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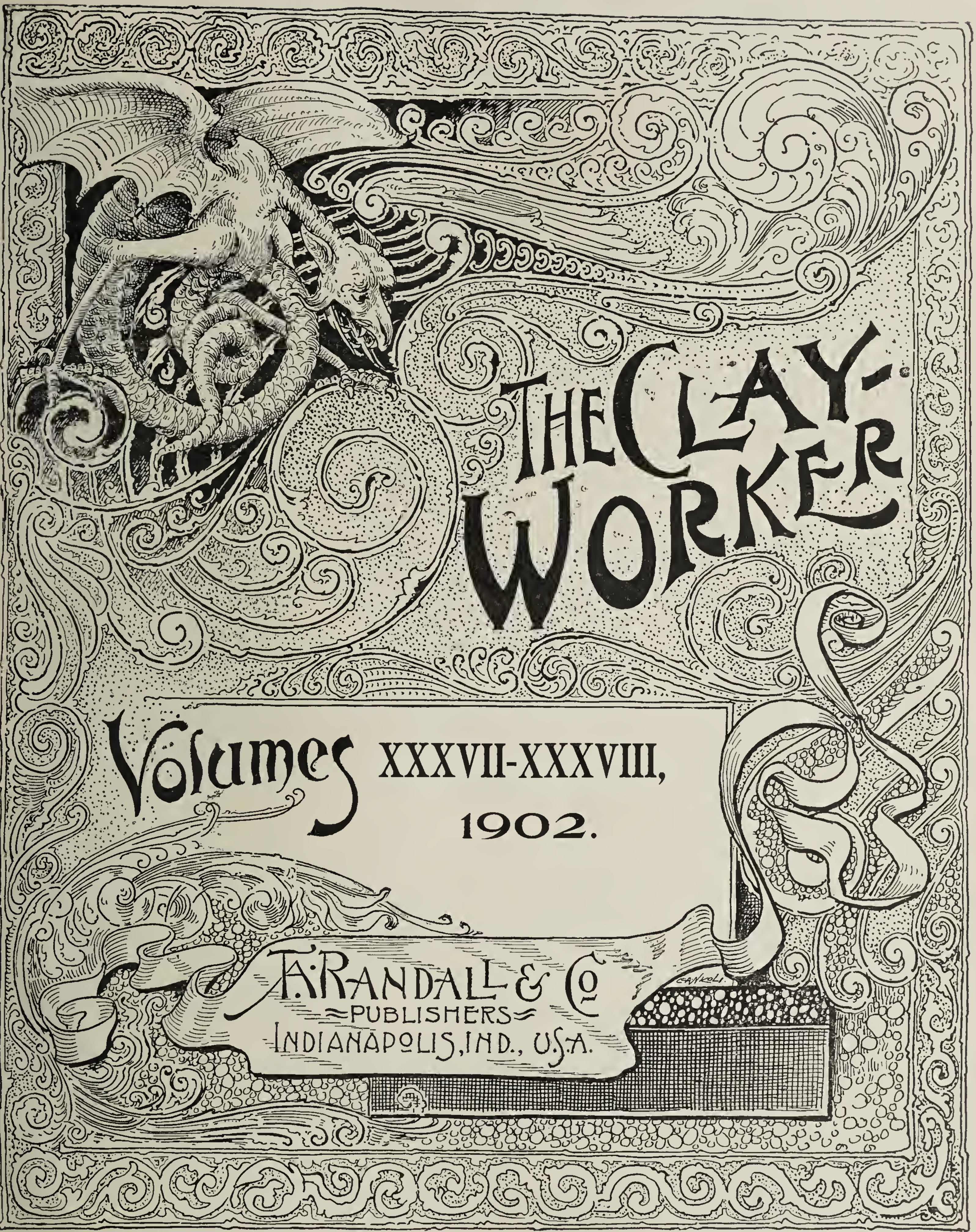


THE CLAY-WORKER

Volumes XXXVII-XXXVIII,
1902.

T. A. RANDALL & Co
PUBLISHERS
INDIANAPOLIS, IND., U.S.A.

INDEX TO THE CLAY-WORKER.

VOLUME XXXVII.

FROM JANUARY TO JUNE, 1902.

A.

Avoid Strikes, How... 45
Annual Meeting of the National Stove Lining Manufacturers' Association... 54
As Others See Us... 77
Among the Potters...78, 264, 370, 463, 556, 666
Annual Address of President Hunt...183
Address of Toastmaster Hunt...231
Address of Rev. Harris R. Cooley...231
Address of S. H. Holding...232
Address of Arthur S. Bradley...232
Address of Prof. Edward Orton...234
Address of George M. Fiske...235
Address of Rev. Casper W. Hiatt...236
Address of Prof. Chas. F. Binns...237
Address of W. D. Gates...238
Address of Jno. W. Sibley...239
American Ceramic Society...253
After the Banquet...358
An Improved Continuous Kiln...460
American vs. English Pottery...465
American Brick Architecture...529
Art Pottery...531
Ancient and Modern Persian Tiles...644

B.

Brick Pavements in the City of Cleveland... 26
Best Education for the Twentieth Century Clay-Worker... 30
Burning Money... 32
Brick Testing... 44
Brick Inspection... 48
Buttonhole Talks...53, 437, 539, 641
Benefits of Convention Work... 72
Buffalo Brick and Building News... 76, 458, 545, 622
Banner Year for Philadelphia Brickmakers, The... 76
Brick in Architecture...206, 253
Burning Brick with Oil...209
Badge of Membership, The...253
Beauties of Terra Cotta...326, 360
Brickmaker's Welcome, A...339
Brick for Foundations...360
Brickmaking as Seen from the Office Window...442
By the Light of the Kiln Fire...452, 537, 648
Brittle Brick Trouble, Cause and Cure..459
Belt Dressing...465
"Bricklaying," by Owen B. Maginnis...465
Brick Pavements...540
Brickmakers of Philadelphia Are All Busy, The...543
Brick Roadways Best...555
Boom Reaches Maine, The...555
Brickyard Bout, A...565
Boston's Building Regulations...567
Burned Out Brick a Second Time...569
Brick Walk with Sticks...570
Brick and Terra Cotta in Philadelphia...629
Brick Pavement in Alabama...633
Busy Tennessee Plant, A...637
Brick Tells the Story of Ancient History...640
Brick Industry in Buenos Ayres...643
Brickyard Tribulations...662

C.

Color and Form in Brick Architecture.. 19
Clay Industries of Texas, The... 31
Clay Industries of Germany, The... 34
Clay-Working Industries of Marseilles, France, The... 54
Convention City, The... 56
Convention City's Brick Plants, The... 62
Current Comment...85, 252, 360, 464, 567, 668
Clay Products at the St. Louis Exposition... 85
Clay as a Commercial Commodity...193
Clay Building Materials from the Standpoint of the Architect...352
Convention Echoes...358
Chicago Brick and Building News.. 368, 555
Clay-Worker in Madagascar, The...432
Cuba, New and Old...454, 548, 638
Cause of Brittle Brick...459
Can't Keep Up with the Demand...555
Coronation Cup, The...641
Clay-Working Industries of Rouen, France, The...664
Clays and Clay Productions in Maryland, The...666

D.

Drying Problems, General Discussion...204
Drying Brick with Waste Heat from Cooling Kilns...223, 253
Dakotan Finds Pleasure and Profit at the National Convention...254
Distribution of Clays of Economic Importance in Iowa...440
Drying Clay Wares by Use of a Suction Fan...441
Discussion of Lien Laws of Interest to Iowa Clay-Workers...447
Device for Cutting Arch Brick, A...653
Detroit Doings in the Brick and Building Line...663

E.

Election of Officers—
  Illinois... 51
  N. B. M. A...187
  Wisconsin...356
  Iowa...448
Evolution of the Potting Industry of the United States, The... 60
Event of the St. Louis World's Fair, The 86
Editorial Notes and Clippings...90, 256, 372, 472, 572, 672
Election of the Officers of the National Association...187
Experimental Work in Brickmaking...195
Economy in Building and Repairing Permanent Kilns...200
Economy of Soft Mud Process, The...221
Exhibition Room, The...242
Every Feature of the Convention a Success...242
Expects a Still Larger Convention Next Year...359
"Excelsior," Says Yates...362
East Coast of Florida and Its Building Materials, The...538

F.

Factory Leaks... 43
From Northern New England... 74
First Impressions...359
From Brick to Lumber...460
Foundations for Pavements...464
Frost for Canadian Brick Manufacturers, A...565
Future Tile Business, The...446

G.

Gigantic Fraud Exposed, A... 28
Good Ship Brick, The...332
Growth of Clay Industries of Western Pennsylvania, The...335
Gates's Gratitude...358
German's Clay-Workers' Convention.458, 552
Good Way to Keep Up with the Times, A...457
Good Roads and How to Get Them...464
Good Place to Start a Yard...555
Good and Effective Medium, A...555
General Understanding, A...668

H.

Hot Air Direct vs. Steam-Heated Dryers.203
Hanover Press Brick Company, The...430
Hotel Reverie, A...466
High Wages and Dull Times...537

I.

Iowa Brickmaking Industries...75, 366, 468, 544, 667
Impressions of the Convention...230
Insurance Tax, The...360
Indiana Clays and Clay Industries...431
Improvements at the East Liverpool Potteries...433

J.

Just a Hint... 86

L.

List of Members of the Illinois Association... 52
Letters from Absent Members...192
List of Members of the N. B. M. A...240
Ladies at the Convention, The...252
List of Members of Wisconsin Convention...357
List of Members of Iowa Convention...449
Little Pat Roach...466
Leaning Tower of Pisa, The...532
Laminations in Clay Wares...534
Light and Heat...536, 649
Legal Decisions of Interest to Business Men...670

M.

Mayor Bradley's Address of Welcome... 40
Meeting of the American Ceramic Society 55
Modern Brick Plant Prospecting and Construction...197
Mayor Johnson's Address of Welcome...227
Mayor Rose's Welcome to Milwaukee...338
Minimum Cost of Burning Cream-Colored Brick from Wisconsin Calsium Clays and How It Can Be Accomplished, The...344
Manufacture of Brick by Stiff Mud Process...347
Man Behind the Pick, The...362
Most Efficient Outdoor System for Handling and Drying Brick, The...566
Molded Brick...630
Modern Brickmaking Machinery in Use in New Zealand...644

N.

National Convention, The... 85
New Crop of Calendars, The... 86
N. B. M. A.'s Field of Usefulness Widens, The...358
National Convention a Good Place to Get Pointers...359
North Carolina Kaolin Mining...427
Northwestern Brick Manufacturers Meet, The...429
Notes from Tidewater, Va...461
National Manufacturers in Convention..465
New Form of Brick, A...643
New York Brick Market, The...268, 366, 450, 550, 642
National Brotherhood of Potters Meets..652
New Texas Brick Plant, A...662

O.

Out of Sight Brick... 22
Opportunities of the Young Clay-Workers of the Twentieth Century... 24
Official Announcement and Convention Programme... 57
Opening the New Ledger... 87
Official Report of the National Brick Manufacturers' Association...181
Opening Prayer, The...181
Official Welcome to Cleveland...182
Obituary—
  Death of Henry Martin...358
  Death of Frank J. Byrne...436
  Death of Frederick Hemen...436
  Death of W. C. Sibley...569
  Death of N. M. Rittenhouse...569
  Death of Thomas E. Ferrier...569
  Death of Thomas Sankey...569
Our Experience in the Manufacture of Soft Mud Bricks...342
Ohio River Potteries Under Water...433
On Certain Phases of Clay Testing...443

REMOTE STORAGE

Owen's, J. B., Pottery at Zanesville Burns........455
Ohio's Oldest Paving Brick Plant........532
Ohio Valley Pottery Growth........566

P.

Programme of the Iowa Brick and Tile Association........25
President Coverse's Annual Address..... 40
Piece Work........44
Prosperity at the Mouth of the Mississippi........73
Prospects for Paving Brick in Russia.... 74
Programme for Wisconsin Convention.. 75
Pacific Coast News......100, 364, 470, 576, 676
Programme of Entertainment, The.......175
Proposed Exhibits of Clay Products at St. Louis Exposition........203
Permanent Improvement of Public Highways, The........211
Paving Brick, Sewer Pipe and Other Clay Products Used in City Improvements........350
President Drake's Annual Address........348
President Wild's Address........439
Prosperous Illinois Brick Company, A....460
Philadelphia Bricklets........461
Pottery Leads........641
Potteries of Zanesville, O., The........650
Pioneer Tilemaker Lives to See the Fruits of His Good Work........653
Prosperity Long Drawn Out........668

Q.

Questions for General Discussion........202
Questions and Answers........568

R.

Remarkable Stein, A........25
Report of Illinois Convention........35
Report of Secretary Stoll........37
Report of Committee on Resolutions........51, 229, 356, 448
Response to Address of Welcome........182
Report of Committee on Technical Investigation........201
Report of Committee on Specifications for Construction of Brick Pavements..215
Round vs. Square Kilns........217
Road Construction........357
Report of Wisconsin Convention........338
Response of Mr. Morris........339
Roofing Tile Company Shares Profit Making........428
Report of the Iowa Brick and Tile Convention........438
Remarkable Contest Between a Pike and a Shark, A........459
Road Construction—Burnt Clay for Roads........634

S.

Selling Brick for Profit........21, 428
The Superintendent........47
St. Louis Brick and Building Notes........96, 266, 462, 547, 665
Substantial Benefits Realized........243
State Conventions, The........253
Second Crop of Calendars, A........254
Status of Clay-Working Industries in England, The........327, 361
Successful Georgia Brick Plant, A.......334
Sermon on Brick, A........336
Secretary Buckley's Report........340
Students Study Drainage........449
Success at Thurber........454
Succeeded Where Others Had Failed Because He Reads the Clay-Worker......460
Some Fire Clay Products........542
Si's Sight Seeing........570
Syracuse Brickmakers Rushed with Orders........644
Strike a Blessing in Disguise—Maybe....669

T.

Tiling Highways........41
Treasurer Hammerschmidt's Report...... 51
Treasurer Sibley's Report........186
Twentieth Century Retrospect and Prophecy, A........189
Trip to the Brickyards, The........252
Treasurer Finnegan's Report........340
Tile Drainage........341
Technical and Trade Literature and Its Value to the Clay-Workers........351
Trade Notes........362
Traction on Wagon Roads........434
Tests of Strength of Hollow Building Block........447
Talk on Machines, A........453
Tale of Two Cities, A........457
Trade Literature........568, 669
Tired........570
Talks on Burning........636
Transport in Clay-Working........645

W.

Where Are We At........42
What Illinois Tile Manufacturers Have Done........49
Western Pennsylvania Clay Industries........98, 262, 456, 551, 678
What We Have Learned About the Manufacture of Soft Mud Brick........346
Wisconsin Clays and Some of Their Characteristics........353
With the Syracusans........450
Way Up in Maine........632
With Milwaukee Builders........651
Who Supplied the Roofing Tile for Wyman School........653

Y.

Youngest Brickmaker at the National Convention........359
Young Man's Chances To-Day........549

VOLUME XXXVIII.

FROM JULY TO DECEMBER, 1902.

A

About Fire Traps........56
All Quiet in the Strike District........156
Arbitration and Strike Evils........258
About Lime Stone in Clay........341
A Far Cry for Ceramic Knowledge.......342
Assistant Secretary of N. B. M. A. Honored........362
An Up-to-Date Brick Factory........425
Arbitration's Victory........459
Annual Convention of United States Potters' Association........543

B.

Brickmaking in London........17
Buckeye Capital a Great Brick Market, The........20
By the Light of the Kiln Fire........24, 142, 338, 437, 548
Buffalo Brick and Building News........29, 153, 241, 352, 452, 551b
Buttonhole Talks........35, 136, 254
Boston's Brick Architecture........54
Brickyard Tribulations—Reply to Mr. Bivings........42
Busy and Happy Buckeye, A........156
Brickmaker Victims of Appendicitis.....159
Brick and Lumber in Louisiana........218
Brick Streets of Syracuse, The........223
Building Statistics........222
Brickmaking Under the Shadow of the Rockies........226
Brick Manufacturers Will Build a Model Town........255
Burning Questions........256
Brickyard Beverages........225, 455
Brick Manufacturer Injured........238
Brick and Bricklaying........330, 528
Brick in a New Role........341
Build Bridges of Brick........354
Brick Plant and Brick Pavements of Wilmington, Dela........329
Baltimore Brick Company and Monumental City Generally........339
Brickyards on the Hudson........340
Brickyard Chat........357
Brickmaking on the Hudson........417
Brickmaking in the Land of Flowers....420
Bone Porcelain........432
Brickmakers and Potters of Trenton, N. J., The........434
Brick Walls........454
Brickmaking Down in Maine........459, 530
Brickmaking Abroad........461
Brick Verselets After Longfellow........462
Boston—Old and New........517

C.

Clay-Worker Honored, The........19
Canal Turns Swamp Land to Rich Prairie Fields for Indiana's Governor........20
Common Sense in Paving Brick........23
Combination of Fire Clay Manufacturers 27
Cost of Product........37
Change in Pittsburg District, A........52
Chicago Situation, The.....53, 157, 256, 356, 558
Current Comment........56, 158, 258, 360, 460
Cost of Production........122, 224, 424
Clay-Workers and the World's Fair......159
Clay-Working Industries of Greece.....238
Convention Dates........259, 362, 458
Clay Exhibits at the World's Fair.......360
Coal Strike, The........360
Combinations and Trusts........361
Chat on Brickmaking, Ancient and Modern, A........429
Clay Dust........440, 534
Clay-Worker Epoch, A........460
Convention Thoughts........460
Ceramic Mosaic Floor Tile Company.....523
Convention Dates........259, 362, 458, 552
Convention of Canadian Clay-Workers...553
Cry for Justice, A........551a
Christmas Greetings........554

D.

Detroit Brick and Building Notes........42, 153, 436, 551c
Desirable Location for Brick and Tile Plant, A........257
Drain Tile for the Arkansas Valley.......428
Down East........436
Dryer Stacks........531

E.

East Liverpool Brick Manufacturing Company, The........28
Editorial Notes and Clippings........64, 162, 264, 364, 464, 564
Evolution of the Potter's Wheel, The....322
Expansion of American Commerce......361
English Cousins Profit by American Methods........365
Emperor of Germany Turns Potter.......436
Extensive Clay Deposits Discovered in Wisconsin........459
Ex-President Eggers Given a Verdict....459
Elimination of Labor in Brickmaking........535, 555

F.

Fernholtz Brick Machinery Company's New Plant, The........30
Foreign Scrapings......54, 137, 242, 336, 438, 532
Faithful Watchman, The........222
Famous Brick Centre........325
Fuel Brick........355
Folly of Secretive Methods, The........461
Fire Tax, The........458
Fire Brick Plant Wanted........551a

G.

German Cement Industry To-day, The.. 37
Good Place for Workmen, A........52
Glorious Fourth, The........60
Great Fire Brick Manufactory, A........133
Good Beginning, Baltimore Builders Busy........157
Growth of Years, The........253
Good Enough to Keep........257
Good Times........258
Georgia Brickmakers Busy........339
Good Place for a Vitrified Brick Plant....456

H.

Handsome Brick Street, A........128
How to Make a Good Paper........156
Has the Price of Brick Increased in Chicago Since 1899........158
Handling Brick from Kiln to Car........454
Hudson River Attractions, The........551a

I.

Information Wanted and Given About Burning with Coal........156
Istability of Wood, The........159
Iowa Clay News........257, 358
In Yankee Land........259
Improved Kilns Wanted........456
In the Brickyard of Philadelphia........550

65472

K.

Key to Business Progress, The..........592

L.

Light and Heat........18, 118, 237, 326, 426, 522
Louisville Fire Brick Works............... 22
Later Day Developments in American Pottery 25
Legal Decisions of Interest to Brick Men 40
Loyalty a Crowning Virtue.................132
Labor-Saving Machinery...................158
Lime Pebbles—How to Get Rid of Them..257
Lime Stone in Clay..........................341

M.

Much Rain in Maine......................... 21
Milwaukee and Wisconsin Brick and Building News...........55, 127, 356, 452, 547
Montgomery Land Company a Successful Brick Company, The.................117
Maine Brickyard Incidents..................155
Machine Made Brick Popular..............257
Modern Clay-Worker, The............420, 520

N.

National China Company, The.......... 34
New York Brick Market, The.................................41, 143, 240, 442
National Capital Brick and Building News 43, 134, 257, 324, 453
New Departure for Soap Manufacturers, A 55
New Brick in an Old Town...............217
New St. Louis—World's Fair City.......317
New Brick Plants in Cleveland...........334
National Dry Kiln Company's New Factory, The.......................................342
New China for the White House..........355
Notes from Tide Water, Va..............332
Natural Evolution—Horse to Steam Power 356
New Jersey's Clay School.................459
National Convention City, The............555

O.

Obituary—
  Death of J. B. Johnson.....................28
  Death of Thomas Richeson............... 28
  Death of Isaac W. Knowles.............140
  Death of J. D. Fate.........................327
  Death of John A. Day......................441
  Death of Chas. A. Freeman..............530
Oil Drying and Burning System..........139
Our Clay-Working Industries in 1901.....159
Oil Fuel for the Clay Industries...........230
Oil Fuel..258
Official Announcement.................358, 458
Official Announcement.............358, 458, 551
Old Year, The...................................554

P.

Portland Cement..........................38, 124
Patent Suit Decision......................43, 156
Pittsburg and Western Pennsylvania Clay Industries.......................36, 368, 453, 552
Pottery News.....................39, 152, 352, 562
Profitable Investment, A.................... 52
Pacific Coast News.........62, 155, 354, 457, 560
Prosperous Pennsylvania Firm, A........126
Philadelphia Brickmakers Are All Happy, The...130
Perpetual Motion or Perpetual Draft.....136
Prosperous Wisconsin Enterprise, A.....166
Promotion of the Brick Business.....221, 331
Philadelphia Brickmakers Jubilant with Prosperity 252
Perpetual Motion (Draft) Achieved Long Ago...256
Problem for Machine Manufacturers, A..257
Porcelain of Great Value...................355
Peace and Plenty in the Land of Cotton 358
Paving a Country Road with Brick......422
Proof of the Durability of Paving Brick.554

R.

Roseville Brick and Pottery Notes......228

S.

Stability in Architectural Decoration.... 17
St. Louis Brick and Building News...........................40, 160, 262, 343, 443, 551c
Sad News from Cleveland................ 52
Summer's Sweet Music...................... 60
Small Missouri Brick Plant, A............157
Something About Old English Porcelain..229
South Bend Brick Streets..................328
Strength of a Brick, The...................455
Superiority of the American Mechanic....547

T.

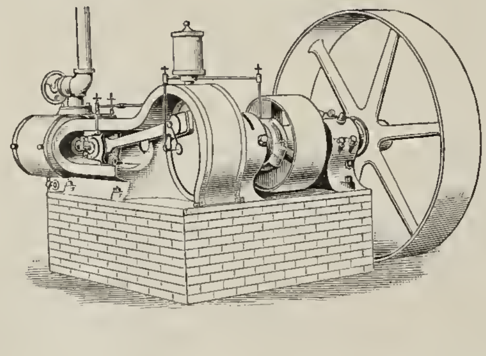
Trade Rivalry................................... 57
Trade Literature...........57, 259, 361, 460, 555
Terra Cotta and Brick in Architecture..234
Things That Are to Be......................321
Thriving Pottery Town, A..................433
Thanksgiving 460

U.

Use of Roofing Tile Abroad, The.........119

W.

Why Staff, Why Not Terra Cotta....... 56
World's Biggest Kaolin Deposit, The.....120
Woman Potter, A..............................129
With the Cleveland Brickmakers.........154
What Clay Can Do...........................220
Will Enlarge Plant............................256
What Is an Economical Burn........320, 524
Water Tanks....................................342
Wants Large Size Drain Tile.............357
Wants More Buttonholes....................454
Wants to Start a New Brick Plant......455
Wants to Know How to Make Flower Pots 456
Warrenite Wanted............................456
With the Illinois Clay-Workers...........525
Wants to Know More About Continuous Kilns 551
Western Ohio Notes..........................553



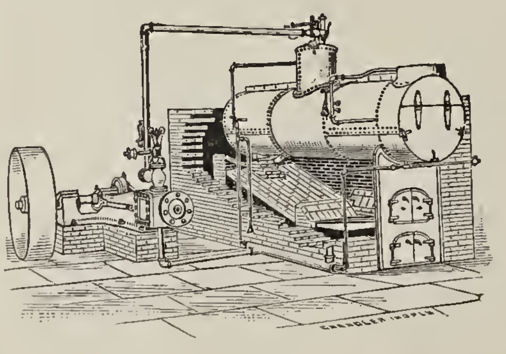


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Table of Contents, Page 88.

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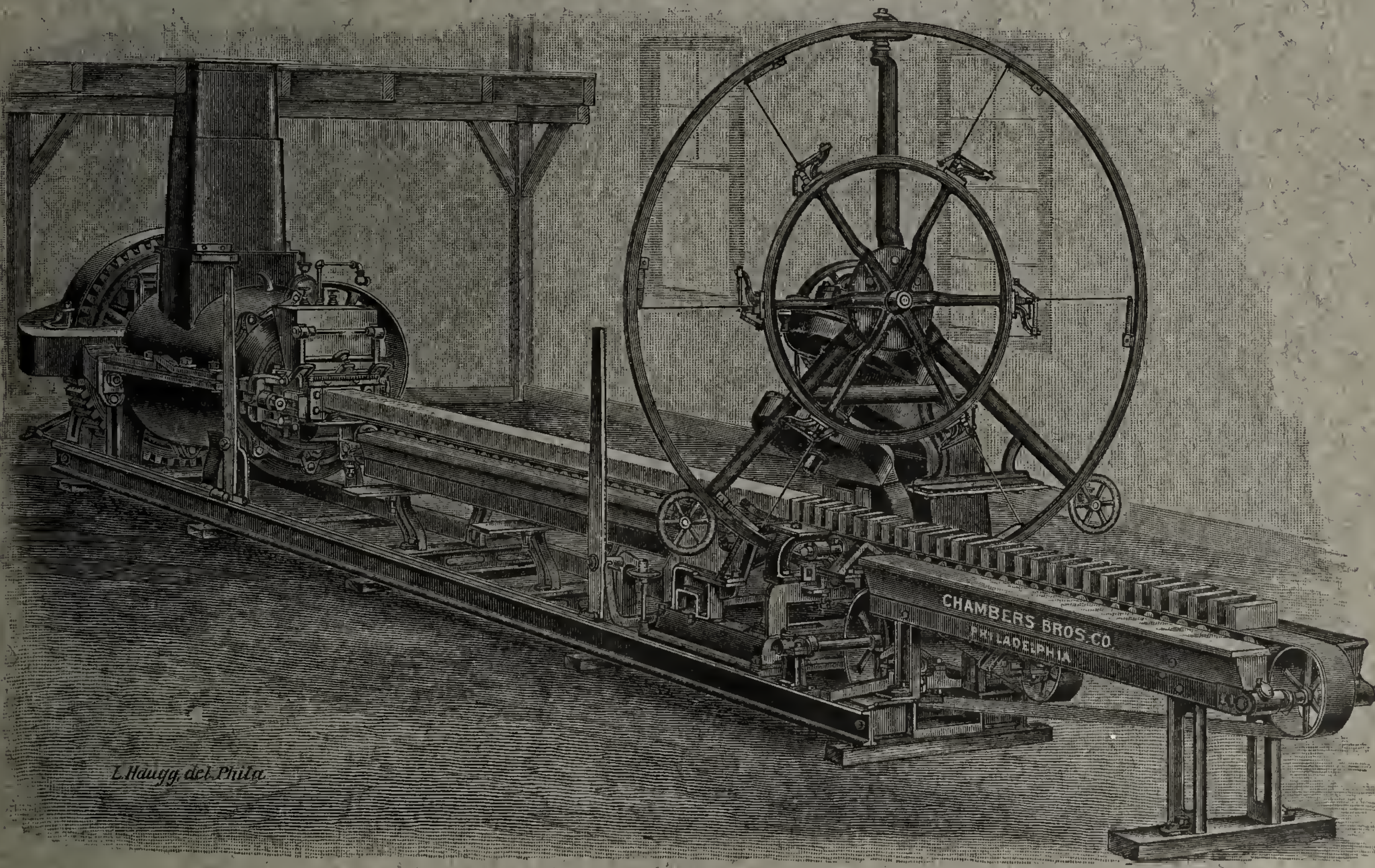
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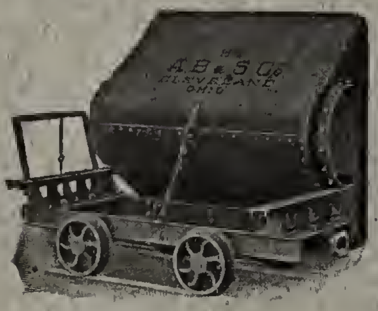

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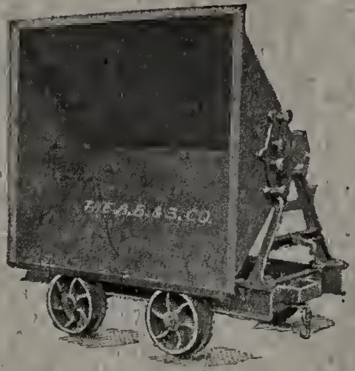

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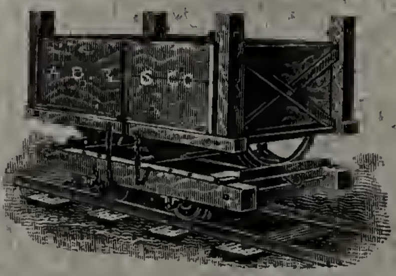

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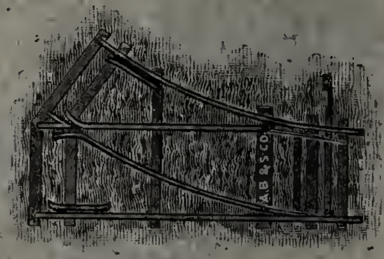

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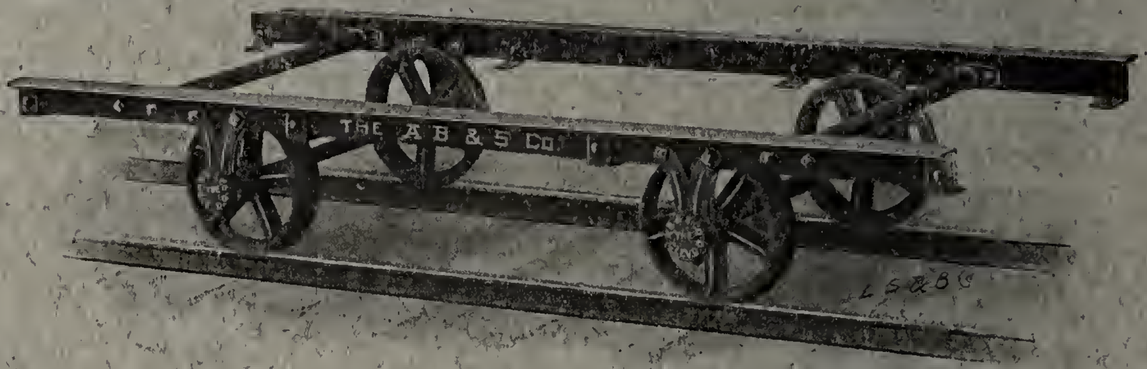

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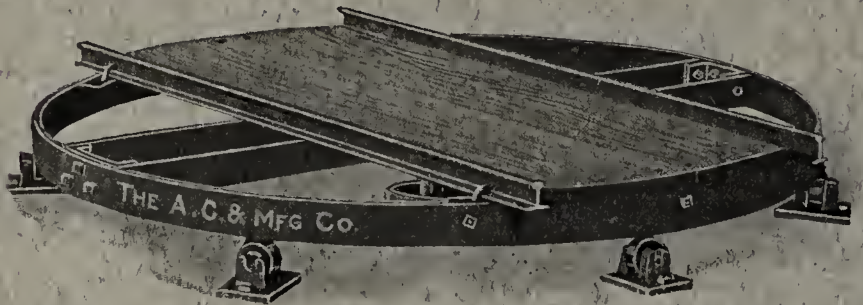
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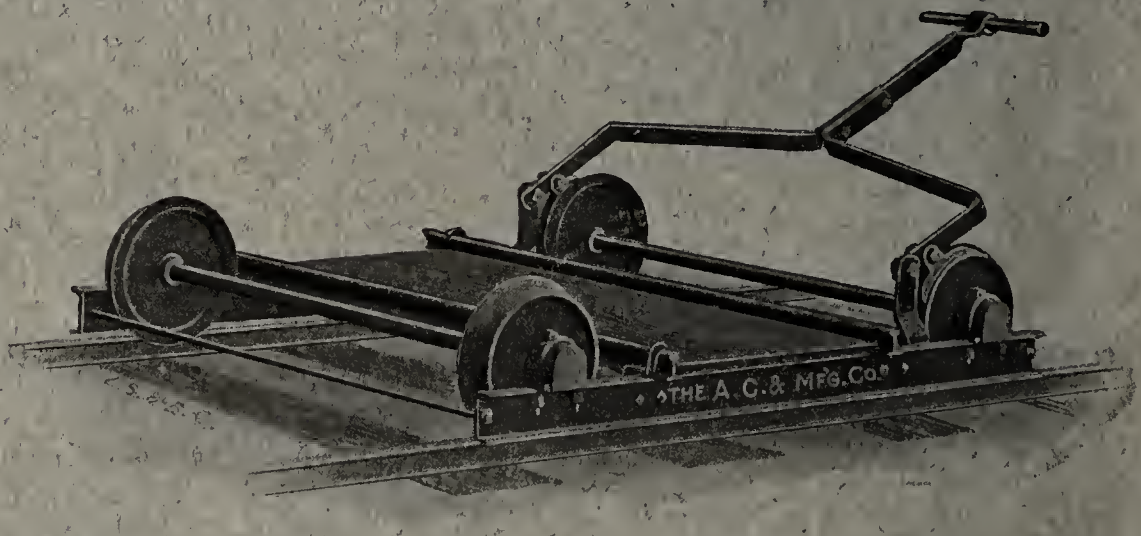
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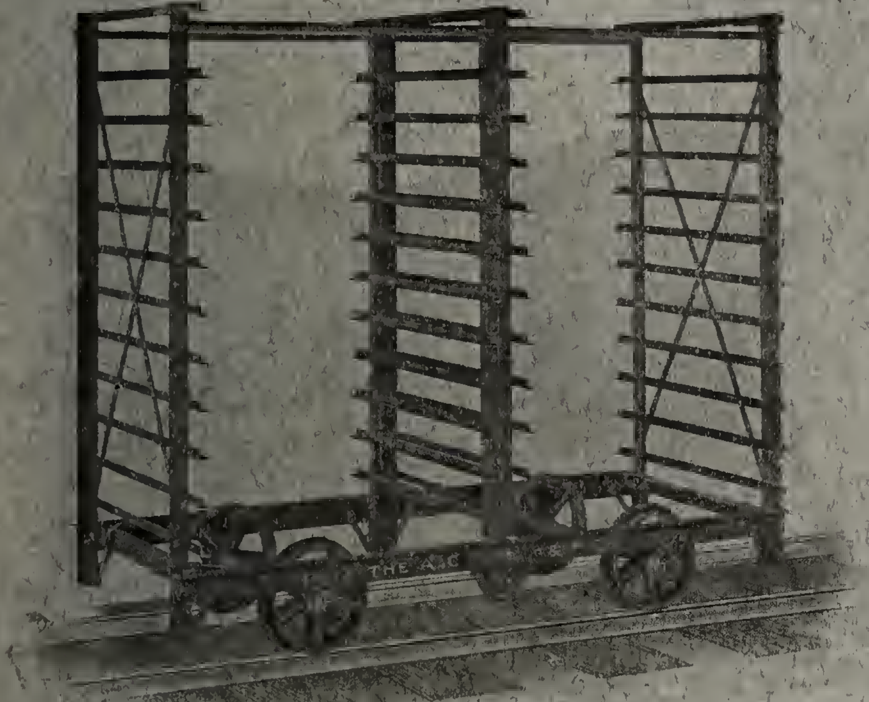
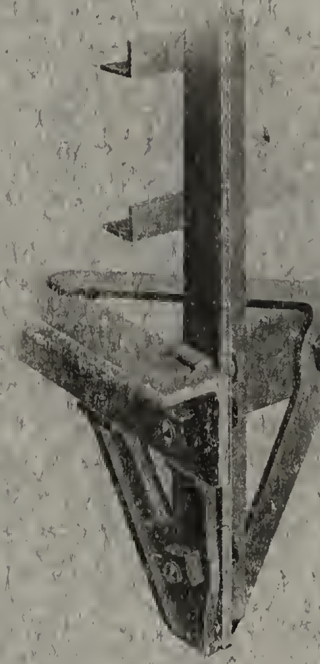


Wright's Patent Malleable Bracket.

Accompanying cut shows manner in which uprights on No. 137 car is held in position assuring rigidity in all directions.



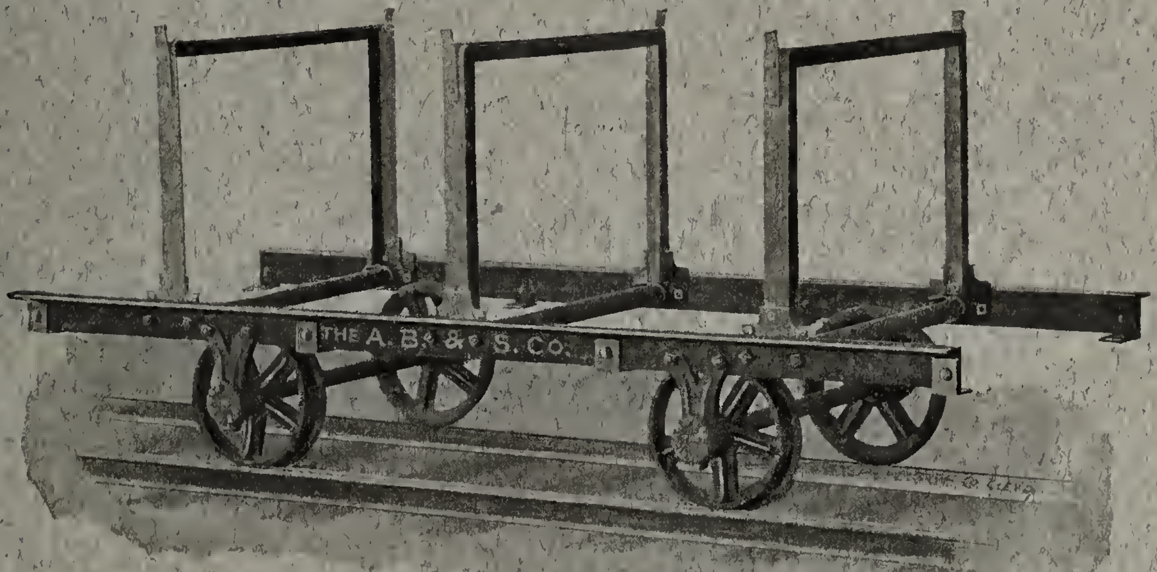
No. 137, SOFT MUD RACK CAR. For Soft Mud on Flat Pallets.

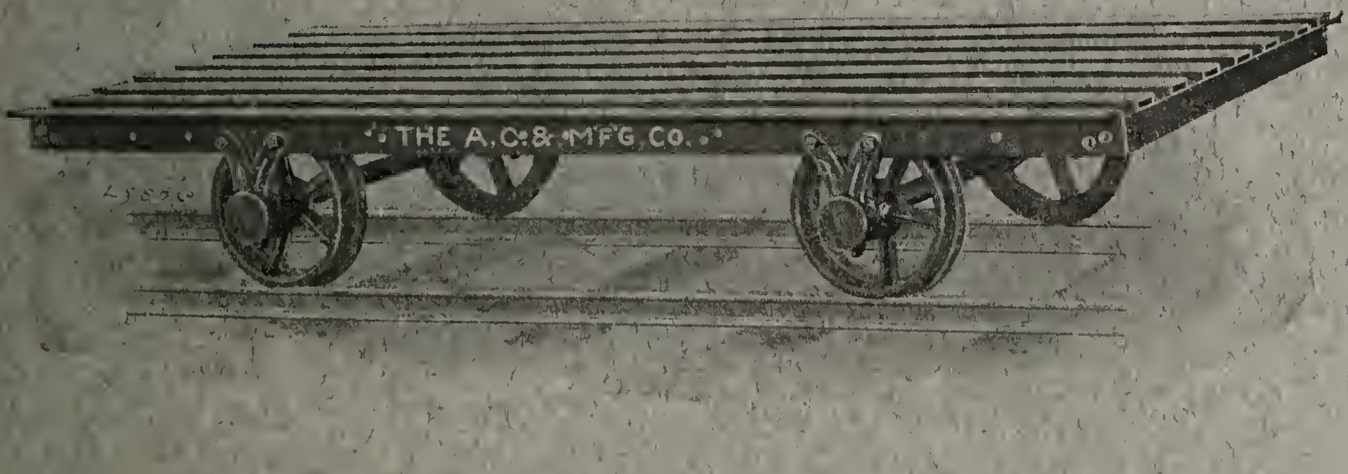
Six brick per pallet, 3 pallets wide, 12 pallets high, 4¾ inches top to top of pallets. Standard size of pallets, 34 inches long. Can be made any size desired. Equipped with Wrights patent malleable center and corner brackets for upright supports. Length over all 6 foot 4 inches; width, 36 inches; height, top of rail to top of upper pallet slide, 5 feet 8 inches; capacity 432 green brick.

No. 124, DOUBLE DECK,

Shown without Decks.

For stiff mud brick to hack four high on lower deck and 3, 4 or 5 on upper. Equally well adapted for Fire proofing, Terra Cotta, Hollow Block, Sewer Pipe, etc. Uprights riveted to malleable brackets, preventing racking. Length over all 6 feet 11 inches; width, 35 inches; height, top of rail to top of lower deck 13 inches; height top of lower deck to top of supports for upper deck 21 inches.




THE A.C.& MFG.CO.

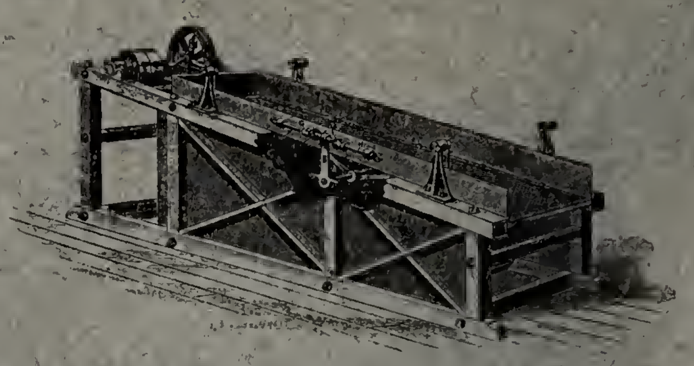
No. 108, STIFF MUD FLAT CAR, with Steel Channel Deck.

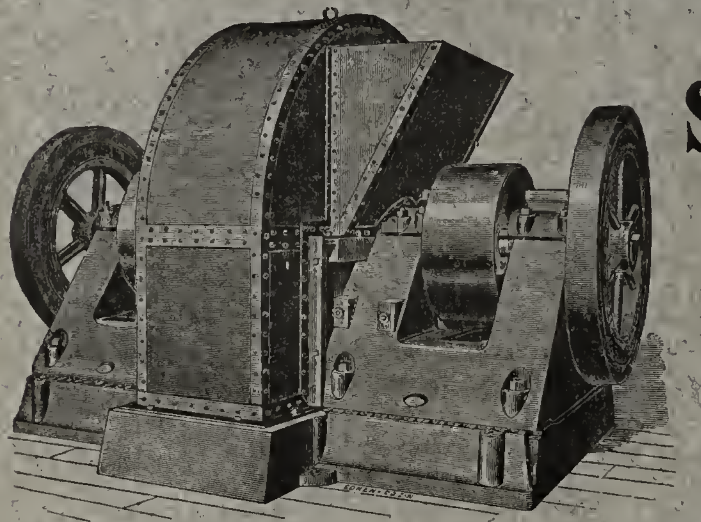
Designed to hack 8 or 9 high. Car is riveted complete ready for use. Length over all 6 feet 11 in.; width over all 35 in.; height from top of rail to top of car 13 inches. Capacity 500 to 600 green brick.

STEDMAN'S AGITATING INCLINE SHAKER SCREEN.

A GOOD Screen for properly screening to any degree of fineness a great variety of materials, and especially clay, is a long felt want. Our Incline Agitating Shaker Screen meets the requirements of the trade in the most successful manner possible.

In this screen we have one of large capacity for small floor space and one that will screen fine without clogging, as the agitating device we have underneath the screen wire prevents any clogging of the screen holes when screening clay or any other material in a dry or semi-dry condition. The screen will run with little power and without any shake or jar to the building, as the moving parts are well balanced by an adjustable counter-weight within the rim of the balance or fly wheel.





STEDMAN'S IMPROVED CLAY DISINTEGRATOR

For Thoroughly Pulverizing Clay in a Dry, Semi-Dry or Damp Condition.

Its construction is such that it will not clog in pulverizing damp clay, and the journal bearings are constructed dust proof.

Write for catalogue, giving full description, references and testimonials.

Stedman Foundry & Machine Works,
AURORA, INDIANA.

INDEX TO ADVERTISERS.

Brick Machinery—Dry Press Process.

Name. Page.
American Clay-Working Mach Co, The 12, 99, 148
Anderson Foundry and Mach. Works 10
Chicago Brick Machinery Co.. 146
Chisholm, Boyd & White Co 4 5 6 7
Fernholtz Brick Machinery Co. The 9
Ill. Supply & Construction Co. 13
Ross-Keller Brick Machine Co 8
Simpson Manufacturing Company The 11

Brick and Tile Machinery.

American Clay-Working Mach Co., The 12, 99, 148
Anderson Foundry and Mach. Works 10, 124
Battenfeld Mfg. Co., The 101
Brewer. H. & Co 158 159
Bonnot Co, The 137
Chambers Brothers Co. 1, 93, 94, 95
Chicago Brick Machinery Co... 146
Eastern Machinery Co, The.... 162
Fate & Co., The J. D 149
Freese, E. M. & Co.. 127, 128, 129, 130
Henry Martin Brick Mach. Mfg Co. The 147
Hensley J. W 116
Horton Mfg. Co, The 160 161
Ill. Supply & Construction Co. 13
Kells Foundry and Machine Co 108
Leader Mfg. Co, The 124
Madden & Co 131
Ohio Ceramic Engineering Co., The 133 164
Potts & Co., C. & A. 139, 140, 141, 142
Raymond Co., The C. W 89 91
Stedman Foundry and Machine Works 2b
Steele & Sons, J. C 114
Stevenson Co., The 162a
Wallace Mfg. Co, The 151, 152, 153, 154
Wellington Machine Co, The... 97
Wiles Co., A. M. & W. H 120

Brick Kilns and Dryers.

American Blower Co, The...... 164
Barron, A. F. & A. E 136
Bushong, M. M 122
Crown Dryer Co., The 144
Eudaly, W. A 122
Frey Engineering Co 121
Haigh, H 115
Illinois Supply and Construction Co, The 13
Justice, I. M 123
Morrison & Co., R. B 109
New York Blower Co., The 134
National Dry Kiln Co, The..... 135
Philips, S. G 110
Pike, E. M 109
Reppell, L. H 115
Standard Dry Kiln Co, The. 16 17 18
Wurz, Egidius 109

Brick Yard Supplies.

Atlas Car & Mfg. Co. 2, 2a
Arnold, D. J. C 123 132
Bechtel, B. E 114
Cleveland Car Co 121
Caldwell & Son Co., H. W....... 111
Carmichael, T. W 115
Carnell, Geo 120
Cox, Geo. S 109
Dunlap Mfg. Co 107
Frost Engine Co 162b 163
Gandy Belting Co., The........ 105
Gray, S. B 106
Gregory, M. E 107
Harrington & King Perforating Co. The 3
Henry Martin Brick Machine Mfg. Co, The 147
Horton Mfg. Co, The........ 160 161
Jeffrey Manufacturing Co, The. 105
Kendall & Flick 108
Marion Steam Shovel Co........ 150
Main Belting Co 105
Mershon, Schuette, Parker & Co 110
Newton, A. H 110
Ohio Steam Pump Co., The..... 107
Phillips & McLaren 108
Rockwood Mfg. Co, The.......... 108
Patterson Foundry and Machine Co, The 108
Smidth & Co., F. L 115
Scott & Co., Alex A......... 156 157
St. Louis Pulverizer Co......... 164
Tecktonius, E. C 109
Thew Automatic Shovel Co, The 155
Williams Patent Crusher and Pulverizer Co 145

Miscellaneous.

American School of Correspondence 111
American Road Machine Co... 114
Audel & Co., Theo 107
Baird & Co., Henry Carey...... 109
Baltimore and Ohio Railway.. 125
Big Four Route 110 138
Caldwell Co., W. E 107
Chesapeake & Ohio R. R 110
Clinton Paving and Building Brick Co., The 113
Coaldale Paving Brick Co., The 112
Clark W J. Co., The 109
Crown Fire Clay Co., The 106
Dean Bros. Steam Pump Works 107
Eastern Paving Brick Co..... 112
Evens & Howard 106
Evert & Co., H. C 106
Gabriel & Schall 107
Green & Hunter Brick Co 112
Hydraulic Press Brick Co... 14, 15
Indianapolis Engraving and Electro Co 106 109, 118
Indiana, Decatur & Western ... 111
Johnsonburg Vitrified Brick Co 112
Lake Erie & Western 111
McAvoy Vitrified Brick Co 113
McHose, J. B 104
Miller Oil and Supply Co 108
Munn & Co 110
New York Brick and Paving Co 112
Ohio State University 106
Preston Brick Co 113
Pennsylvania Line 111 119
Purington Paving Brick Co, The 113
Perrine & Son, H. C 106
Queen and Cresent Railway... 126
Reese-Hammond Fire Brick Co 106
Roessler-Hassiacher Chemical Company, The 120
Sangamo Brick Co 112
Sea Board Air Line Railway... 125
Terre Haute Brick and Pipe Co. 113
Vandalia Line 110
Wabash Railroad 143
Wabash Clay Co., The 113
Ads., Small Wanted, For Sale, etc.

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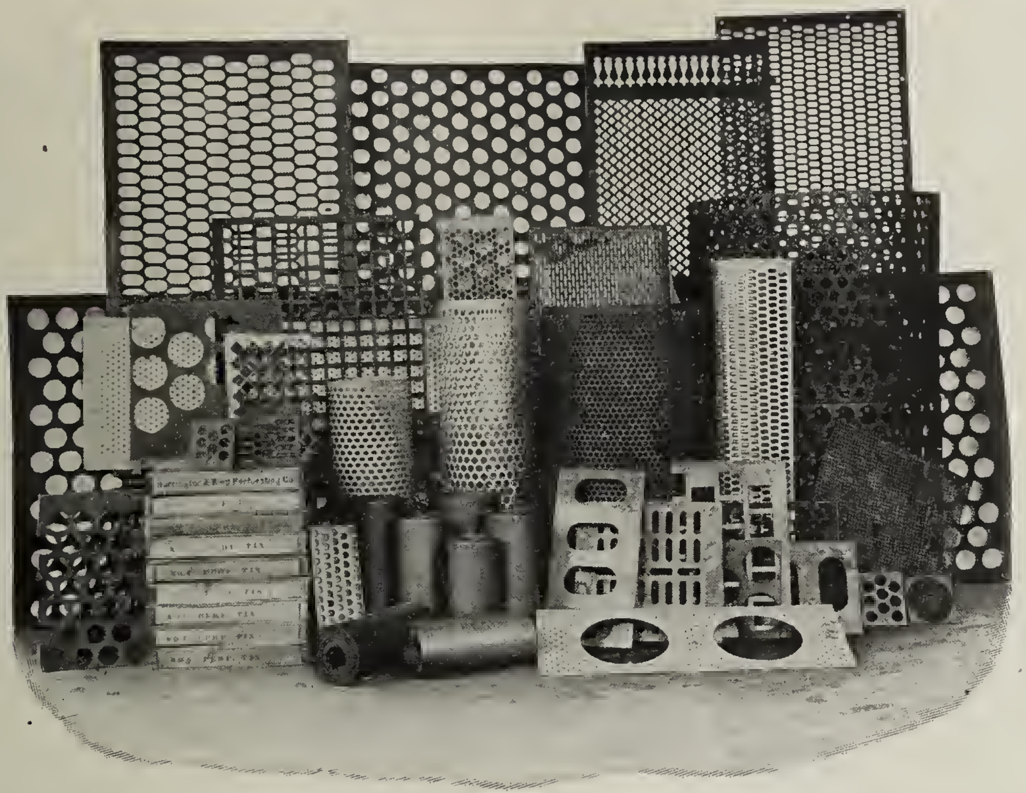
Of Every Description.



PERFORATED STEEL FOR CLAY SCREENS.

Screens of all Kinds

FOR USE IN

Clay, Shale, Sand, Cement, Crushed Stone, Coal, Coke, Etc.

PERFORATED STEEL DECKS

FOR DRYER CARS.

Dry Pans, Drying Floors, Conveyor Bottoms, Trays, Separators, Etc.

The Harrington & King Perforating Co.,

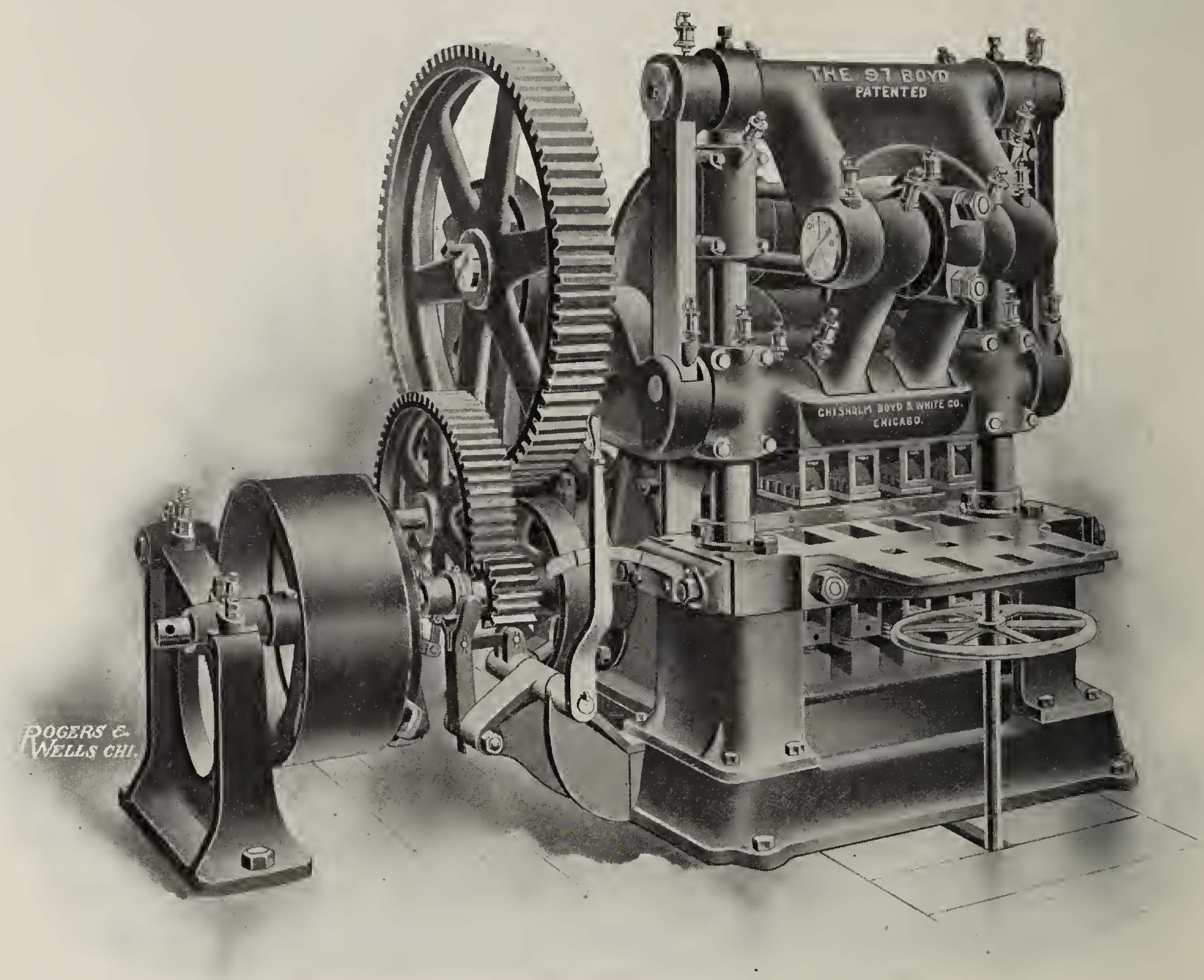
No. 231 North Union St.,

CHICAGO, ILL., U. S. A.

The Improved Boyd Brick Press.

The '97 Model.

IT'S NAME A GUARANTEE.



The '97 Boyd Brick Press has Enormous Strength and Great Durability: It is Compact; The Adjustments are Convenient; It Operates Quietly and Smoothly; The Workmanship and Material are of the best; The Design Ingenious, and shows the most Perfect Application of Scientific and Mechanical Principles to the Art of Brick-making.

Sent on trial and subject to purchase after the making and burning of one or more Kilns of Brick.

Fifty Presses of this Pattern Now in Use.

Can not be broken in pressing brick. Fully Guaranteed.

Write for Descriptive Catalogue, No. 9.

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CHICAGO, U. S. A.

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57th and Wallace Streets.

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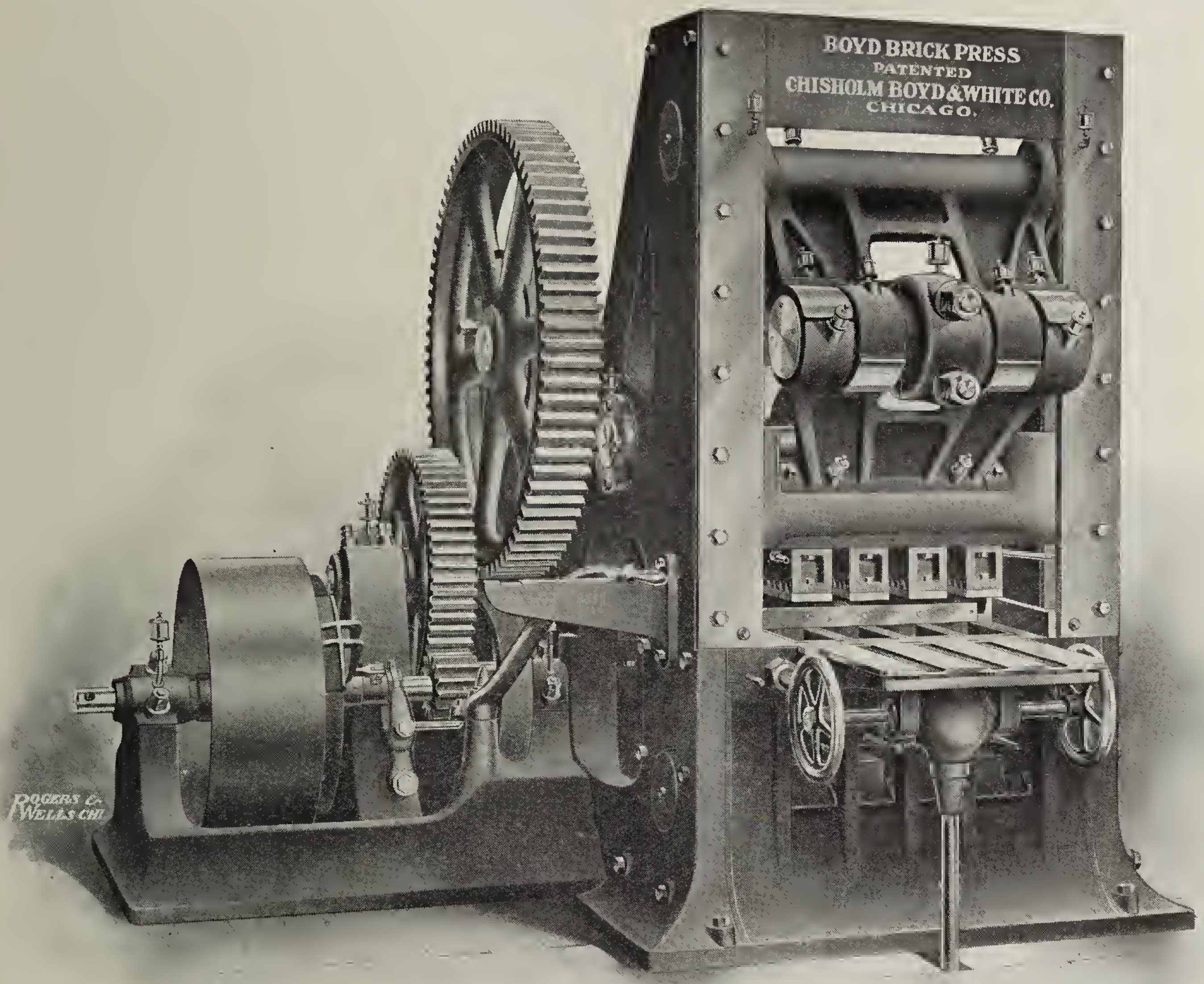
The BOYD BRICK PRESS.



The Boyd Brick Press will make Better Brick from Clay or Shale than can be made from the same material by any other press.

Especially adapted for Working Shales; and is the only Successful Machine for Making Fire Brick.

Its Record: More Boyd Presses in Actual Operation than of all other Press Brick Machines Combined.

Brick Plants of any desired capacity designed and constructed complete, Under Guarantee of Producing Satisfactory Burned Brick.

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CHICAGO, U. S. A.

OFFICE AND WORKS:
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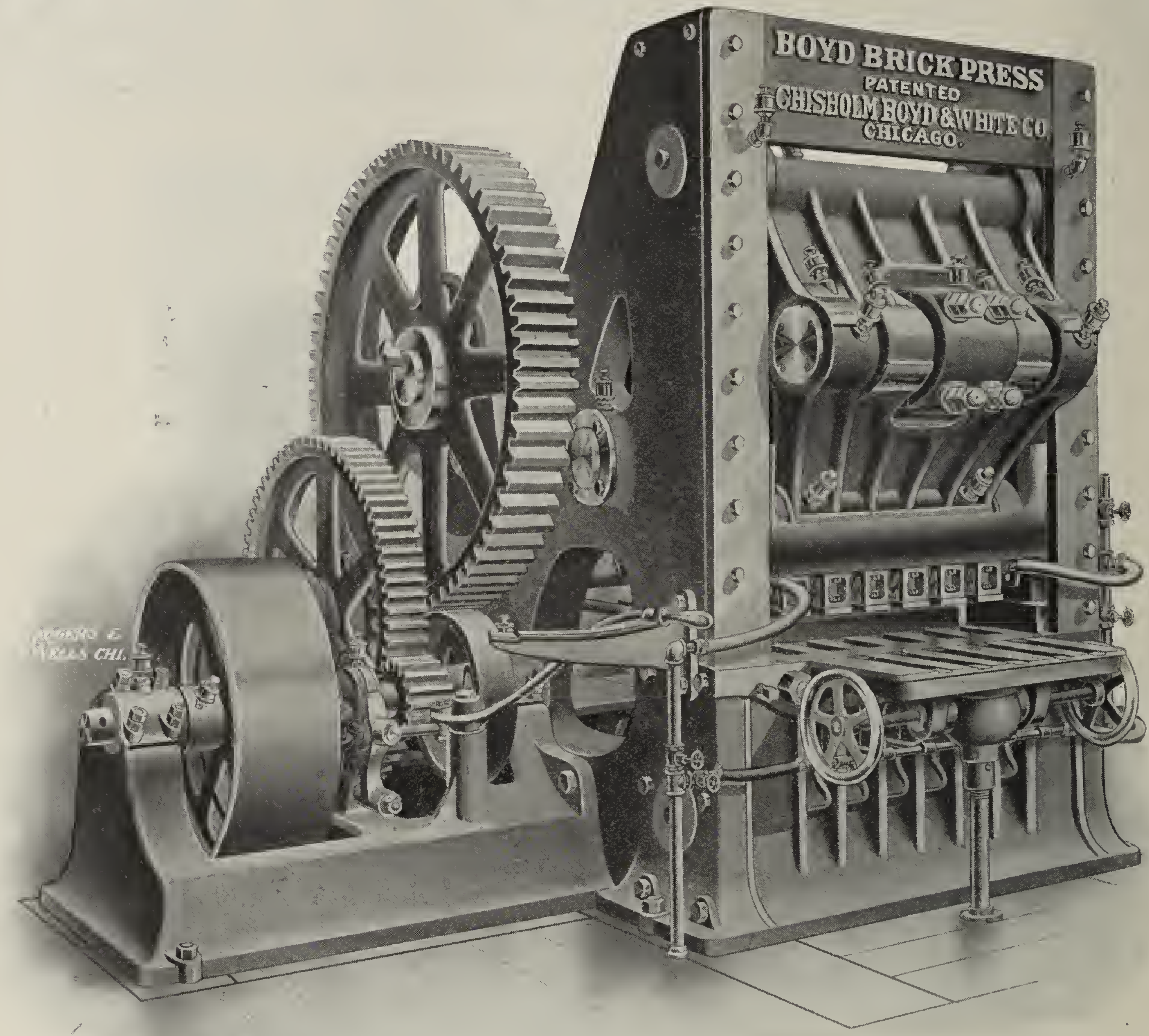
America's Greatest Brick Press.



Another Record for the Boyd Press! Six of our Six-Mold Presses in use **on one yard** since 1892. Average cost of repairs for each machine $1.00 per year.

The Boyd Press exerts greater pressure than any other machine made. It is the only Press in which the lower plungers are independent of the lower crosshead. This feature positively ensures equal pressure and finish on both sides of the brick, and no granulated or soft centers.

The mold liners are made of the hardest and toughest known metal, and are guaranteed for two years. The movement of the Boyd Press is noiseless and without jar or shock; no rubber or air cushions, hooks, latches or other uncertain and unmechanical devices are employed.

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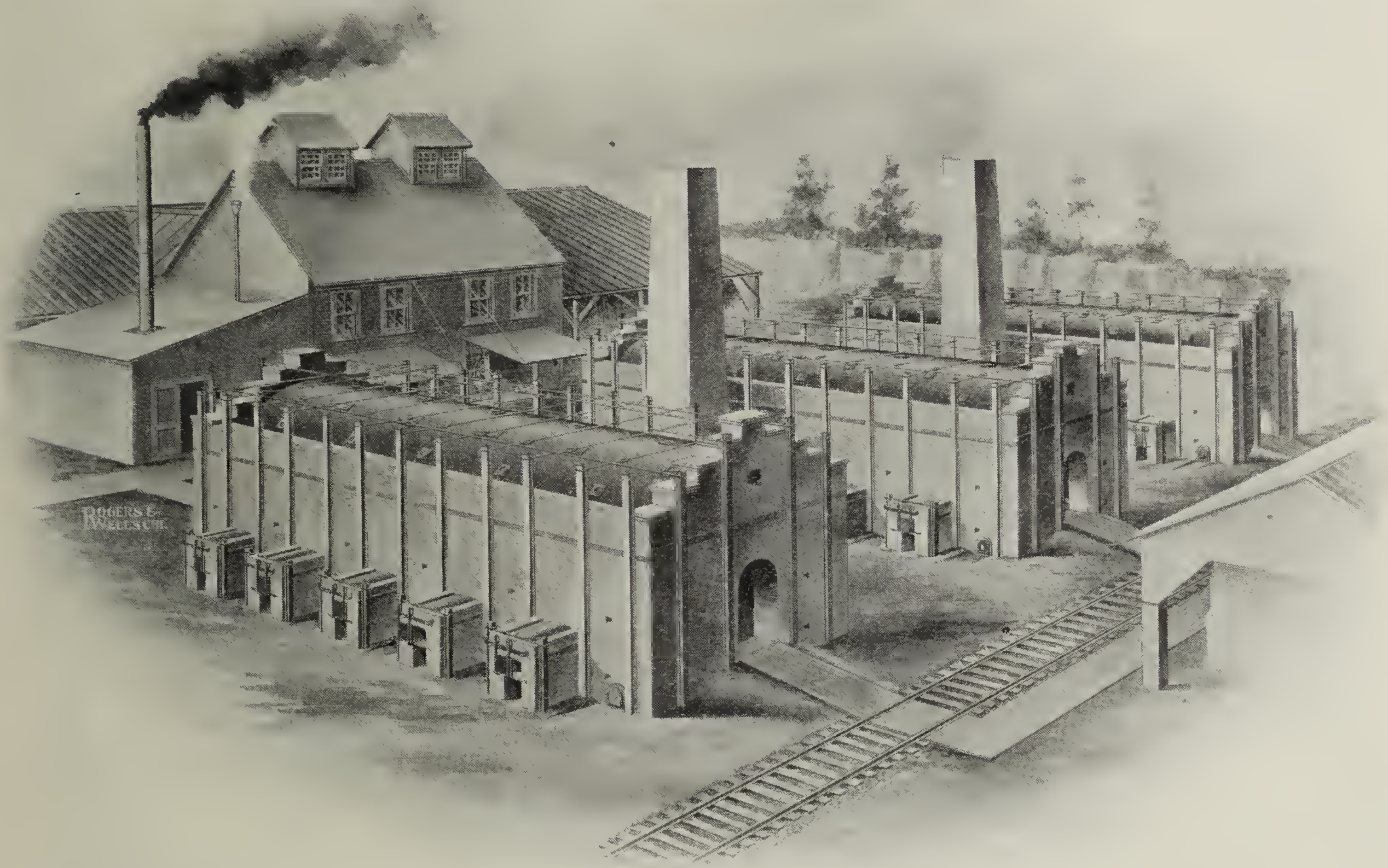
Chisholm, Boyd & White Company,

ENGINEERS AND CONTRACTORS FOR BRICK PLANTS.

MANUFACTURERS OF

The Boyd Brick Press.



A MODERN BRICK PLANT—As Equipped by Us.

A Sure Thing—We are prepared to construct and equip a Brick Plant of any desired capacity, furnishing the brickmaking machinery and power plant, erect the necessary buildings and kilns, and turn the plant over to the purchaser in proper working order, under guarantee of satisfactory results.

Brick Plants designed and equipped by us have the highest reputation for efficiency. They are modern, up-to-date, compact, convenient in arrangcment, and are not encumbered with unnecessary or useless machinery or appliances. CORRESPONDENCE SOLICITED.

CHISHOLM, BOYD & WHITE CO.,
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The LATEST IMPROVED

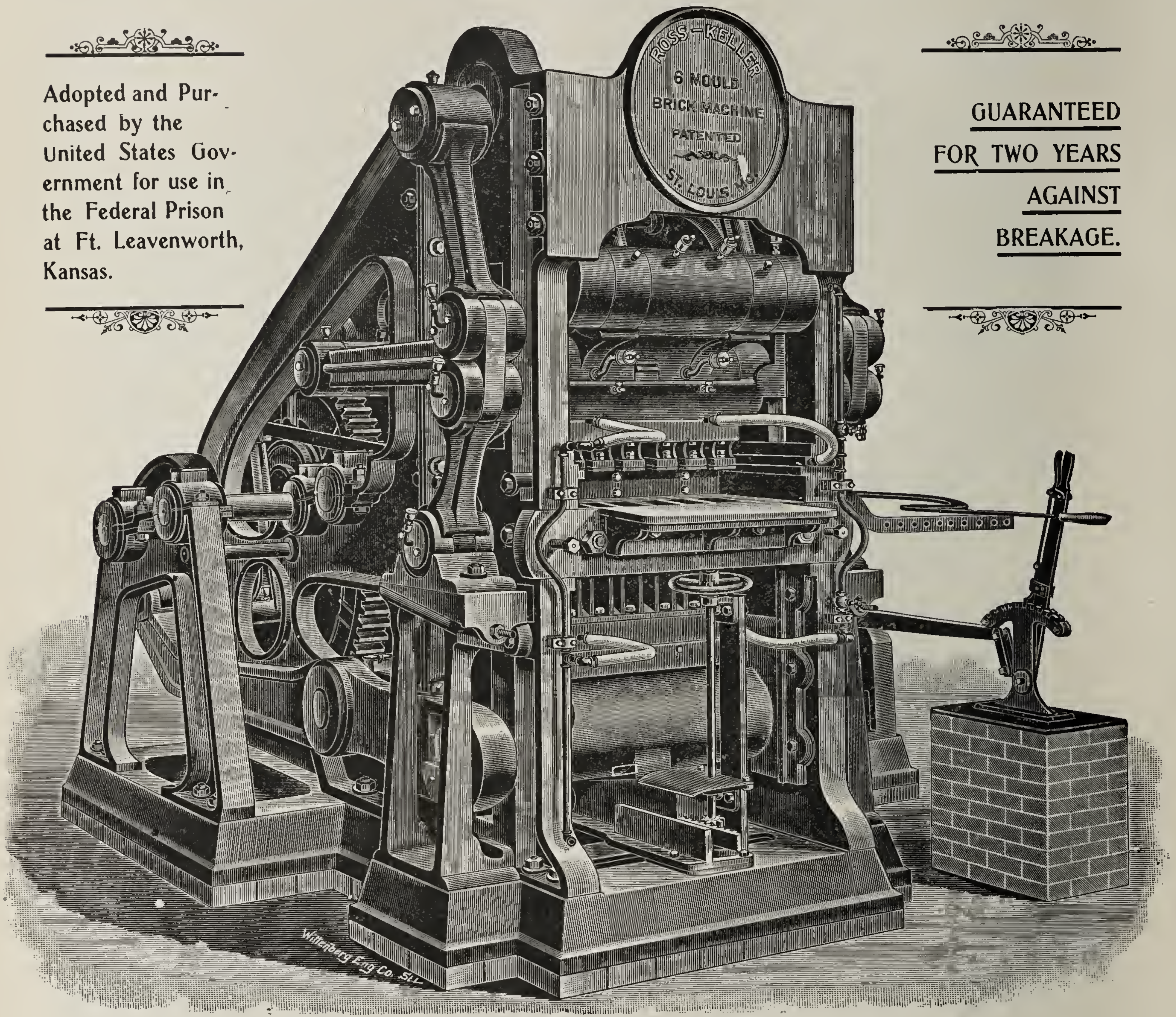
Ross-Keller TRIPLE PRESSURE Brick Machine

Manufactured in four and six-mould sizes. Weight of four-mould machine 58,000 pounds; capacity 24,000 brick per day. Weight of six-mould machine 75,000 pounds, capacity 35,000 to 40,000 brick per day.

BRICK SET IN KILN DIRECT FROM MACHINE.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

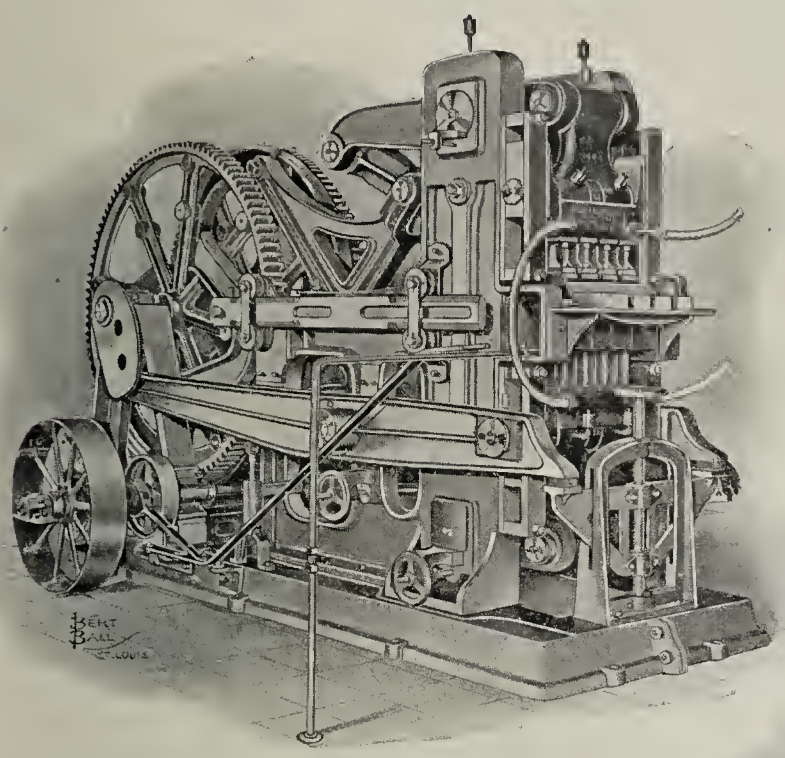
GUARANTEED FOR TWO YEARS AGAINST BREAKAGE.



THIS machine has an unbroken record of success. It is used on a number of the best equipped brick plants in the United States. It has never failed to give entire satisfaction and we are perfectly safe in guaranteeing that it will work any clay of which pressed brick can be made, and make them better and cheaper than any other press. It makes better brick because the pressure is greater and is applied in a way most effective. It makes brick cheaper because it is unbreakable and hence there are no repair bills or expensive delays and stopping of work which brickmakers know are more costly than the repair bills themselves. If you want to make the best brick at the least expense the season through don't fail to investigate this machine, with it you can "put money in your purse." Let us tell you more about it and give the address of those now using it. Remember "the proof of the pudding is in the eating of it."

For Prices and Full Particulars, address **ROSS-KELLER BRICK MACHINE CO.,** 915 and 916 Holland Bldg. ST. LOUIS, MO., U. S. A.

The New Fernholtz Brick Press.



WONDERFULLY
ø ø ø IMPROVED.

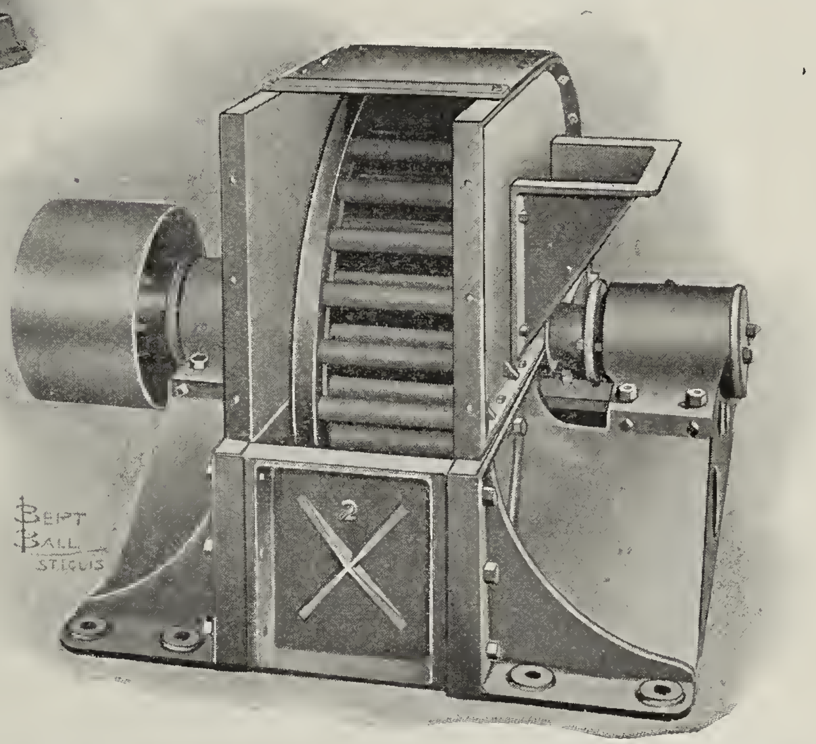
Fitted with the Celebrated

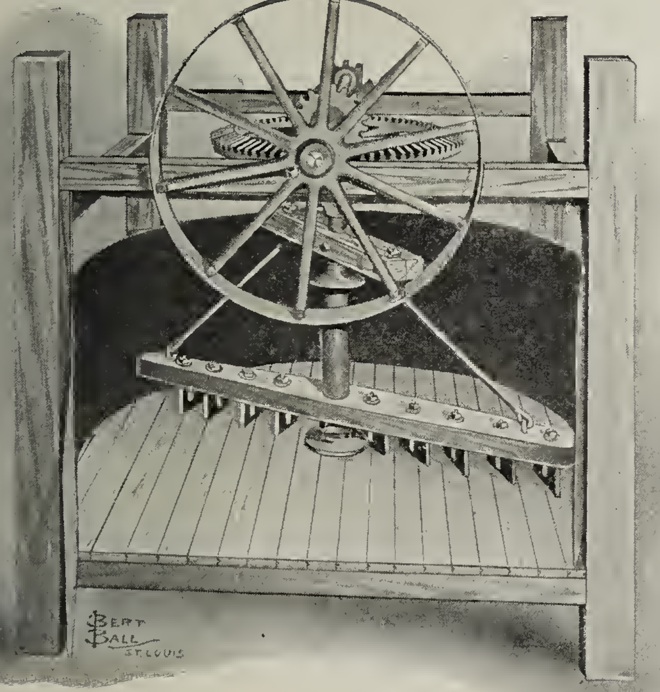
FERNHOLTZ MOLD BOX

Which is used by leading Brick Manufacturers in other Dry Presses.

The Fernholtz PATENT Clay Pulverizer.

No more rivetting Pins in Cage.
Any one can put them in. Most economical Clay Grinder ever made.





The Fernholtz ø ø Clay Mixer.

"The Mixer that Mixes."

WE HAVE a first class repair department and can repair all kinds of Brick Machines and Machinery. We make a specialty of Molds for Fancy Shape brick at reasonable prices.

Dealers in BRICKYARD SUPPLIES.

If you don't see what you want ask for it. No trouble to answer questions.

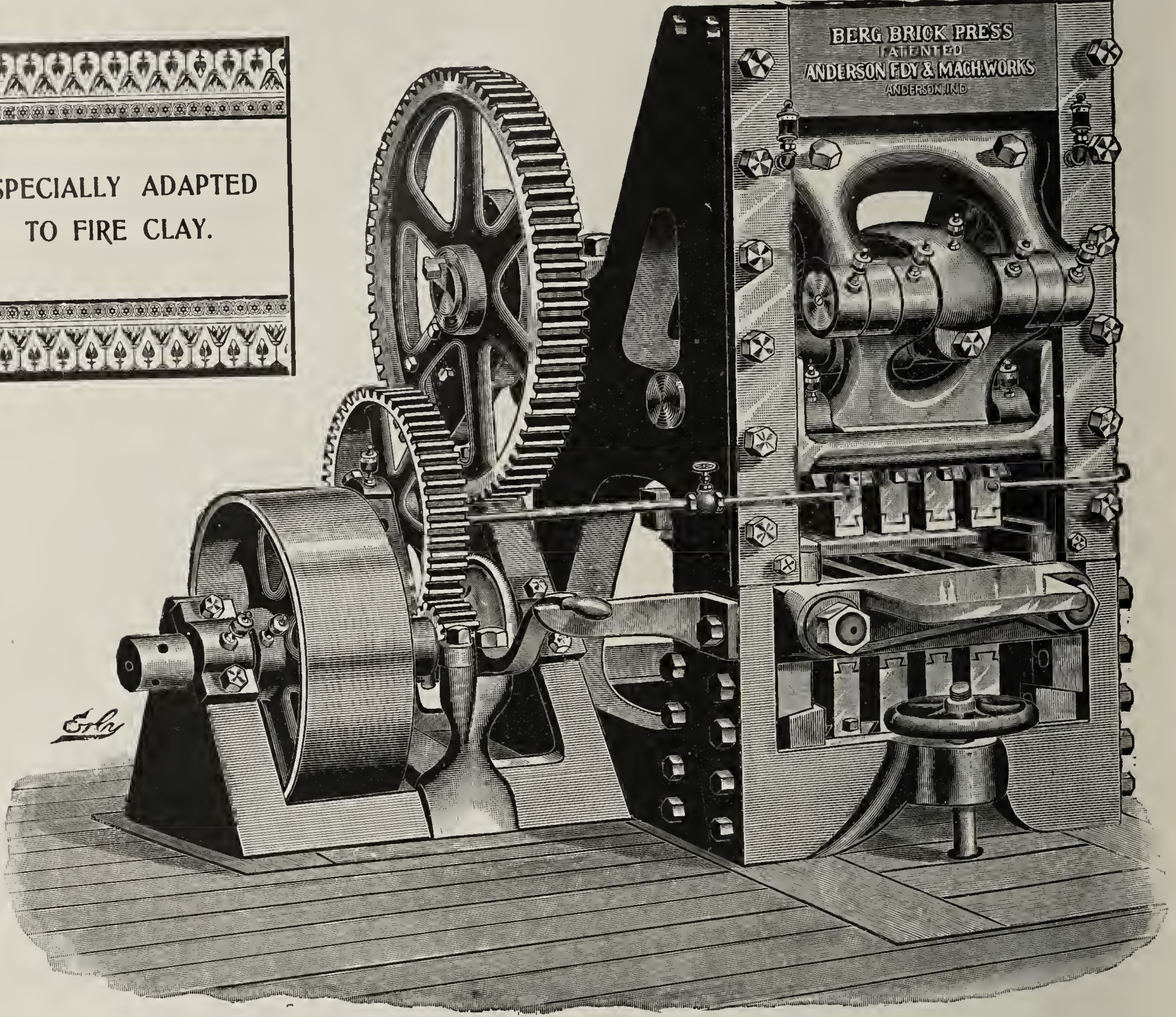
The Fernholtz Brick Machinery Co.,

CABLE ADDRESS "FERNBRICK."
WESTERN UNION CODE.

1214 to 1216 Poplar Street, ST. LOUIS, MO., U. S. A.

The BERG BRICK PRESS.

ESPECIALLY ADAPTED
TO FIRE CLAY.



The Highest Development of the Art of Brickmaking—so Pronounced by the U. S. Government.

Three distinct pressures.
Greater Pressure than any other machine.
Greater Strength than any other machine.
Will put more clay into given space than any other machine
Less working parts than any other machine.
No Plunger Stems, eye rods or Springs.

Mold Liners Made of Tempered Tool Steel.

Makes all size Brick and Tile from 2 to 24-inch.

SOLD BY
Chicago Brick Machinery Co.,
225 Dearborn St., CHICAGO.

MANUFACTURED BY
The Anderson Foundry & Machine Works,
Anderson, Indiana.

IN NATIONAL and international use for the last 17 years, giving the greatest satisfaction, receiving the highest confidence and conceded to be the most adaptable and least expensive—that is the record and reputation of the Simpson Brick Press.

Our Catalogue Including a Treatise on "Dry Press Brickmaking," Mailed Free.

The Simpson Manufacturing Co.

Works: Winthrop Harbor, Illinois. **Offices:** Suite 1208 Chamber of Commerce, **Chicago.**

It's "Built Right and Runs Right."

What More Could You Ask?

Its goodness is guaranteed. Write for full description.

We are the largest manufacturers of **Clayworking Machinery** in the world. Every machine a winner. Every patron pleased.

Write us about

**Dry Press,
Stiff Mud,
Soft Mud,
Pottery or
Cement
Machinery.**

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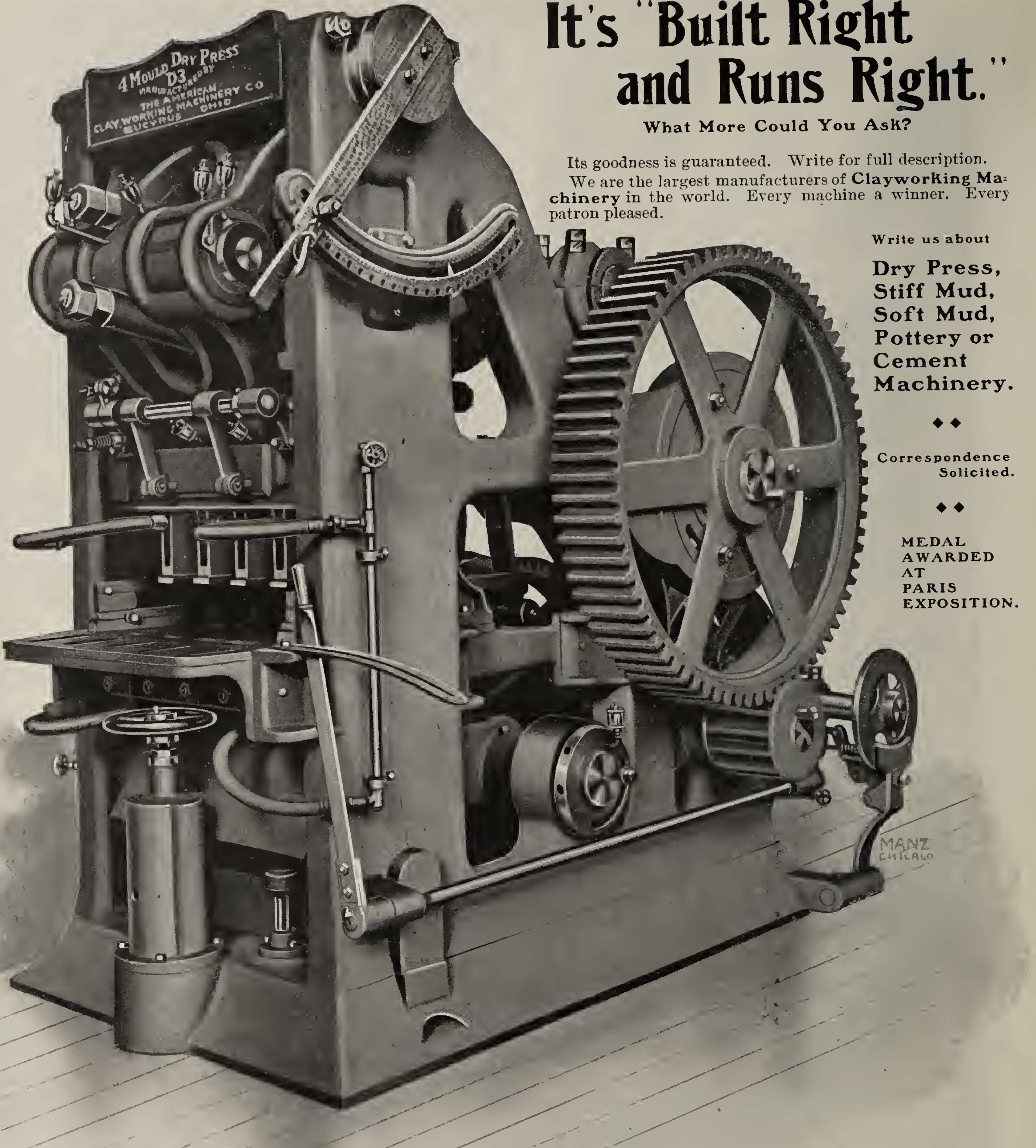
MEDAL
AWARDED
AT
PARIS
EXPOSITION.



The American Clay-Working Machinery Company,

BUCYRUS, OHIO, U. S. A.

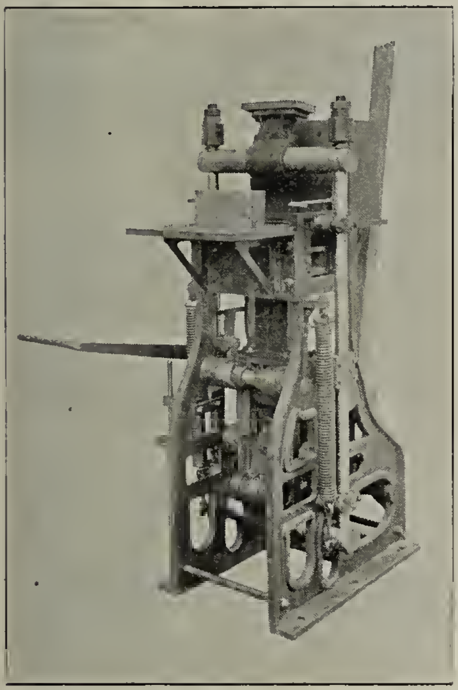
NEW YORK OFFICE:
39 and 41 Cortlandt St.,
Rooms 101 to 106.

See Ad. on Page 148.

THE NEW

Grath Hand-Power Brick Press

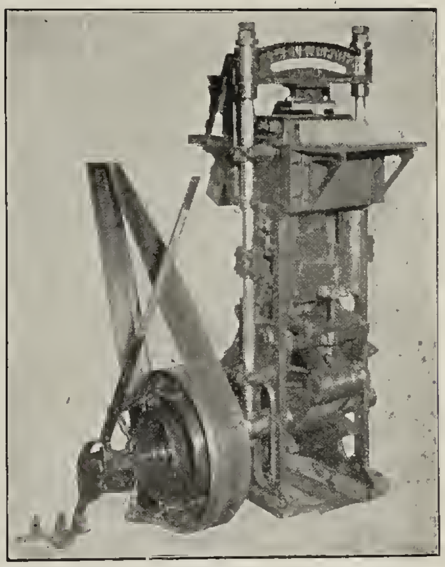
FOR MAKING PLAIN AND ORNAMENTAL PRESS BRICK FROM SEMI-DRY CLAY.



The accompanying cut shows the only successful **HAND POWER PRESS** for pressing brick direct from the clay. The brick made on same are equal to those made on any steam power or hydraulic press. They have a polished face and perfect edges and corners. As will be seen, the press is equipped with charger and feed box. Two men can easily make 2,000 best quality press brick per day. By simply changing the liners and die plates, brick of any size up to 12½ inches long, 8½ inches wide and from 1 to 4¼ inches in depth can be pressed. In making brick on edge the mould is 9 inches deep. No brickyard is complete without a press of this sort. It is also recognized as the only successful press for making plain press or front brick for small yards that are making brick by the plastic process.

The Coffeyville (Kansas) Vitrified Brick & Tile Co. were the first one to order one of these presses, and to show what they think of same, they have only recently placed an order for two more of them.

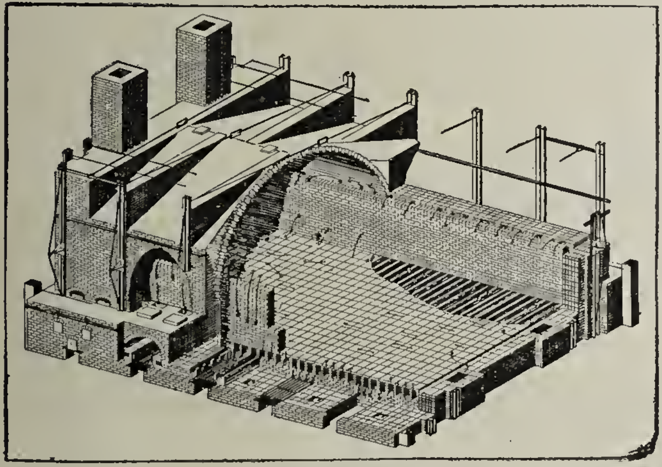
The Grath ONE AND TWO Mould Steam Power Press



The accompanying cut shows the latest improvement in Brick Presses which are built in two sizes. The One Mould, which has a capacity of 5,000 best quality press brick per day. The Two Mould having a capacity of 10,000 best quality press brick per day. This press is so constructed that all shapes and sizes of ornamental brick can be made on same by simply changing moulds and die plates, and is the cheapest as well as the simplest and most powerful Press of its kind in the market. The brick made are very dense with perfect edges and corners. The Press is guaranteed against breakage for one year. All parts subject to strain are of steel.

The Grath Gas and Coking Furnaces

Can be attached to ALL kinds of Kilns, either old or new, and produces better results with SLACK than lump coal in ordinary furnaces. PROTECTION GUARANTEED TO ALL USERS. REWARD FOR INFORMATION ON INFRINGEMENTS.



The GRATH Combined Radiating Floor and Direct Down=Draft Kiln,

(THE PERFECT KILN.)

BUILT ROUND, SQUARE AND CONTINUOUS.

PATENTED.

BY OPERATING the Tile Dampers over the furnaces the heat is directed to any part of the kiln. When the dampers are closed all the heat from the furnaces is drawn into the flues under the Radiating Floor, then up the bag on the opposite side, then down through the ware. If the dampers are entirely open, all of the heat from the furnaces ascends directly up the bag and then down through the ware. If the dampers are split, part of the heat ascends up the bag and the balance is drawn into the flues under the Radiating Floor, up the bag on the opposite side, and then down through the ware. The heat passing under the Radiating Floor burns the ware in the lower part of the kiln by radiation to any degree of intensity. Thus it will be seen that all the material in the kiln is thoroughly burnt to any degree all at the same time. This constitutes the long sought for perfect kiln. For Catalogue and Prices apply to

Mention The CLAY-WORKER.

The Illinois Supply & Construction Co., ST. LOUIS, MO., U. S. A.

HYDRAULIC BRICK

IF YOU NEED.....

BRICKS

In any color, Red, Gray, Buff, Mottled, Pink or Brown.

BRICKS

Impervious to moisture and unchangeable.

BRICKS

Enamelled in all colors.

BRICKS

Glazed, or of any Shape.

Write to any of the HYDRAULIC COMPANIES or their REPRESENTATIVES.

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THE STANDARD DRIER
USERS PUT IT ABOVE ALL OTHERS.

FIFTEEN YEARS OF PERSISTENT EFFORT has developed a drying system that, in the words of one of it's users, has put THE STANDARD DRIER "ABOVE ALL OTHERS." Being sensible, however, we don't claim to have reached perfection. There is no such thing, as every one knows. Time nowadays means continued progress; years bring improvement. That's why

THE STANDARD DRIER.

Is to-day so far in advance of and "above all others,"
MARK ITS STRONG POINTS.

It is time tried and tested. It is simple, safe and sensible. It requires no expert labor to operate. It is capable of close regulation. It is adapted to the drying of any clay that is fit to make into brick. Its heating system is extraordinarily effective and likewise economical; comparative tests have PROVED this statement.

Recent improvements, embodying steel construction of building, which eliminates practically all wood work up to the ceiling line makes an investment in THE STANDARD DRIER a permanent, non-depreciating one. If you have this subject under consideration, our printed matter will surely interest you. It's yours for the asking.

Our Motto:--"NOT HOW CHEAP, BUT HOW GOOD."

THE STANDARD DRY KILN CO.,
INDIANAPOLIS, IND., U.S.A.

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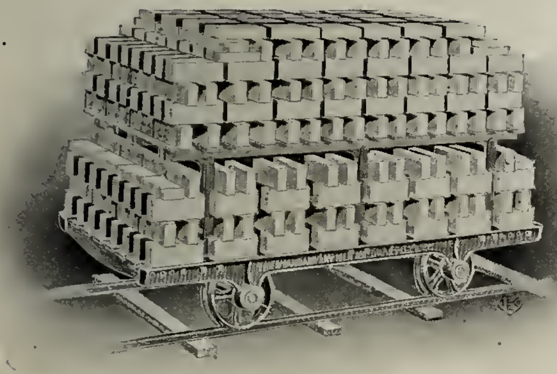
GOOD ENOUGH
TO GO WITH THE STANDARD DRIER



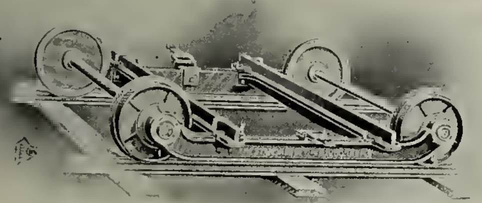
The Standard Cage Roller Bearing Car and **Drier Equipment**

Throughout, needs no higher valuation. The full significance of this statement is best understood by those who are using or have knowledge of the merits of

THE STANDARD DRIER.

These illustrations show the two types of Drier Cars and Transfer Car most commonly used. The Double Deck car for carrying Stiff Mud Brick, Hollow Blocks, Tile, etc. The Steel Rack car for Soft Mud Brick.

The Standard Cars are successfully in use all over the country. They are conceded by far sighted Brickmakers to be altogether the most practical, yet devised for their intended purposes. Competitors also acknowledge their superiority, as is plainly shown by the many attempts at imitation. The novel and striking features of THE STANDARD CARS are these:==In the Double Deck Car, the posts and the upper and lower cross bars are made in one piece. In the Steel Rack Car, the posts are inclined, forming a TRUSS brace. This construction in each car gives maximum rigidity, with a minimum of bolts. Both cars are fully covered by patents and notice is hereby given that infringers will be vigorously prosecuted.



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In your choice if you select The Standard Equipmeni for either an old or new drying plant.

We are headquarters for everything in this line.

Write for Catalog and Prices.

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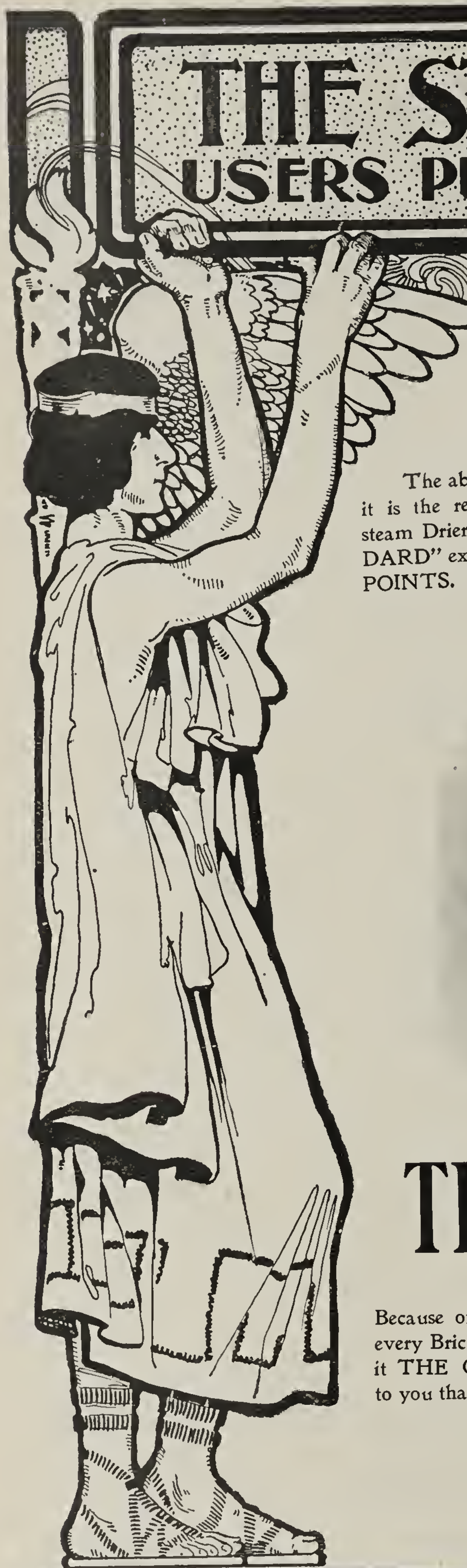

THE STANDARD DRIER
USERS PUT IT ABOVE ALL OTHERS.

> *"We are pleased, indeed, to be able to recommend your Drier to the trade in general. Our experience with it has been monumentally satisfactory, both in quantity of brick dried and in the economical use of steam. We cheerfully endorse THE STANDARD System.*
>
> *WESTERN BRICK CO.*
> *F. W. Butterworth, Gen. Mgr.*
>
> *Danville, Ill., Nov. 9, 1901.*

The above endorsement is significant and entitled to more than ordinary weight for the reason that it is the result of an exhaustive test made of "THE STANDARD" and TWO OTHER makes of steam Driers, operated under like conditions, and which demonstrated conclusively that "THE STANDARD" excelled in quantity of brick dried and also in economy of steam—TWO VERY IMPORTANT POINTS.

THE STANDARD DRIER

Because of proven goodness—because of proven economy, is worthy of the most serious consideration of every Brickmaker, who has any use for a Drier. Many of its users have enthusiastically denominated it THE ONE PERFECT BRICK DRYING PROCESS on the market. An investigation will prove to you that this isn't such an exaggeration after all.

Let us send you our Catalog and
"Story of a Dried Brick" to clinch the argument.

THE STANDARD DRY KILN CO.,
INDIANAPOLIS, IND., U.S.A.

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THE CLAY-WORKER

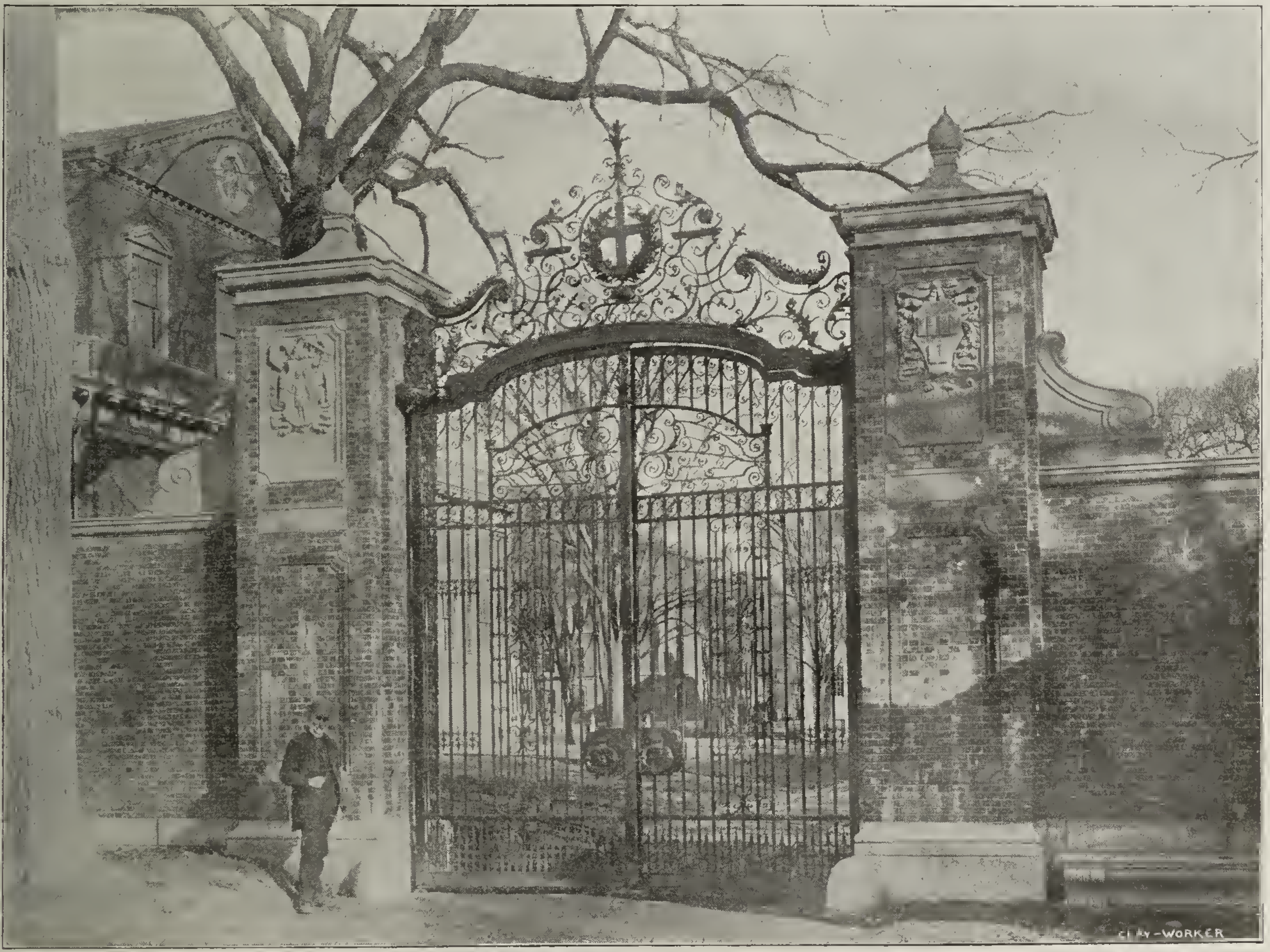
THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXXVII. INDIANAPOLIS, IND., JANUARY, 1902. No. 1.

WRITTEN FOR THE CLAY-WORKER.

COLOR AND FORM IN BRICK ARCHITECTURE.

THE EVOLUTION OF CLAY building material in the United States during the past twenty-five or thirty years presents some exceedingly interesting features. In no other building material have such developments taken place. The stones of to-day are the same as those of thirty years ago, and the only apparent progress is in improved methods of working the material, which has considerably reduced prices. In wood nothing new has been brought forward, although the fine woods of the South are now more extensively used. With the coming of the steel construction building the use of iron has indeed increased enormously, and to some degree has reduced the quantity of bricks required in our modern buildings. But when we consider the great variety of form and color which has characterized the development of clay building material, we must admit that it has been, and still is, in the lead.



One of the Famous "Harvard Gates," Cambridge, Mass.

Looking back twenty-five or thirty years, we find the universal color of front brick to be red. In those days the Peerless Brick Co., of Philadelphia, was easily the leader in the front brick business. "Peerless brick" were the recognized standard for quality, color and ornamental effect, and from the Atlantic to the Pacific and from Huron to the Gulf the demand for these bricks taxed the capacity of the company far beyond its power of production. And yet the patterns of molded bricks produced by this famous house, when compared with those of several concerns that are prominent in the market to-day, are "squatty," "bungling" and wooden," sadly lacking in grace and artistic merit.

Some ten or twelve years ago there appeared a new catalogue of molded brick shapes, which was hailed with delight by the architects. The moldings illustrated were, in artistic merit, as far ahead of anything before produced as the work of the "old masters" is ahead of that of most of their ambitious imitators. Indeed, these shapes represented the "old masters," for they were simply the old Italian stone moldings cut up into bricks. How exceedingly interesting is the fact that the human race has made absolutely no intellectual progress since the days of ancient Greece and Rome. The apparent progress consists in the fact that intelligence is more universal—that is, a much larger proportion of the race is now thus endowed. But is there any nineteenth century poetry which surpasses that of Homer? Any philosophy more subtle than that of Plato and Socrates? Our artists are continually striving to emulate the "old masters." Our legislators are turning back to Roman laws for guidance, and our architects are studying, and, to a large degree, imitating ancient architecture.

Thus are we indebted to the remote past for that which appeals to our higher natures, and the leaders of men to-day are those who have the discernment and the skill to take from the past its artistic treasures and present them to their fellow-men, who, recognizing at once their superior merit, are quick to give due praise to, and to follow, those whose work thus attracts them.

These new shapes of molded brick appealed so strongly to the architects that from many offices all over the country drawings began to appear with the letters "P. & B. F. B. Co." marked against the molded bricks. The result was that other manufacturers who had been generally following the Peerless Co. were obliged to make new molds to meet these new designs, and they have since been very generally adopted.

Thus to the Philadelphia and Boston Face Brick Co., of Boston, is due the credit of giving a great uplift to the ornamental brick business in this country.

About the same time this advance was made in the forms of molded brick there began to dawn upon the minds of our leading architects the possibility of varying colors in bricks. Only red and a certain muddy buff, known as "Milwaukee bricks," had been available up to that time. The first decided forward movement in the direction of the use of colored brick was made by Messrs. McKim, Mead & White, architects, of New York city, in the use of "Pompeiian bricks," so called. These were of a gray-brown mottle, Roman size, 12 inches by 1½ inches on face, and fire flashed. They were first produced by the Perth Amboy Terra Cotta Co., and became known on the market as Perth Amboy bricks, and to this day many architects designate a 12x1½-inch mottled brick as "Perth Amboy brick." These bricks commanded very high prices, and it was not long before they were generally produced by manufacturers in all parts of the country.

From the time of the introduction of the Pompeiian brick the advance in colored brick architecture was steady and rapid. Buff, cream, lemon, plain gray, mottled gray, brown, pink, old gold, colonial yellow, white, white mottled and numberless intermediate shades were gradually put upon the market, until to-day the poor architect and owner are sorely puzzled to decide between them.

The introduction of the Roman brick, 12 inches by 1½ inches on face, gave another new and distinctive feature to brick architecture. To the novice the effect of Roman bricks well laid is, indeed, surprising. There is an air of elegance and refinement about them which is entirely lacking in the ordinary brickwork. It is like silk as compared with cotton, and its use has lifted brick to a decidedly higher plane as a decorative building material.

The Norman brick—12x2⅜ inches on face—also has played no small part in this general advance. With its solid, substantial form, it is especially fitted for use in public and semipublic buildings, and to-day adds dignity to hundreds of prominent structures of that character.

Another interesting phase of modern brick architecture is the use of rough surfaces, and even irregular bricks, to produce artistic effects. In this also Messrs. McKim, Mead & White have been leaders. One of their first and most notable efforts in this line was the famous "Harvard Gates," at Harvard University, Cambridge. (See illustration.)

These gates were built of the roughest red bricks obtainable, with black headers, laid Flemish bond. I had the honor of making the molded bricks used in forming the panels for these gates, and well remember the difficulties encountered. The first lot were promptly rejected because they were "too good." Another lot was a little better (that is, a little worse), but still not up to the standard of roughness and crookedness. I then resolved that the third attempt should be a success. To say that these bricks were "handled without gloves" during the process of manufacture is to put it very mildly. Never were bricks so abused. They were shoveled, and thrown, and kicked, and dumped, and stepped on, in the desperate determination to have them rough enough this time, and, when they came from the kiln, the inspector exclaimed, "Ah, beautiful, beautiful!" and the Harvard gates were duly completed. Since then many college gates of similar character have been erected. Those at Brown University, at Providence, R. I. (see illustration), are especially beautiful. These are built of Pennsylvania bricks, of a soft, rich red, with rough face, and set with white mortar. The effect is fine. From the Harvard gates originated the name, "Harvard brick." These are simply the rough-molded, soft-mud, water-struck, wood-burnt brick, of a deep, rich red, peculiarly their own, produced nowhere else, I believe, except in eastern Massachusetts and southern New Hampshire. Within the past few years millions of these bricks have been shipped from the above territory to New York, Philadelphia, Washington, Baltimore, and even as far west as Chicago. They are pre-eminently "the bricks of our grandfathers," having been produced upon some of our New England farms for over two hundred years, and substantially by the same methods.

To the artistic eye a rough surface, giving a soft tone of color, is far more pleasing than a mechanically perfect brick, with a smooth surface and glossy effect, just as a soft, dull furniture finish to woodwork is more pleasing than a varnished surface.

This question of color and texture has also invaded the realms of architectural terra cotta. Twenty years ago very little besides red was called for; now not one operation in fifty is of red, while hand-tooling of the surface is very generally required.

At times there have been indications of a return to red in face brick. Improved machinery for working out stone moldings has somewhat checked the growth of architectural terra cotta, but these "symptoms" have only been temporary.

The great uplift which the last twenty years have given to clay building material is too pronounced and remarkable to admit the possibility of its career being checked; but, on the other hand, the probabilities are that further advances will be made, until this "material of the ancients" shall assume its proper place and lead all others in the construction of buildings, even to the humble homes of the people.

Boston, Dec. 18, 1901. GEO. M. FISKE.

Thrift is evidently not a lost virtue in the United States, if savings bank deposits indicate its existence and practice. According to the Comptroller of the Currency, the deposits in the savings banks of the country amount to $2,310,660,000. Germany comes next with a total of $1,900,000,000; Austria-Hungary third, with $1,201,240,000; France follows with $854,220,000, and the United Kingdom with deposits amounting to $829,000,000. No other countries reach the $200,000,000 mark but Belgium, Russia and Switzerland. These deposits are not limited to the working classes, but there is enough of it for their share to show that the dollar laid by for a rainy day is not so rare as some suppose. In the ability of the people to do this the United States leads the way. The figures are in evidence.—*Ex.*

WRITTEN FOR THE CLAY-WORKER.

SELLING BRICK FOR A PROFIT. No 2.

L. C. Moore.

WHAT, THEN, is a reasonable profit? Is there any danger of overdoing this matter and securing so much profit that one's conscience will goad him for his haste to become a capitalist? Did you ever know a brickmaker to get rich so rapidly from the enormous profits from the sale of his bricks that he deserved the name of an oppressor of the poor? Don't let these matters of morals trouble you in deciding the question of a fair profit. You will find that competition, and the wear and tear on your plant, and many other minor circumstances will shave down your profits sufficiently that you will not have to answer for the sin of greed and oppression. Make this a strictly business proposition. Sell your bricks for every dollar you can possibly get for them and hold your trade. And when circumstances arise similar to those of the year 1901, when there are not enough bricks to supply the demand, do not hesitate to follow the example of other manufacturers and place a correspondingly high price upon your products.

Brick Gates at Brown's University, Providence, R. I. Built of the "Bricks of our Grandfathers." See Page 20.

Corn is 75 cents per bushel in our town to-day because the demand is far in excess of the supply. Why should not bricks be from $7.00 to $8.00 per thousand from a similar cause? Not more than one week ago one of our granger customers charged us with being guilty of taking advantage of the present great demand for bricks and raising the price to an extent that was unjust. We offered to sell him bricks at the old price if he would pay us in corn at 50 cents per bushel, or in fat hogs at 4 cents per pound. He paid us in cash and let the subject of unjust prices drop.

For many years I sold dry goods at from 20 to 30 per cent. profit. But that won't do in the brick business, especially in the smaller factories, where the annual sale amounts to only a few millions of brick. Perhaps all brickmakers know the amount of profit they would like to get, but the question of getting it is one that may interest them most.

How shall we get the desired profit? That has been easy for about eighteen months, but I am of the opinion that we will not long have such opportunities as those of the last year. We have very nearly had things our own way, but soon the old condition of things will rule, and we will again be hunting for a market for our products.

It takes no business tact as a salesman to get good prices for brick now, but when all your neighboring manufacturers are after each contract like a pack of hungry wolves, what about prices then? When present conditions are reversed, and the supply exceeds the demand, are we going to repeat the folly of past years and sell bricks on such a close margin of profit that our work is practically lost?

There is such a genuine feeling of good fellowship now existing between competitors that perhaps now is the best time possible to solve some of the problems of severe competition while we are so friendly that we actually go out of our way to shake hands with one another. There is no jealousy nor distrust of each others' motives now as there was eighteen months ago, and had been for several years prior to that time. Then, if one suggested a solution for the difficulties through which we were passing, all the rest of us feared that he was scheming to get a mean advantage, and refused to enter into any arrangement for controlling prices. But since there have been enough contracts to go around and some to spare, how different we feel toward one another. We are actually chums for the first time since we became entangled in the brick business, and have no end of good times together. We are surprised that we should ever have secretly sworn at such good fellows in the days of hard times—but you know we passed through some times that tried men's souls. We don't say much about prices, but somehow there is uniformity of prices as well as that general good feeling spoken of above. Let us reason together now while we are planning to enlarge our factories for next season's work, and if it should happen that we oversupply the market, let us form some plan of controlling prices, and not lose the profits of the past year in a senseless struggle to overreach one another.

We cannot afford to sell good bricks at less than $6.00 per thousand, and should have $7.00. Then, why not ask that price? There is enough demand every year to enable us all to make money if we refused to sell below the figures named above. But there have been years with fairly good demand for bricks in which we lost money in our eager scramble to undersell each other. We have been to blame for nine-tenths of our past troubles, and we should be sure to remember that the days of troubles are not over, unless we refuse to be guided by our old-time business ideas.

We are all making a fairly good article, and no one has very much advantage over his competitors in regard to quality or cost of production. When one cuts prices his neighbor feels called upon to cut a few cents deeper, and by the time the circuit of competitors has been made, and the contract given to the lowest bidder, someone has either lost money or at least sacrificed the greater part of his profits. There is but one way to control this matter, and that is by entering into an agreement in regard to prices, and each man abiding by the terms of the contract with his competitors. We may not need such an agreement now, but let us talk this matter over among ourselves and get ready for action when troublous times come upon us again.

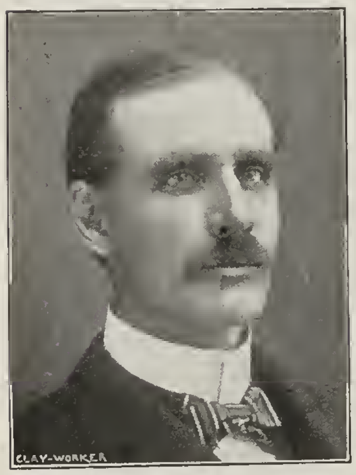
(To Be Continued.)

Written for The Clay-Worker.

OUT-OF-SIGHT-BRICK.

Cleveland's Sewers—Forty Miles of Brick Tunnels, in Which Are Buried 350,000,000 Hard Brick.

CHILDHOOD'S fancy pictures a realm of beauty hidden under the depths of the forest, and dwells upon the pathways and vast chambers which he would explore, if only one might find the doorway under some mossy clod through which the fairies enter and where he might follow.


W. C. Parmley.

Under each large city, out of sight always, and seldom in mind, exists a labyrinth of small and large passageways, tunnels built of brick and mortar, chambers of roomy dimensions with beauty of groined or vaulted arch, but no fairies dwell here. Toads and microbes and the voracious sewer rat, in streams of waste and filth, here hold perpetual carnival, but through these dank, miasmic sewers the city is purged and purified.

It is common to note municipal pride in public buildings, water works, street railways, or other evidences of refinement and comfort, but not less necessary is a complete and efficient sewerage system. In vital importance it vastly transcends all other municipal improvements, except that of a pure and abundant water supply, with which it stands equal in importance to our life and health. While Cleveland has shown much progress in growth of population, manufacturing industries and those other ordinarily observed evidences of progress, she has not forgotten the importance of this matter, and sewerage is receiving more and more attention.

In 1872 there were about forty miles of sewers in the city. During three years only of the period from 1872 to 1890 did the annual construction of sewers exceed ten miles, the average being less than six miles. During the years 1890-1900, inclusive, the amount of construction has been much greater, the yearly average being over fourteen miles, while, on account of the larger diameters of sewers constructed, the yearly expenditure has been much greater proportionately, averaging nearly $400,000. At the present time nearly twenty miles are being built annually, at a cost of about $750,000, and requiring annually about 15,000,000 brick for their construction. The great Walworth sewer, in capacity as well as in diameter, easily one of the greatest sewers in the world, consumed alone 25,000,000 brick, while the number of brick required to construct the Cleveland sewer up to the present time exceeds the enormous sum of 350,000,000.

The combined system of sewers is used almost entirely in Cleveland. The mileage, therefore, of pipe sewers is comparatively small. The sudden and severe rainstorms which frequent the city requires furthermore that the storm sewers be of unusually large diameter. This need for specially large sewers, however, was not fully appreciated till within the last five or six years. In consequence of these facts, the increase in the demand for brick for sewer building purposes has been even greater than would appear from the increased mileage constructed. In fact, the demand for brick has been so great that with the rising prices therefor, at the present time, the larger sewers can be more economically built of concrete; and in the large trunk intercepting sewer, 13½ feet in diameter, and in the outlet section of the Walworth sewer, 16½ feet in diameter to 50 feet in width, concrete is used entirely, except for lining rings and walls. Notwithstanding the increased use of concrete, the demand for brick in sewer construction will continue large.

In former years the sewers were built of clay brick of ordinary building size. These bricks were always very porous and so soft that often the interior of the sewer had to be relined.

A Thirteen foot six inch Sewer, Cleveland, Ohio.

For several years past the city has required the use of shale brick for at least the inner ring of the sewer. These brick are much harder and more impervious, so that there is much less leakage either into or from the sewer than in a sewer composed entirely of sewer brick.

The requirements for both clay and shale brick for Cleveland sewers are as follows:

All bricks shall be strictly first quality, regular in form, with straight fair edges, without warp, and shall in every way meet the approval of the chief engineer.

All bricks shall be at least 8 inches long, at least 2¼ inches thick and not more than 2⅝ inches wide. Shale brick shall not be less than 4 inches wide and not more than 4¼ inches wide. Clay brick shall not be less than 3¾ inches wide.

All clay bricks shall be composed of well tempered clay of a quality approved by the chief engineer, and they shall, in the opinion of said engineer, be of the best quality of hard bricks, burnt hard entirely through, and of uniform fine grained compact texture.

Any clay bricks which show a want of uniform hard burning, a want of toughness, or that after drying for twenty-four hours at a temperature of 300 degrees F., and subsequent immersion in water for forty-eight hours, absorb more than fifteen (15) per cent. of their weight of water, will be rejected. The above absorption test will be made upon the bricks after having been broken near the middle into two pieces. They are to be culled before being delivered upon the work at the expense of the contractor, and all bricks of improper size or quality will be rejected.

Shale brick may be of two grades of hardness and are designated herein as No. 1 shale brick and No. 2 shale brick. All No. 1 shale bricks shall be of the best quality of vitrified side cut shale bricks. They shall be specially burned for the work herein specified, and in hardness, toughness and vitrification shall be equal to the very best shale paving bricks obtainable in the market. They shall be true in form, with straight sharp edges and flat surfaces. They shall be of uniform quality, burning and vitrification, said vitrification extending entirely through said bricks. After being broken near the middle into two pieces and drying at a temperature of 300 degrees F. for twenty-four hours, they shall not absorb to exceed 2 per cent. of their weight of water, after being immersed in water forty-eight hours.

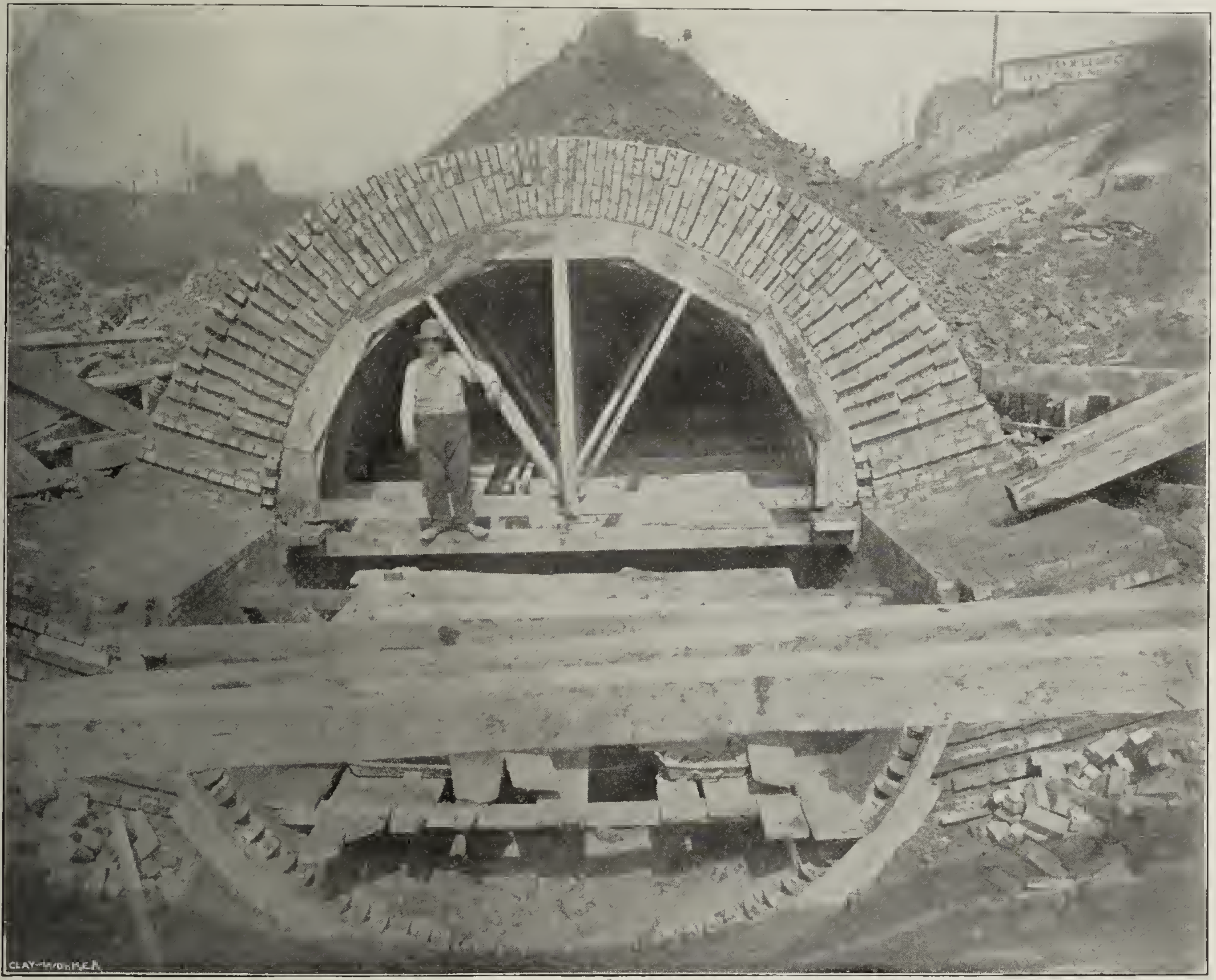
Each brick must, furthermore, show such qualities of hardness and toughness as to meet the approval of the chief engineer.

No. 2 shale brick shall in every way be subject to the same requirements as those pertaining to No. 1 shale brick, except that when the absorption test is applied in the same manner as specified for No. 1 shale brick, they shall not absorb more than 6 per cent. of their weight of water.

Whatever may be the dimensions of the bricks used, the bricks, whether shale or clay bricks, for any particular portion of the sewer, must be of uniform size and thickness, so as to permit, in the opinion of the chief engineer, the making of such toothing, bonding, thickness of mortar joints, and other details of construction, as herein specified.

As will be seen from the accompanying specification, only well burned brick may be used. The absorption test, as specified, produces a shale brick for lining rings (No. 1 shale brick), which is fired as hard or harder than is required for street paving. A brick need not be tough, but must be exceedingly hard to make the best lining for a sewer. As a result of a 2 per cent. absorption limit for No. 1 shale brick, the bricks of this region are burned to a deep chocolate color. The No. 2 shale brick are of a red or brown color, and are thus, as a rule, easily distinguished from the No. 1 shale brick. The 6 per cent. absorption test for the No. 2 brick gives a quality admirably suited to the most substantial wall construction where it is protected from the direct wearing of the sediment carried in the sewer. Shale brick which absorb more than 6 per cent. tend toward the light brown and yellow brown colors, and are rejected for even back wall construction, on the ground that the firing has been insufficient.

With the clay bricks produced in the Cleveland district it is somewhat difficult to obtain bricks which always are within the 15 per cent. absorption test. It is certain that only the very best sorted clay brick will pass the requirement, but there is no doubt that brick of this class are well suited to any portion of a sewer structure except the inner ring. However, clay bricks which absorb more than 15 per cent. moisture are usually of a rather soft character, which would make a conservative engineer hesitate to use them in an important structure. This is especially true since the advent of shale brick into the field, because there is no doubt as to the suitable quality of No. 2 shale brick for this purpose. In some instances the contractors of their own initiative have used No. 2 shale brick where clay brick were specified, stating as their reason that the large dimensions of the shale brick compensated for their increased cost per thousand, and the less difficulty in obtaining shale brick to meet the requirements make it economical for them to do so. A further reason why shale brick are in many cases used to the exclusion of clay brick is that a well-burned kiln of shale brick will all class as No. 1 or No. 2, and the proportion of No. 1 brick used in a given sewer is usually less than the proportional number produced in a good kiln run. The contractor, therefore, buys the run of the kiln and picks out the No. 1 shale brick as required, using



Walworth Sewer, Fifteen Feet Diameter, Cleveland, Ohio.

the remainder as No. 2 brick. He thus deals with only one brick manufacturer instead of with two, which, other things being equal, is always to his advantage.

The topography of the city of Cleveland makes the sewerage system more complex and expensive than most cities require. The Cuyahoga River valley cuts the city into two main portions, which portions are further subdivided by branch streams, as the Walworth, Kingsbury and Morgan runs, and Doan and Giddings brooks. The portion not situated within these valleys lies upon high plateau land, from 70 to 200 feet above Lake Erie, and extending inland distances in places as much as six miles. The plateau areas require draining, either into Lake Erie or the Cuyahoga river, in larger drainage systems, involving the construction of very large trunk sewers. Then, too, the pollution of the branches of the river, have caused, or will, in the near future, cause the construction of larger trunk storm sewers in the brooks and runs draining into the Cuyahoga river.

The Walworth run has been provided with such a sewer, the work on which will be completed within the next few months. This sewer is about 13,300 feet long, 8 feet in diameter at the upper end and 16½ feet near the outlet. The outlet section, however, widens in a trumpet-shaped structure till a 50-foot width is attained, and then enters the river through a structure built down to the bottom of the river, the portion nearest the river being floored over with heavy plate girder construction to carry the tracks of the Erie Railroad Company. This portion of the work, approximately 400 feet in length, is very expensive, costing over $325 per lineal foot, while the cost of the entire sewer will be about $800,000.

The intercepting system of sewers is the great sewerage project of the city, in spite of the magnitude of the Walworth work. This system consists of building an interceptor about thirteen miles long, stretching along the entire lake front, and discharging easterly from the city into Lake Erie through a tunnel under the lake bed. Branches will extend in a southerly direction from this main interceptor, tapping all the high level sewers in the southern and southwestern parts of the city, including the flow in the Walworth sewer. Even after the construction of this high level system there will be portions of the Cuyahoga valley which lie too low to be drained to the common outlet by gravity. In this valley will be constructed the low level intercepting system, which will concentrate the flow at certain favorable points, where points will lift the sewage into the high level sewers.

When the intercepting sewers are completed practically no sewage or filth will flow either into the river or the lake front, but all the sewage and the first washings from the streets during rains will be concentrated well to the east of the city and discharged into deep water, far enough from the shore to prevent the production of a nuisance. As the sewage outlet will be about ten miles easterly from the new water works intake pure water supply, a comparatively pure river and lake front will be assured.

Some of the portions of this sewer lying in the western part of the city have already been constructed, but the city is just entering in earnest upon this great work, the total cost of which will not be less than $6,000,000. At the present time about $600,000, principally of 13½-foot drain trunk interceptors, are under contract in the eastern portion of the city and its suburbs, and an equal amount will be put under contract this coming spring.

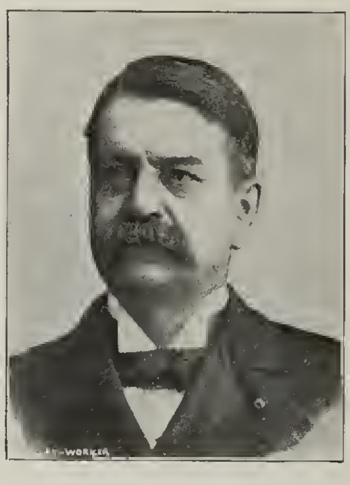
With the construction of these and the remaining sewers of the intercepting system, and an expenditure of about $300,000 annually for the miscellaneous sewers of the city, it is evident that the prospective demand for brick will be most gratifying to the sewer brick manufacturer.

W. C. PARMLEY.

Written for The Clay-Worker.

OPPORTUNITIES OF THE YOUNG CLAYWORKERS OF THE TWENTIETH CENTURY.

A RECENT NUMBER of the Saturday Evening Post contains an article from the pen of a man who, for nearly forty years, has given his best efforts to the upbuilding of one of the largest mercantile houses in the United States.


D. V. Purington.

In this letter to young men he discusses at length the chances for success of the young men of to-day as compared with those of forty or fifty years ago, and proves fairly conclusively that the youth of this generation have as great opportunities to reach the top rung of the ladder as did their immediate predecessors. My personal acquaintance with the writer and my intimate knowledge of what he has accomplished by adding honesty and perseverance to great natural ability give additional strength to his arguments and have suggested an application of these to the particular line of work your readers are so directly interested in. Those of us who are old enough to take a retrospective view of the last half of the nineteenth century are apt to feel that it is impossible for a continuance of the progress and development of the clayworking art such as has been the good fortune of many of us to witness. Even among those who have given the evolution of the clayworking industry the best years of their life and the most earnest efforts of those years there are comparatively few who do not believe that almost every possible change has been rung, and that the work of the future clayworker lies chiefly in perfecting present methods. Admitting the correctness of this theory, there is still a large field for the thoroughly earnest and practical young man of brains. As I look back over the past forty years of growth in this industry I am impressed with the conviction that they have been the kindergarten age, and have barely brushed away the dust and cobwebs which had been accumulating for centuries.

The idea I am endeavoring to convey to the younger and more progressive members of our fraternity is that there has never been a more opportune time to use their ingenuity, never greater inducements for careful study into cause and effects or richer promise of reward than just now. In some parts of the work performed by the successful progressive clayworker of this day and generation there has been little improvement. Take, for instance, the preparation of the raw material. No method of recent discovery excels in results the old-fashioned tempering wheel and wet pan. No process within my knowledge so thoroughly mixes clay or puts it into better shape for first-class ware as do both of those just named, but in the evolution of the art it has come about that quantity has been more to be desired than quality, and the granulator and pug mill, running at a high speed, have come into almost universal use in the preparation of clay for the manufacture of building and paving brick. I do not think it fair to say that by the use of the granulator and pug mill clay cannot be as thoroughly mixed as by the older method, but it is true that in very few instances is it so mixed.

A certain manufacturer of brick machinery, who has been in the business for a long time, commenced selling his machines with a guarantee of 35,000 brick in ten hours. One of these machines recently put out 205,000 brick in eight hours, and the product was in every respect equal to that made twenty years before, but it was no better. I mention this simply to illustrate my idea that quantity has been the objective point rather than quality. Eventually the brickmaker will call a halt on the speed of his machinery and devote his time and energy to an improvement in quality.

With all the patented devices in use to facilitate the proper running of our clay products there has never been a period in the history of the art when there was such need of practical economy as the present. A recent trip, visiting brickyards through Illinois, Ohio and Indiana, reveals the fact that in nine out of ten of them fuel is outrageously wasted. The debris from the arches or furnaces is from 20 to 40 per cent. unconsumed coal. I do not mention this to blame the men under whose direction this waste is occurring and who are doing their best according to the light given them, but to call the attention of the young, ambitious craftsmen to the incentive this condition of affairs should be to improvement, and to the further fact that the opportunity for getting out of the rut their predecessors have so long remained in is theirs. I believe that we have barely reached the incipient stages in the progress of preparing clay for the market, and, while I do not expect to do much more active work in this direction, I do hope and expect, so long as I live, to be ready to lend a helping hand to the clayworker of the future. In our avocation, more than in many others, success will depend upon economy in manufacturing, i. e., the manufacturer who can produce the best at an equal or less cost than his competitor can a poorer article will come out ahead.

I think the chances for such success were never greater than now, and that money, reputation and satisfaction will be the remuneration of those who solve the problems so many of us have failed in, and that very many of them are possible of solution.

D. V. PURINGTON.

PROGRAMME OF THE TWENTY-SECOND ANNUAL CONVENTION OF THE IOWA BRICK AND TILE ASSOCIATION.

TO BE HELD IN DES MOINES, IOWA, JAN 22-23, 1902.

AHE BRICK AND TILE manufacturers of Iowa have had a very prosperous season. Few now engaged in the business can recall a year of such universal activity in the clay business. As there is every reason to expect a continuance of this condition, the clayworkers of that section are on the qui vive for all up-to-date appliances, which insure an increased and an improved product, hence an unusually large attendance is expected at the coming annual convention, for which the indefatigable secretary has prepared the following interesting programme. Every effort will be made to afford visitors an enjoyable as well as instructive time.

THE PROGRAMME.

Enrollment and Report of Members.

Annual Address by President.

"Classification and Distribution of Iowa Clays of Economic Importance." By S. W. Beyers, Ames, Iowa.

"Drying Clay Ware by Use of Suction Fan." By O. T. Dennison, Mason City, Iowa.

"Hollow Blocks and Clay Conduits." By O. C. Pixley, Chicago.

"Brickmaking from Office Window." By M. Joeston, Sioux City, Iowa.

"Better Drainage Law." Discussion led by J. B. McHose, Boone, Iowa.

"Clay Testing." By I. A. Williams, Ames, Iowa.

Discussion. Speaker to be supplied.

"The Future Tile Business." By H. L. Zartman, Sioux Rapids, Iowa.

"How to Curtail Fuel Expenses." By H. L. Tramp, Creston, Iowa.

"How to Maintain Efficient Laborers." Discussion led by C. J. Holman, Sergeant Bluff, Iowa.

"A Preliminary Investigation of the Properties of Gypsum Relative to Its Use as a Mortar in Brick Work. By A. Marston, Ames, Iowa.

Question Box.

Report of Committee on Resolutions.

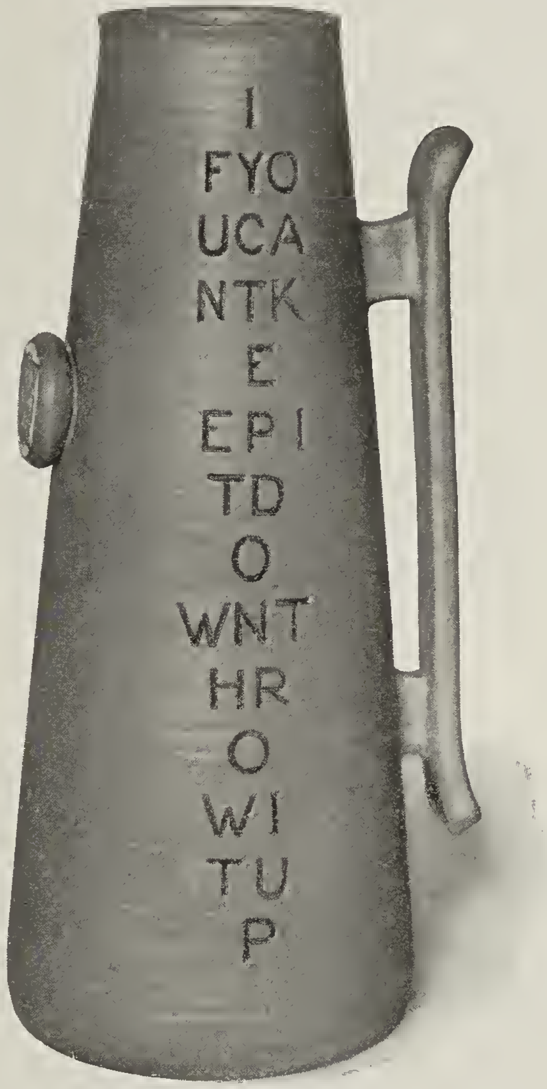
Election of Officers.

ROBERT GOODWIN, JR., Secretary,
Redfield, Iowa.

A REMARKABLE STEIN.

A BEAUTIFULLY UNIQUE STEIN was recently presented to the Chicago Architectural Sketch Club by W. D. Gates, president of the American Terra Cotta and Ceramic Co. The accompanying picture gives but a faint impression of the real beauty of this remarkable clay product. The conception is that of our own Buttonholer Gates. The stein is a very appropriate gift from that gentleman to the club, which is composed of the young architects of Chicago—the architects of the future.

It is the custom of the organization to have monthly meetings, at which they frequently lay aside their professional work and cultivate the social amenities of life. Sometimes these meetings are devoted to music and literature, but more often they are informal smokers, at which the cob pipe and the homely stein are much in evidence. From this feature doubtless Mr. Gates conceived the idea of a Souvenir Stein which would represent to the club something of the appreciation and affection he bears for it.



Mammoth Stein designed for and presented to Chicago Architectural Sketch Club by W. D. Gates.

The stein is both unique and handsome. It is a very dark velvety green in color. Upon the front is shown the monogram of the club. The inscription on the stein reads, Chinese fashion, from the top down, and, properly translated, is, "If you can't keep it down, throw it up," an epigram which the club members thoroughly appreciate. The stein is something over twenty inches high, and is of the same general color effect as the famous Teco ware now being manufactured by the American Terra Cotta and Ceramic Co., and which is, we think, destined to become as noted and popular as the Rookwood or any other of the really great American ceramic products.

WRITTEN FOR THE CLAY-WORKER.

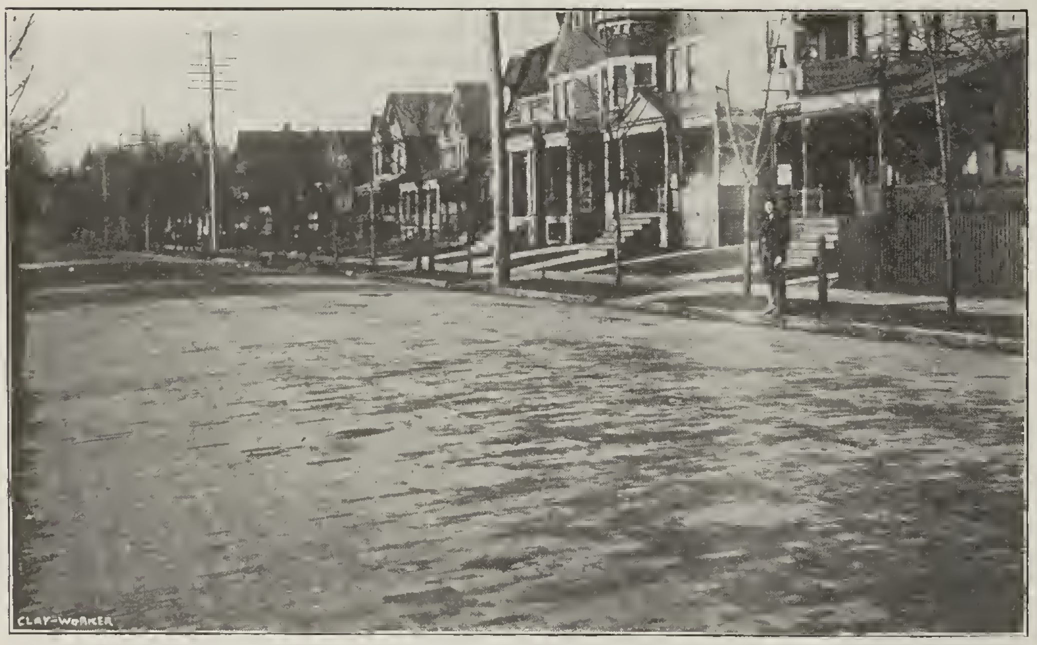
BRICK PAVEMENTS IN THE CITY OF CLEVELAND.

THE FIRST BRICK PAVEMENT laid in the city of Cleveland was laid on Euclid Place, from Euclid avenue to E. Prospect street, in the year 1887. The brick used was what is known as "fire clay brick," of ordinary brick size. This pavement is not in very bad condition at the present time.

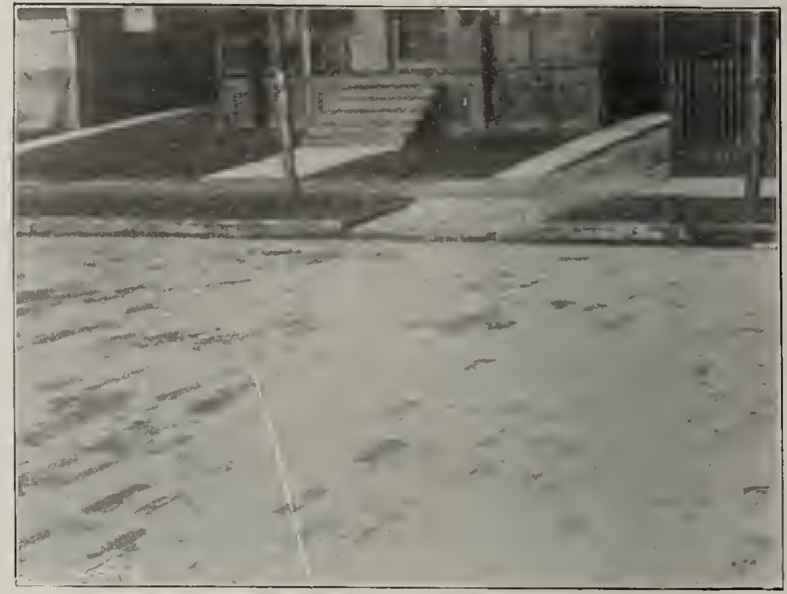
Wm. J. Carter.

Numerous streets were paved in 1889 with Porter fire clay brick. The first shale brick made its appearance in 1891. These pavements were all filled with tar composition. Dodge street was paved in 1893 with shale brick, filled with a tar filler. One side of this street has since been torn up to put in telephone conduits, replaced, and is to-day in very good condition.

In the year 1895 Hough avenue was paved with fire clay brick. Part of this pavement was filled with tar and the balance with a cement filler, this being the first attempt at filling brick pavements with cement. Two photographs taken of this street show present condition, and also show the difference between a tar and a cement filler. At the present time we use cement entirely, except on steep grades. The brick blocks used in this city are now required to be of the best quality of sound, hard-burned, machine-pressed paving brick, made and burned especially for street paving purposes to stand all reasonable tests as to durability and fitness. The blocks are five inches deep, and not less than 3x8½ inches. The bricks have an indentation or recess across each end, with projections one-eighth inch upon the side for the purpose of keeping the bricks apart.


Hough Ave. West of Russell Ave. Cement filled.

On resident streets where the soil is of a sandy nature the bed is prepared by removing surplus material on the street, plowing up material and banking it in such a way that it will confine the water in blocks or squares, then filling these blocks with water and allowing the same to stand until the water has entirely disappeared. If one flooding is not sufficient, the street is flooded the second time. Afterwards it is smoothed and graded to a proper crown and rolled with a heavy roller. Roller to weigh seven or eight tons, distributed over four and one-half feet of face. After preparing this base, the bricks are laid in the following manner: One course shall be laid parallel to and next to each curb, the joint next curb to be five-eighths of an inch wide and to be filled with asphaltic cement before the balance of roadway is grouted. The pavement is constructed with a single layer of brick, laid on edge, end to end, in right-angle courses across the street, except at street intersections. The pavement is then thoroughly rammed in courses with a square rammer, weight to be not less than eighty pounds, no iron of any kind being allowed on lower face of this rammer. In the final ramming the pavement is to be surfaced by using a long straightedge and thoroughly rolling the pavement with a heavy roller. The five-eighths-inch joint next to the curb, as above mentioned, is filled with a composition of cold tar and asphalt. The balance of the pavement is filled with Portland cement grout. It is necessary to keep traffic off the completed street for at least seven days.


Detail of Hough Ave. West of Russell Ave. Cement filled.

On streets that are not subjected to very heavy traffic and where material is not satisfactory for ballast—that is, a material entirely devoid of any sand or gravel—the sub-grade is made eight inches lower, and this eight inches filled with sand or gravel. Upon this ballast pavement is laid as above described.

On streets subjected to very severe traffic, also streets in clay localities, the pavement is laid on a six-inch concrete foundation. More or less trouble has been experienced from cracks appearing in pavement, both longitudinal and horizontal. By the use of the tar joint at the curb these cracks have been quite materially reduced, but not entirely eliminated.

It has been a question in my mind whether or not we could secure better results by laying brick in courses parallel to the curb, instead of at right angles to the same. Our brick pavements are, to all intents and purposes, an arched covering, and in arch work it is universally the practice to lay the brick in row-lock courses.

Would it not be well to follow the same method of procedure in paving our streets? Of course, the liability to introduce something in the nature of a spiral effect would have to be guarded against.

We have one or two instances of brick laid in this manner in street car tracks and devil strips. The traffic over this brick seems to be much smoother than over brick laid in the other manner. As long as a cement filler is used you produce an even, homogeneous surface, whether your joints are at right angles or longitudinal to your curb.

Guarantees extend over a period of three years, and amount to 2¼ cents per square foot of pavement laid.

Hough Avenue looking West from Spangler Ave.

Spangler Avenue, Cleveland, Ohio.

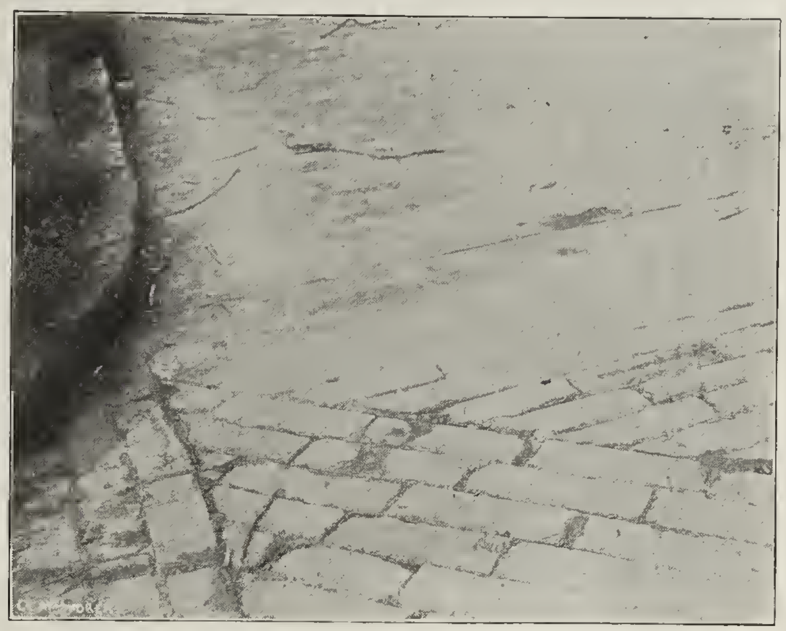
Upon streets recently repaired at the expiration of the three-year guarantee the repairs were quite light; I am not able to state how much per square foot, but do not think it amounts to any great sum. Some of these repairs were very small, and if it had not been for the specifications under which the guarantee was given, some of these repairs would not need to have been made for several years. In general, if care is exercised in excluding all soft brick, also in preparing the foundation, a brick pavement will stay in good condition under moderate traffic for a long period of time. At the present time we have in this city about ninety-five miles of brick pavement, and expect to lay fifteen miles additional next year.

WM. J. CARTER, Associate Member Am. Soc. C. E.,
Cleveland, O. City Engineer.

For cheap machinery the reader is referred to our "For Sale" columns. We do not advise the purchase of cheap machinery. As a rule, cheap machinery is dear in the end, but for some places second-hand machinery answers a very good purpose. Those wanting experienced help will also find the "Wanted," "For Sale," etc., columns a means of satisfying their needs.

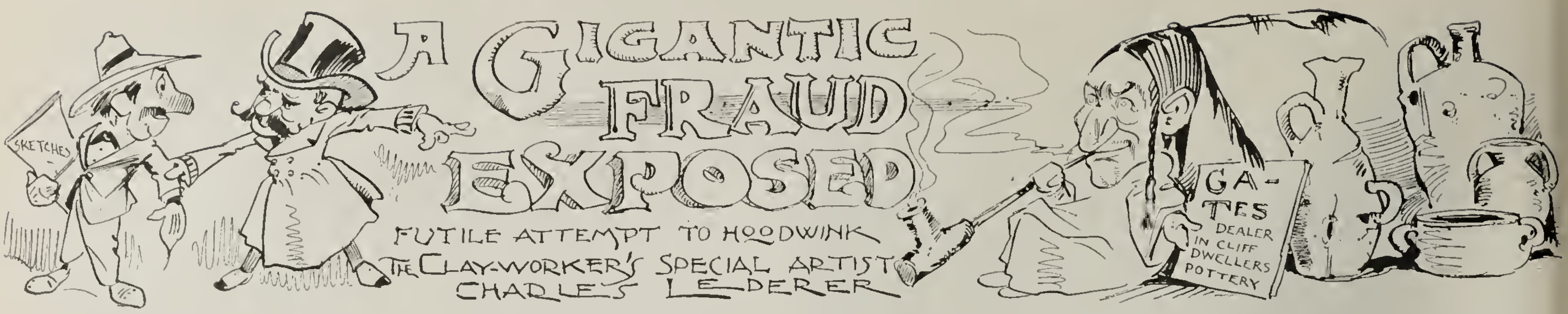
A FOG AND SMOKE DESTROYER.

According to a press dispatch from Berlin, Germany, an architect and engineer of Dusseldorf has solved the problem of destroying fog and smoke. This invention, as stated, consists of a mechanical apparatus capable of consuming the particles that produce clouded air. The inventor says the invention is not yet perfected to the point of absolute destruction of fog, but it robs fog of all its blinding properties. The process is devoid of danger, such as accompanies the various explosive systems that have been used. The inventor wants to give a practical demonstration of his claim in a typical London fog, and for that purpose has brought his invention to the notice of the British embassy at Berlin. If this invention is but approximately successful, it will be an incalculable benefit to fog and smoke smothered cities.—*Age of Steel.*



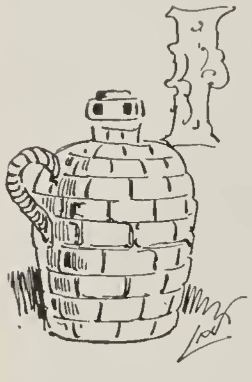
Intersection of Hough and Spangler Ave. Brick in Foreground is filled with Tar while that in Background is Filled with Cement.

Euclid Place Looking South from Euclid Ave.


SKETCHES
GA-TES
DEALER IN CLIFF DWELLERS POTTERY

A GIGANTIC FRAUD EXPOSED

FUTILE ATTEMPT TO HOODWINK THE CLAY-WORKER'S SPECIAL ARTIST CHARLES LEDERER



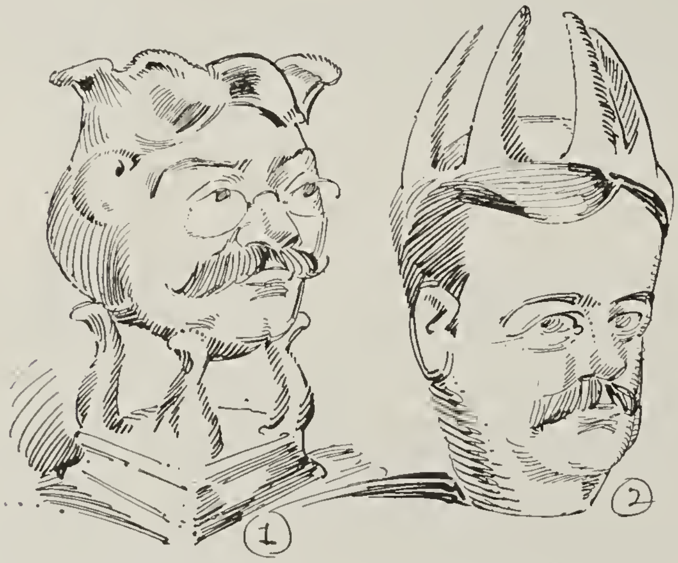
I WAS JUST TELLING the individual in the white jacket and apron to put in just a dash of bitters, when a perfect stranger, but a gentleman, as one could readily perceive by his well-curled black mustache, his meteor-like necktie and his volcanic vest—waistcoat, I should say—stepped up and said:

"Pardon me, sir, but this is Mr. Ledpipe, the celebrated artist and renowned collector of antiques, is it not?"

"That is no nightmare," I replied, with that lofty air with which it is my custom to treat strangers.

"Well, sir, if you will accompany me to the sixth floor of the Chamber of Commerce building (we were in Chicago, of course), I will show you a private collection of the finest specimens of Cliff Dwellers' pottery extant."

I forgot that the man was a stranger, and had all the earmarks, as it were, of a "con" man. I forgot everything except my intense, burning love for ceramics. Following the stranger, I was conducted to an eyrie looking room and introduced to the owner of the alleged prehistoric articles, made by a forgotten, a lost and mysterious race. He was an Indian, gruff and monosyllabic. Ga-Tes-Te-Ko was his name, signifying, in his own flowery language, "Man-that-came-out-through-his-own-buttonhole."



"Like pottery? Heap dam good. Buy?" he grunted.

"Are they guaranteed?"

"Ugh! Don't know. Some are glazed."

"Where did you get them?" I inquired, turning slightly away from the aborigine as a volume of deadly smoke escaped from a huge clay pipe which he was industriously puffing.

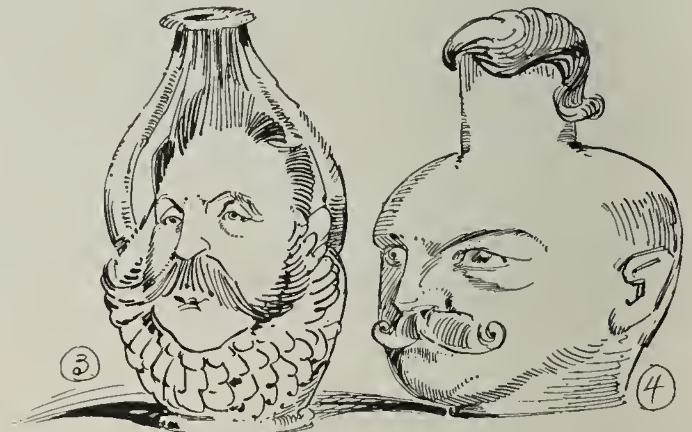
"Found 'em. Dug 'em up Arizona. Want buy?"

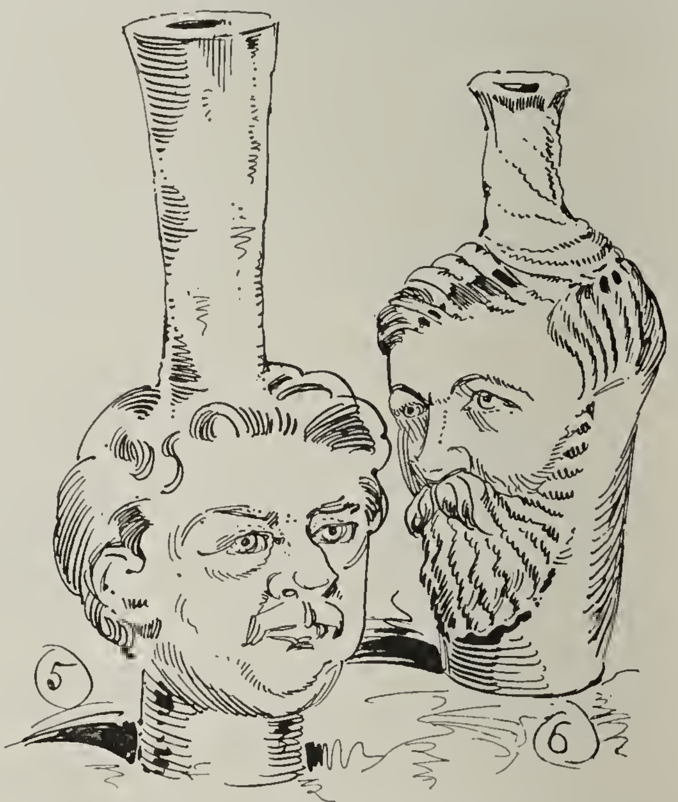
"I'll look 'em over first, I think," was my guarded reply. I had been stuck with alleged relics before.

Then the capper for them, for so I am constrained to call the loud-dressed one, spoke up: "They're thousands of years old, every one of 'em. And look at the designs! Ain't they birds?"

"Sell cheap. Want to get back to wigwam," ejaculated Ga-Tes, as the red man was addressed for short.

I made a careful and conscientious examination of the articles comprising the collection. For the benefit of an over-confiding public I have only to say that they are a grand aggregation of frauds. Not alone am I satisfied that the whole outfit was made at Terra Cotta, in the State of Illinois, but I furthermore desire to warn the unsophisticated that the designs with which the clay counterfeits of a noble past are decorated are positively libelous. The embellishments, as I discovered by exercising minute care, are gross caricatures of eminent and respected citizens of this country who are engaged in manufacturing sensible and useful articles from clay.





One of the articles, for instance (No. 1), which consisted of an upturned footstool supporting a jardinier, had lines forming a strange, though distorted, likeness of his Excellency, President Hunt, of the N. B. M. A., while the next bore dim outlines of the esteemed treasurer, J. W. Sibley. What significance there is in the horn-like projections only the Indian can explain, and he won't. Possibly they symbolize the horns of a dilemma which the handsome Alabamian has at some time overcome. A little farther along I detected an urn bearing the conventionalized features of Mr. Frank W. Stiles, of the place where the clocks come from. In close proximity—or prolixity, as my friend—but never mind—was a fat looking demijohn (No. 4), depicting either Mr. E. M. Pike or Mr. J. C. Adams. I really don't know which it was intended for, but, from a hirsute decoration that surmounted the utensil, am inclined to think the latter was the libeled victim. Pipe dream No. 5, from its high-rolling aspect, suggested that it might possibly have been meant for W. G. Titcomb, Esq., he that hails from Providence, R. I.

The next one (No. 6), which showed a gentleman with Etruscan whiskers, might have been designed to portray Mr. W. A. Eudaly, from where the lightning comes. Regarding No. 7 I am uncertain. It was intended for Santa Claus, perhaps, or it might be Lord Salisbury. And then, again, it might have been a gross attempt to mimic the benign face of Capt. S. P. Crafts, also of Clocktown. Who knows?

The capacious vessel numbered eight, judging from the inscription, may have been meant for Mr. George M. Fiske. There is a suggestion, a bare suggestion, of his features, if you look closely at the sketch I have made.

I tasked the aborigine, Ga-Tes, with the atrocious offense of libeling a lot of inoffensive gentlemen. This he denied, but, under pressure and the threat of the law, he admitted that No. 9 was a flattering likeness of himself. As the capacity of the jug was three-quarters of a gallon, I felt that there was a mingling of truth in his statement. No. 10 he acknowledged was intended to be a counterfeit resemblance of one D. V. Pur-Ring-Ton, a noted chief of the Aztecs, who is said to be still living, though embalmed. I charged the Indian with an attempt to cartoon Mr. R. G. Eisenhart, of Horseheads, N. Y., on the jug No. 11.

"Not by a jug full," dissented the brave. "Him look more like Charley Bonner, Chicago man. Ugh!"

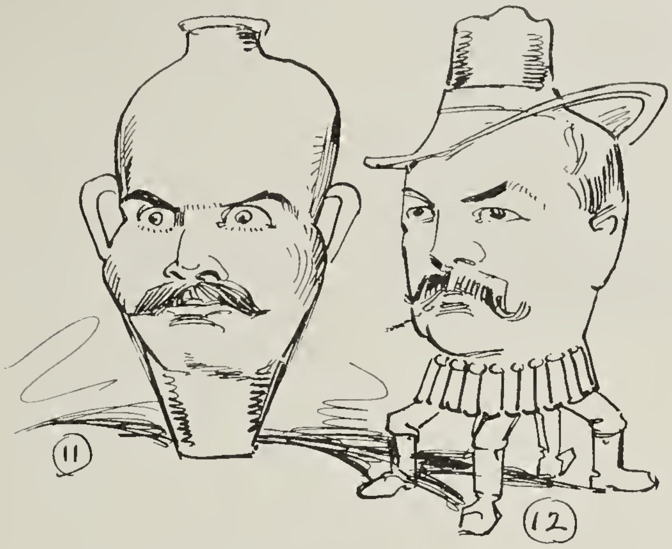
"Who is that meant to be?" I asked, indicating No. 12.

"That? Ugh! Bad man! Montana man! Heap shoot Injun! Him man Charley Bray. Scalp him some day! Ugh!"

No. 13, it strikes me, looks like Prof. Ed Orton, of Columbus, O. But perhaps I am mistaken.

"Who is the last in the bunch?" I inquired, pointing to a tough-looking vase of dark color.

"Him? Ugh! You no know? Him Randall, chronic secretary of the Cliff Dwellers' Brick Association. Looks like prize fighter man, eh? Ugh!"



"What's his official capacity?"

"About two gallon. Hold much. Ugh!"

"What's the price?"

"Twenty-two plunks."

"Give you thirty-five cents for it."

"Heap big Injun take no bluff—take it along for thirty-five cents!"

Let my experience be a warning to the unsophisticated.

CHARLES LEDERER.

The Boston Paving Brick Co. has been incorporated under the laws of the State of New Jersey, with a capital stock of $150,000, and Messrs. Daniels & Co., the well-known bankers of 6 Wall street, New York, have charge of the disposal of the bonds. The offices of the company will be 923 Colonial Building, Boston, and 8 Booth's Block, New Britain, Conn. Communications are invited in regard to machinery, shafting, pulleys, belting, kilns, etc., and should be addressed to Box 555, New Britain, Conn.

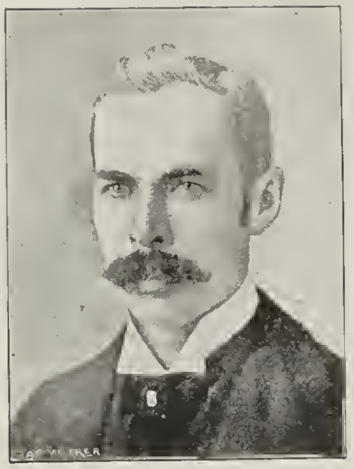
WRITTEN FOR THE CLAY-WORKER.

THE BEST EDUCATION FOR THE TWENTIETH CENTURY CLAYWORKER.

By Prof. Chas. F. Binns.

THE CONSIDERATION of this question demands, first of all, a review of the problems which confront the modern ceramist and an inquiry as to wherein they differ from the problems of the last generation.

"I managed to get on without a special education. Why cannot the boy do the same?" Have we not all met him, the man who asks this question? Or, if he has not the courage to ask it, he thinks it in his own mind. Another and a worse type of objector is he who, having reached some sort of success, is jealous of the advantages offered to others lest they should prove better men. While it is true that a considerable amount of success was achieved by our fathers, it is not true that this was done because they were untaught, but rather in spite of the fact. And the same remark may be made of any industry. Engineering, metallurgy, mining and a thousand other arts have taken advantage of higher education in the last twenty years. The clayworker has more need than them all, and must not be denied.


Prof. Chas. F. Binns.

The success of the unscientific days had two great contributing causes: monopoly and price. The clayworkers then were a comparatively small band, and, being more or less independent, could offer pretty much what they liked and could place the figure where they wanted it. The exactions of the architect had not then driven front-brick into four hundred and sixty-seven shades, and a carload footed up to a respectable figure.

But what is the state of the case now? Trade is good, to be sure, but there are ten men looking after every contract, and conditions as to color, strength, time of delivery and payment stand out like bayonet points to disturb the repose of the manufacturer. Take one of the ordinary problems which besets the producer of dry press, buff or mottled brick. His clay bed has done good service for the past fifteen years and he has had no serious variation, but now it gives signs of exhaustion. There is plenty of clay, but it is not so uniform. Run of kiln yields four or five shades of brick, necessitating expensive sorting and heavy stocks. Time was when this would not have been required, for the brick are good and sound and "near enough" in color, but in the face of a modern demand for absolute uniformity the manufacturer is apt to get stranded. What can science do for him? It can, in the first place, inform him as to the minute variations in the clay bank; it can post him as to the cause of his troubles, and, in the majority of cases, can suggest a remedy. How many brickmakers, when using barium carbonate in the pug mill, give credit for its work to the science which prompted its use? They are willing to employ a remedy for trouble, but often are quite as willing to give the cold shoulder to the science which provided it.

What, then, is the best education for the clayworker? To answer this question a few words must be said on the scope of education in general. A true education is the *e duco*, the drawing out of the powers of the man. An educated man is one who is able to bring the vigor of his mind to bear upon whatever problem is set before him. He has a disciplined brain, trained to discriminative thought and capable of patient application. To this end an education, in whatever branch of learning, must, to be complete, include such subjects as are intended for mental training only. In some walks of life the higher branches of mathematics have no practical application whatever, and yet the discipline of a mathematical course cannot be supplied by any other means. It has become the fashion, of late years, to depreciate classical learning as a branch of commercial education, but the fact remains that no man can be called educated who has no acquaintance with literature, past and present, and that nothing will take the place of classical writings in imparting dignity and refinement of thought, and therefore of life.

Young men nowadays are, however, impatient of the advice of their elders. The prevailing thought is, "How little education can I get off with so as to begin to earn money?" Our ceramic schools offer courses of four years, leading to a college degree and laying a sound and substantial education in clayworking. But, alas! the larger number of students have hitherto selected the shorter and less complete course, preferring to launch themselves upon the world in a comparatively unprepared condition, to meet the myriad mysteries of mud-mixing as best they may.

It may be safely laid down, then, that a broad general basis of education should be secured as a foundation. This should embrace the ability to read and write good English—an accomplishment not so common as one would think; an insight into at least one foreign language—Latin, for choice; a thorough acquaintance with the history and geography of one's own land and some knowledge of other countries; a mastery of arithmetic and more than a smattering of algebra and plane geometry. This is not enough to enter college upon, but it will serve as a basis. Now, as to special subjects. Chemistry must be taken up and pursued with vigor. We cannot have too much inorganic chemistry in clayworking. Physics ranks next. The principles and laws of motion, light and heat must be learned, and an acquaintance with electricity will be advantageous. The clayworker never knows what his next problem is to be. It may be adjusting a pug mill, setting a line shaft, repairing the sparker of a gas engine or regulating a kiln.

Upon the foundation of plane geometry and algebra can be built mechanical drawing, solid geometry, trigonometry and the higher mathematical branches. The limit is only the time and capacity of the student.

Geology, mineralogy and microscopy must not be forgotten. The light they can throw upon ceramics is invaluable, and, in fact, indispensable.

When it is stated that all the foregoing is but a foundation upon which the technologist is to build, the student is apt to be appalled at the magnitude of the problem. The necessity for a solid foundation may be made plain, however, by a statement which has become almost trite in educational circles, namely, that any communication between teacher and scholar must be made in terms understood by the latter. It is useless to speak French to one not understanding the language, and, in like manner, there is a language of chemistry, of physics and of mathematics which cannot be understood without a course of study.

Granted that it were possible for a professor of ceramics to take his students through preliminary work, look at the energy wasted and the time lost. Our best men are specialists, and while they have had of necessity a solid grounding in these foundation subjects, it is in the direction of their special work that they are most valuable. The foundation being laid in general classes, there is the more energy and time to spare for technical work. In a word, education cannot be too thorough, and ceramic education least of all.

On technical lines the same principle applies. In the manufacture of coarse wares, wares dependent upon a single bed of clay, the most intimate knowledge of the chemical constitution of clay is desirable. The clayworker is not able to select one part of his clay and reject the remainder; he must take the whole dose, whatever its effect. A knowledge of chemistry will help him to locate trouble and overcome it. A knowledge of physics will enable him to control his burn and accomplish the desired results.

In finer wares the problems are similar, but various. The modern clayworker has got beyond the point where success depends upon the possession of a satisfactory recipe. He is able to prescribe for himself the mixtures he needs. The worry of crazed goods, at one time regarded as a necessary evil, need no longer keep the potter awake nights. He can overcome the trouble if he will.

At the same time let it not be thought that finality has been reached in either ceramic education or research. There are many deep and far-reaching problems awaiting solution. Some of them are financial, some purely technical and scientific, but it will be a long time before the modern ceramist can rest on his laurels, assured that there are no more worlds to conquer.

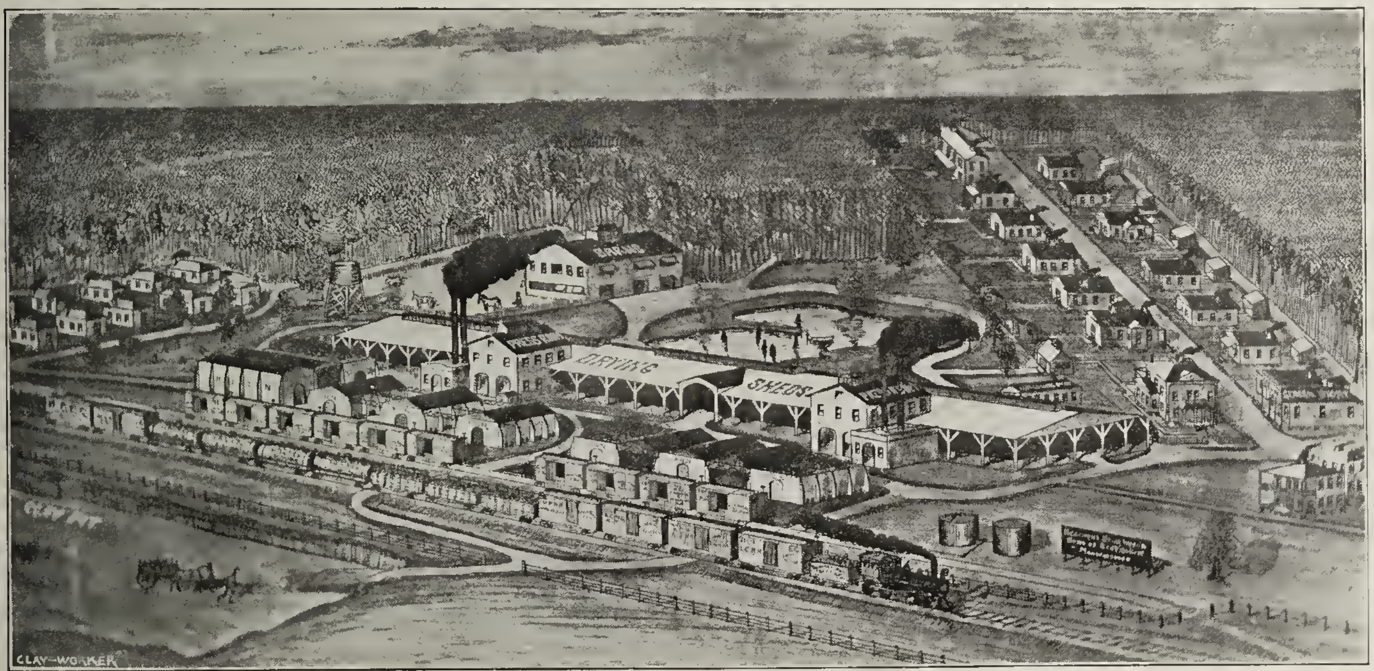
WRITTEN FOR THE CLAY-WORKER.

THE CLAY INDUSTRIES OF TEXAS.

THE OIL BOOM BOOMS THE BRICK BUSINESS.

NEVER BEFORE in the history of Texas have the brick and clayworking industries flourished as they have done during the year just closed. Many new concerns have been launched in the industry, and the old, established plants have greatly enlarged their scope of business and field of operation, by the addition of new machinery, new furnaces and the employment of many additional laborers.

The San Antonio Sewer Pipe Co., which conducts the mechanical part of its enormous business, in the clay locality about eighteen miles from the Alamo city, has just received an order for 1,000 carloads of sewer pipe, to be shipped to the town of Mexico, Mo. The men who are at the head of this institution are hustlers, and it is needless to say that they get their share of the business not only in Texas, but in several adjoining States.



Bird's-Eye View of the Beaumont Brick Co's Plant.

The Texas Kaolin Works, in northeast Texas, have a good run of business, and their work is said to be classed among the best in the South.

There is an immense brick enterprise at Blossom Prairie, ten miles east of Paris, and many of the North Texas towns receive their brick supply from that point.

The plant works night and day in order to supply the demand, and a big increase in business is reported for last year over the previous year.

The story now comes from Beaumont that the brick company of that city is burning their brick with fuel oil, and as a result they claim to have the best brick in the South.

I present a picture, showing a birdseye view of the entire plant. This company was organized about eight months ago, having acquired the business of A. Babin & Co., who were formerly in the business there in a small way.

Mr. Sam Park and Mr. William F. Scott, having recognized the necessity of a brick plant in Beaumont, got a few people interested and organized a company with a capital stock of $100,000, acquiring the machinery and equipment of the old company, together with forty acres of land directly adjoining Beaumont and on the line of the Southern Pacific railroad.

The clay had been tested before, and the people who took charge of the business were not experimenting in the least. They, therefore, put in additional machinery, built additional sheds, and what had formerly been almost a shipwreck is now a prosperous town.

The Beaumont Brick Co. is working at present one six-mold and one four-mold Fernholtz dry press, together with Fernholtz pulverizers, elevators and screens.

The present plant is arranged to put in one or more additional machines in the near future at the other end of the shed room. They have a number of kilns, with capacity ranging from 250,000 to 325,000 each, and they are turning out brick at the present at the rate of about a million and a half per month.

Besides the brick plant, they have about forty houses. They also have one large hotel for the white people and also one for the colored people, and a nice house within a stone's throw from the plant for the superintendent and his family. They also have a large commissary, which supplies all their men with whatever they need.

They have a contract with the Higgins Oil Co. to furnish them oil at a very reasonable rate, and they have a pipe line running to their tanks, which hold many thousand gallons of oil.

They find that in using oil and comparing its cost with the former cost of coal they are enabled to burn their bricks with less cost now than it formerly cost to handle the coal after it had been placed on the yard. In other words, the Beaumont Brick Co. considers that to-day they are not spending anything for fuel, as they are enabled to eliminate the cost of material.

The officers of the company are as follows: Mr. Sam Park, president; Mr. William F. Scott, vice president and general manager; Mr. R. M. Hallowell, treasurer, and Mr. M. F. Parker, secretary.

Mr. Sam Park, who is also president of the Industrial Lumber Co., president of the Beaumont Oil Exchange, and one of the principal owners of the Beaumont National Bank, is one of the foremost business men of Beaumont, and is thoroughly in touch with every advancement of his city, and is looked upon by the citizens of Beaumont as being its stanch friend and supporter.

Mr. Park is as well known in Old Mexico as in the United States, and is considered one of the foremost and brightest lumbermen in the business. Mr. P. S. Heidle, who is the superintendent, is a man who has had ten years' experience as superintendent of one of the largest press brick plants in St. Louis, which is known to be the greatest dry press center in the world.

Mr. D. Parke Bicking, the assistant superintendent, is a very bright, energetic young man, who has had considerable clay experience in the East.

The Beaumont Brick Co. is making an unusual brick, as it is a fine, hard, smooth brick, about the color of granite, which color is very popular indeed. Right from the start they have shown a wonderful business, and, owing to the fact that they are in possession of about the only clay in that vicinity that is adapted to the dry press system, they are bound to succeed.

The discovery of oil will have a wonderful effect in the course of time on the brick industries, and the fact is generally conceded that it will practically revolutionize it.

The oil is cheap, but the principal trouble now, in the use of oil, is the dearth of oil cars, for transportation purposes. It will likely be a year before the railroads will have enough cars to equal the demand for the cheap fuel oil.

A gentleman was here to-day from East Texas, and he stated that there were many hills of kaolin in Jasper county, and with a little energy it could be put to valuable use.

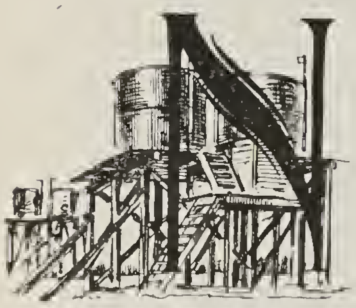
Before closing it might be well to add that the Athens Jug Manufacturing Company, at Athens, Henderson county, is rushed with orders, and is worked overtime.

GEO. MENDELL, JR.

WRITTEN FOR THE CLAY-WORKER.

BURNING MONEY.

Gates' Experiences with Oil—An Ideal Fuel for Clayworkers when Properly Understood and Handled—A Great Labor Saver.

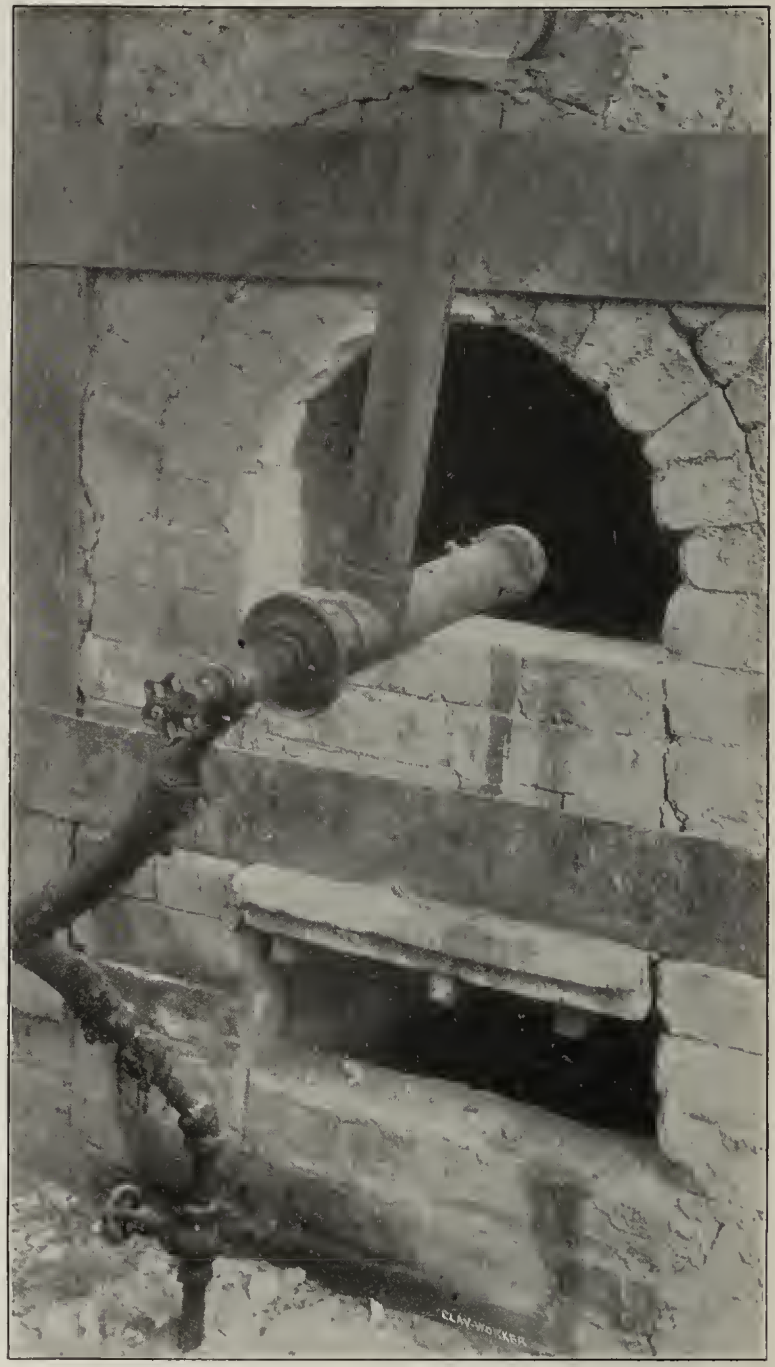


NEXT TO THE PAY ROLL, the item of the cost of fuel is the greatest of the outgoes in the clayworker's experience. His material costs him, comparatively, nothing, but the labor and fuel that transform the crude and worthless raw product into the finished and lasting article are very expensive, so much so that the manufacturer often feels as though he were only a sort of collection agent for the pay roll and the fuel man, and that his life was spent in hustling for them.

His material, no matter how skillfully formed and fashioned, is worthless unless subjected to high heat. This takes fuel, and fuel costs money, so that each one of us is, in effect, burning money. It may be in the shape of coal, coke, oil or gas, and seemingly sometimes might just as well be in the shape of five-dollar bills. We have, I believe, experimented with all of these, but have, I hope, quit using the latter.

Very, very early in the history of fuel oil we got a carload, and, as it was prior to the era of tank cars, it came in oil barrels, and we began experimenting. The patented burners we ordered did not come quick enough, and we were so full of the fever that we could not wait, and so constructed some ourselves. These would not work, and so we made others, until we had some that would work under the boilers, provided we had a good coal fire to help them out; and so we alternately rejoiced and mourned and experimented on and on. Our experience was much amplified by the fact that the old barrels in which our oil came were old, indeed. Some had been used for wagon grease, some for linseed, and some, apparently, for shavings, while all seemed to be plentifully interspersed with old rags. By this means, when our burners gave promise of actually burning successfully, an old rag or a shaving or a linseed oil skin would drift down into a valve and defer the combustive results we had been approaching.

Ultimately we succeeded with the burners, but were getting good results with coal and did not dare make any change on the big kilns, for our work is made to order, and each piece for its particular place, in a particular building, for a particular owner, particular contractor and very particular architect. So we dreaded the change, but were driven to it by a strike in the coal mines and the impossibility of getting our accustomed fuel. Having made the change, however, we have found it a most handy and reliable fuel, and have used it continuously with the exception of the year or so when the price was advanced to such a point that we had to go back to coal, but gladly returned to oil when the price fell so as to make it possible for us to use the liquid fuel.



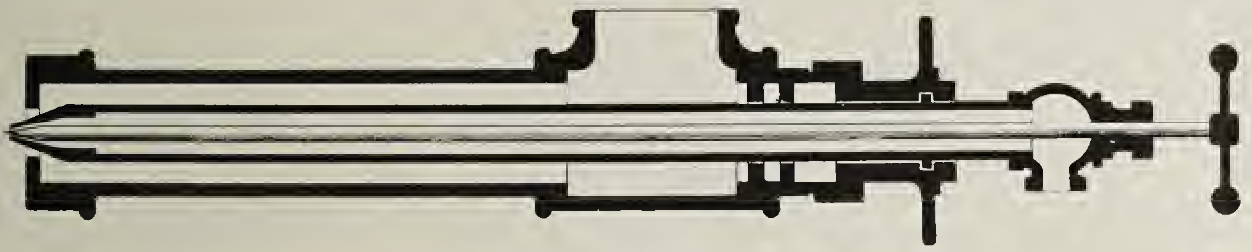
A Burner Connected ready for Business.

At the time we began the use of this fuel we had to transport it about a mile by pumping and found it very much cheaper in transportation than the coal. This item of the saving of labor is of great importance all through its use, from its arrival, where it is unloaded by making a coupling and opening a valve, to the turning of a valve at the fire box, and to the saving of clinkering and cleaning up ashes after the burn. The wear on the kiln and fire boxes is much less with oil, also, than with coal.

Any fuel must be properly applied. Wood, coal and coke each has its peculiar requirements. We all recognize that the furnace fitted for one of these would not give best results for the others. Oil necessarily requires more careful application than any other fuel, and, unless it has proper application, will not give proper results. I have heard of one man who claimed oil was a failure; that he knew whereof he spoke, because he had tried it. It transpired that his fuel had been wood thrown into the arches of his common-brick kiln, and that the way he tested oil was to actually flip it by the pailful into the arch as far as he could, just as he had flipped in the wood. He only considered one kind of application, and because he could not work his oil in by this means he condemned its use for the purpose.

We used steam at boiler pressure for many years to spray the oil into the furnaces, but have been for several years using low pressure air for this purpose, mainly because we had to conduct the steam to such distance that it condensed too much. Where dry steam can be had it works well, and the piping is much less expensive than for air.

Our kilns are circular muffle kilns, and we place the air pipes around them and above the furnaces. The oil pipe we put below ground, inside a tile, and in company with a steam pipe to warm it when necessary, and lead it up to the burner at each fire box, using a half-inch specially prepared hose. Our theory has been, and still is, that the supply of oil and of air, also, should both be controlled and regulated where they meet and leave the burners, and not at a point further back. If there be a length of pipe, of some inches in extent, between the oil valve and the point where the oil or steam catches it, it will naturally tend to having the oil gather along the pipe, leaving an interval when the air or steam will get little or no oil, and then an instant in which it will get all that has accumulated in the pipe, and too much. In like manner, if the air or steam valve is back of the mouth of the burner the energy is lost in getting past the valve instead of being fully utilized, as it should be, at the mouth of the burner and where it sprays the oil.



Gates' Oil Burner Shown in Section.

This we have accomplished by the use of needle valves, which control the supply of both air and oil at the mouth of the burner, as shown in the accompanying drawing. In short fire boxes, where the flame is thrown directly against the back wall and there is considerable tendency to carbonize, it is often advisable to use a fire clay wedge to split and divert the flame.

The question of the proper amount of air is of vital importance at all times, and varies much with different localities and particular conditions. That there is no smoke does not necessarily mean that the conditions are perfect. That the escaping gases are colorless does not necessarily prove that they are harmless. You may admit all the air that is needed for perfect combustion and still be far from the results you wish. The medium with which you are to carry the heat from the furnace where the combustion takes place to the more remote parts of the kiln, where the heat is needed, is air, and unless this air is supplied to carry it the heat will not move. Whether or no you are getting enough of this conveying medium can be accurately ascertained by frequent analyses of the kiln gases, and this method we believe to be the only accurate method of determining the proper amount of air.

If no oil is spilled there will be no smell. Careful pipe fitting regulates this, and we have never been troubled with the smell of oil; the only time, in fact, that it becomes noticeable is when the tank is being filled and the gases are thereby forced out of the tank as the oil replaces them, and these, of course, create an odor while they are being thrown out.

I did not think we had as ugly an arch or as poor a piece of hose on the place as the picture shows. I asked for a photo of a furnace and burner, and am rather inclined to think a job was put up on me. Haven't time to get another, and, anyway, it's the work we send out we are proud of, and the arch and hose are only incident to the burner which we show, and the arch stands and the hose does not leak, bad as it looks.

GATES.

JABEZ CORNTOSSEL'S PHILOSOPHY.

The good Lord made the mewel. I kin safely say that thar are some disbelievers an' semmy-atheists as contends as how He didn't. They allow that Providence never allowed to let loose on airth the devil incarnate, but I reckon them selfsame disbelievers has been touched up considerable at some time or other by this combination of perverted intelligence an' hoofs. My opinion is that the mewel wuz made for the same reason as dynamite, an' that is to do man's work when properly used an' to send careless people to where they belong. I ain't perpared to say what human mewels wuz made for.

You can never tell when a mewel is your friend. I would a durn sight ruther sit on a powder keg smokin' a pipe, with the wind a-blowin', than to git on intimate terms with a long-eared cross between a hoss an' a pile driver. You ain't kept in suspense so long when you're sittin' on the keg.

The radius of action of a mewel's hind foot kin not be measured by the size of his ears, an' you can't tell by the expression of his face whether he's meditatin' murder or jest speculatin' on the price of corn. If he's gazin' pensively on th' ground an' allowin' his ears to droop it might be jest as well fer th' spectator tew move into th' adjoinin' field fer awhile till he spruces up a bit.

He's never tew busy eatin' tew take a fall out of a fellow-mewel or an onsuspectin' stranger, an' it hurts his feelin's considerabul tew find after he comes down that he's missed his mark an' jest kicked a hole in th' atmosphere. The human mewel feels th' same way under the same circumstances.

A mine mewel is clean stone blind when he's been brought to light after spendin' his workin' life underground, an' I often think that some self-opinionated human long-eared specimens air in about the same condition when the light of other people's intelligence falls upon 'em. The mine mewel gits over his blindness—the human mewel never does.

The morals you kin draw from this air about as follows:

Never talk about a mewel behind his back.
Don't be a mewel.
If you must be a mewel, don't kick.—Exchange.

WRITTEN FOR THE CLAY-WORKER.

THE CLAY INDUSURIES OF GERMANY—A MARKED CONTRAST TO AMERICAN PROSPERITY.

IN DISCUSSING the present status of the German clay industries we must consider the subject under two heads, the economic and the technical conditions. An industry may be highly developed technically and yet lack the rewards of industrial progress, and it seems that this may be said of some branches of the German clay industry.

A. V. Bleininger.

From the purely economic standpoint we may divide the clay industry into two great branches, the branch which is more or less intimately connected with the building activity of a country and the one whose activity is based on a comparatively stable demand. The first evidently includes the brick, terra cotta and allied industries; the second the various kinds of pottery, fire brick, chemical stoneware and other branches. But since the building activity of a country is a factor and an expression of the general prosperity, any fluctuation in the latter is bound to be reflected in the brick and terra cotta industries. At present Germany is suffering a distinct industrial depression whose origin is difficult to trace, and which is affecting mainly the largest industries, especially the steel business.

As we know from our own bitter experience of 1893, the clay industries are quick to feel the depression, and it is therefore not surprising to find that the prices of structural clay ware in Germany are constantly dropping lower and lower.

In addition to the general depression, there are several other factors which assist in the lowering of prices. Of these, fierce competition is perhaps the most important. During the years of industrial prosperity which Germany enjoyed brick works sprang up all over the country representing enormous capacities. This great production of brick is now met by a limited demand, and the result can readily be imagined. By underbidding, the price of brick has been lowered to the actual cost in many localities, so that it is possible to buy common brick at $4 per thousand, which practically means cost price. It must be remembered that the standard size of the German bricks is much larger than ours, it being 10x4.8x2.6 inches. The constantly rising price of coal is another most important item in the cost account of the brickmaker. The mining of coal is being regulated by great syndicates in a manner which should be the envy of Mr. Morgan, and it is not surprising to us, when we consider the situation, why the German craftsmen are compelled to use the continuous kiln for burning all kinds of clay ware.

In addition to this, the labor question is becoming a more serious one, as, with the increase in the price of food and rent, wages must be advanced. This has as a consequence that labor-saving machinery is in greater demand than ever. The smaller brick works, which are not operated in winter in many districts, find it difficult to employ a satisfactory class of labor, and must be content to operate their plants with the help of itinerant bands of laborers. This is especially pronounced in southern Germany, where many of the hand yards employ Italians.

The front brick industry, particularly, has a hard row to hoe. It is not only strongly influenced by the existing industrial depression, but it is also compelled to wage war against the so-called new tendency in architecture, which desires to do away with the use of the front brick entirely, replacing it by all sorts of materials, often of the most inferior kind, or would have the front brick replaced by hand-holded brick, rough in appearance and of the most unwieldy size, the so-called Klosterformat. This revival of the large hand-molded brick is intended to imitate the mediaeval brick used in the construction of so many fine specimens of brick architecture. It is evident that this new tendency is a heavy blow to the well-equipped front brick plants, who cannot cater to this temporary demand without being involved in heavy expense. It is a case of retrogression, just as it would be if our manufacturers of front brick were asked to return to the soft-mud process.

On the other hand, the younger generation of German architects, with their indefinite artistic aims, which often consist only in the creation of sensational effects, show a strong tendency to do away with clay material and to replace it with plaster and cement at the sacrifice of durability. It is a sad state of affairs, and the German front brick manufacturers certainly deserve the sympathy of their more fortunate American fellow-craftsmen.

But still another enemy is attacking the German brick industry. That is the newly created lime-sand brick industry, which already has reached respectable dimensions and is represented by a number of factories. Just how much competition will be caused by this new business is difficult to say, but it would seem to the writer that the clay brick certainly have the best of it, both in regard to quality and cost of production.

The question of street paving is becoming more and more important in Germany, and brick manufacturers who find their regular markets dull are now turning their attention to the more universal introduction of brick pavements and the manufacture of paving brick. Without doubt the opening in this direction is great and there is no reason why the German brickmakers should not do what we have almost accomplished.

In regard to the technical status of the German clay industries, it can safely be said that the already high standard of excellence is being constantly raised. New and improved machinery is being continually brought into use, ingenious processes are being adopted and maximum economy, especially in the use of fuels for power and burning, has almost been reached. The continuous kiln, as operated by the German clayworkers, cannot be excelled in regard to economy of fuel. In the branches comprising art pottery and decorative ware new effects in design and technical execution are brought on the market week by week, thus maintaining for Germany its share of the world's market. In chemical stoneware and porcelain, in the intricate patterns required by new chemical, and especially electrolytic processes, the Germans still lead the world.

Last, but not least, it can be said that the technical schools of Germany devoted to ceramic industries are in a flourishing condition. During periods of industrial depression, when profits depend on narrow margins, technical education and training pays best, and this is fully realized.

Altogether it may be said that, though business conditions are not brilliant in the Fatherland, it is not the fault of its plucky clayworkers. A. V. BLEININGER.

A Correction—The Crown Dryer not a Steam Dryer.

Editor Clay-Worker:

Referring to the description of the plant of the Cliffwood Brick Co., of Cliffwood, N. J., in the issue of December, we beg to call your attention to an error in stating that the yard is equipped with a *steam* dryer, though you specifically state later that they are using a Crown Dryer. We do not relish the thought of our system being called a "steam" dryer. There is no steam dryer in existence but what will use fully three times as much fuel to do a given amount of work as ours, and at the same time will require many more tunnels. Incidentally our system is much simpler, will not require as much for repairs in ten years as a steam system in one, will save a very large percentage of cost and time of burning, which is equivalent to an increased kiln capacity, and will successfully handle clay of any nature.

Yours very truly, THE CROWN DRYER CO.,
Per J. W. Hornsey, Secretary and Treasurer.

The Illinois Clayworkers Association's Annual Convention

THE TWENTY-FOURTH ANNUAL CONVENTION OF THE ILLINOIS CLAYWORKERS' ASSOCIATION.

FOR THE SECOND time in its history the Illinois clayworkers met at Galesburg in annual convention, Jan. 7 and 8. The attendance was up to the average of former years, about fifty being present when President Converse called the first session to order. A number of those whom we have grown to expect to see at these meetings were conspicuous by their absence. Fathers Pike and Billingsley, Mr. W. A. Eudaly, D. V. Purington and W. D. Gates were among the absentees. They were missed sadly, though their absence was made less noticeable by the presence of a number of well-known clayworkers from adjoining States. As the membership roster will show, Iowa was represented by an unusually large delegation, which made itself felt in the discussions and lobby talks as well.

President Converse: The Convention will come to order. The first thing on the programme is the reports of members. We will be glad to know how you have been getting along the past year.

F. Plumb, Streator, Ill.: I do not know that we have anything remarkable to report. We have been very busy all summer, and have sold all our products, having practically nothing left in our yard. We have not yet had our trial balance of our books, but we assume we have made a little money. We may be disappointed when we come to see the balance sheets.

J. B. Beale, St. Louis, Mo.: Speaking for the Fernholtz Brick Machinery Co., which firm I represent, I can say that we have enjoyed such an increased business during the past year that we have been forced to build us a new plant of twice the capacity of the old one, which we hope to occupy about the first of next month.

D. C. Heager, Dundee, Ill.: We have been unable to keep up with the demand this year, and have been working overtime all the season, and there seems to be no end to the orders in sight.

J. P. Fargo, Streator: I have nothing to add to what Mr. Plumb has said. I am superintendent of his yard, as most of you know, and he has covered the ground fully.

A. E. Gregg, Waverly, Ill.: So far as the tile business has been concerned, it has been rather dull with us, particularly, I think, on account of the extended drought, but for our brick business we have never seen the end of the orders. We have made and sold more than four or five times more than ever before.

George J. Walters, Chatsworth: I have had a very prosperous year; have made about a million brick, and could have sold a million more. We also made a good many large tile, and could not begin to supply the demand. I am very well satisfied with the year.

Charles Burridge, Tecumseh, Mich.: I can say for H. Brewer & Co. that their business for the past year has been larger than for the past ten preceding years. The machinery business depends upon the business of the clayworkers, so, if the machinery manufacturers are prosperous, it follows that the brick manufacturers must also be. We are very well satisfied, not only with the business of the past year, but with the prospects for the coming season.

President A. L. Converse.

President Converse, Springfield: The demand for our products has been unprecedented. We have refused order after order, so much so that we have deemed it proper to extend our works to make arrangements for a larger output the coming year. We have also had a better margin of profit from the product of our plant.

Charles Ridgley, Springfield: We have had the same sort of experience. We have had a demand for all the brick we could make. We sometimes have had a little trouble to get people to pay up as promptly as our necessities required, but I guess we all have that sort of an experience. Taken all in all, we are very well satisfied with the year.

F. W. Heidenrich, Hedrick, Ia.: Trade has been very good, both as to demand and prices. We sold all we could make.

G. A. Kettel, Tipton, Ia.: I manufacture building brick and drain tile. Trade has been splendid all year. Could have sold a good many more if we had had them. Prospects are bright for the coming season; it really looks as though we would have even a better trade next season than last.

Madden & Co., Rushville, Ind.: We manufacture brick and tile machinery, and have had a very good trade this past season, with good prospects ahead.

C. J. Holman, Sergeant Bluff, Ia.: I am glad to report a prosperous year, the most prosperous I have ever had since I have been in the business. I have been unable to keep up with the demand, and we are looking forward to a duplicate of this season, and are preparing to meet it.

W. B. Lower, Sioux City, Ia.: Our business has been very satisfactory. We sold more last year than we ever sold before in any one year. The prospects are for a big business the coming season. The prices have been very satisfactory.

Robert Goodwin, Jr., Redfield, Ia.: We have had a very good year in both the brick and tile trade. Made all we could possibly make and sold all we could make.

H. deJoannis, Chicago: I just beg to duplicate what has been said in regard to the clay machinery business as regards that of the clay papers. As the clayworkers of the country are prosperous, so are the trade papers prosperous. We have had 50 per cent. more business the past year than ever before.

F. Carter, Peoria, Ill.: I have had a very prosperous year. Have sold all the brick we could get out. We make both building and paving brick.

M. Lareau, Beaverville: Business has been very fair this season. Good demand and good prospects for next year.

G. C. Stoll, Wheaton: I am with the American Clay-Working Machinery Co., of Bucyrus, and I suppose everybody in the room knows of me and has seen me. I have had an excellent trade in my territory, so much so that I have had to have somebody to help me out in the Western territory, because I could not take all the orders.

F. A. Martin, Mason, Ill.: I have about the same report as the other members—a good business, with good prospects for the coming season.

A. S. Curry, Reddick: I can report a very good year. We have no stock on hand; all sold out, even in tile. Our prospects are good for next year.

E. B. Johnson, Decatur: I represent the Decatur Leader Manufacturing Co. Our business has been very good, just as with the rest of you. I think, if anything, it has been better than ever before in the history of the company.

John Jensen, Pekin: Our firm has done well. We have to increase our capacity to meet the demand and keep up with our trade.

The Chicago Brick Machinery Co., Chicago: We have had the most prosperous season in the history of our company.

L. H. Lambert, Beaverville: We have made all we could and sold all we could make. I guess we will have to increase our capacity the coming season.

J. B. McHose, Boone, Ia.: I cannot help but remark that when I was attending the Illinois Convention some years ago these reports did not come in quite so unanimously as they do to-day, every one having such a good trade, and for that reason I quietly folded my tent and took my machinery to Iowa. In Iowa we are always prosperous, and the reports are along the same line as they have been here to-day.

J. M. Mamer, Campus: We increased our capacity this year and made all we possibly could, and, while we have a little stock on hand, mostly drain tile, we are out of several sizes. In our invoice of stock on New Year's day we found we had about 30 per cent. less than a year ago. We are perfectly satisfied with the year.

George Hartwell, Chicago: I am quite well satisfied with the results of the year.

L. H. Martin, Dwight: We have been running our factory to full capacity all year, and have sold our entire output.

C. G. Elliott, Indianapolis: I am glad to be back in the State where I first began business in the drainage line. I find that the business is extending very largely in other States. I am glad to know that Iowa is pushing out so nobly in that line. I am glad to see these gentlemen here. I am now wielding the pen in behalf of this interest.

Tiernan Bros., Macomb: We increased our capacity about one-half, and yet at no time during the past season were there any brick on the yard. They were loaded right from the kilns.

J. H. Millson, Illinois Manufacturing Co., Macomb: We manufacture sewer pipe and drain tile, and we have been very busy the whole year. We are a new concern, comparatively, having been in the business only about two years and a half, and are well satisfied with our trade.

Fenstermaker Bros., Ellsworth, Ill.: We had a very good season. Made all we could make and are sold out.

Wm. Hammerschmidt, Lombard: We have had a very prosperous year. We got a late start on account of changing our machinery, but we have made and sold the large sizes of tile. Yesterday we could not take an order because we are out of sizes. The prospects are that the demand will be for more large tile next year than ever before.

Wm. Sutton, Table Rock, Neb.: As the Secretary has just announced, I live in Nebraska. I had the good fortune to be born in the State of Illinois, but since the spring of 1866 I have been wandering in the wild and woolly West, in the State which has become distinguished for its rivers of shallow waters and wide-mouthed statesmen. I accidentally became interested in the brick business in an attempt to boom a new industry in our town, which proved very fatal to some of our financial interests. For the last three years I have undertaken the work myself, and am glad to say, with the craftsmen from Illinois and other States, that our business has been reasonably prosperous. We are making building brick, sidewalk brick and pavers. We made a little over 4,000,000 last summer, and sold them all at a reasonable margin of profit, and the facts are, some of our stockholders are becoming enthusiastic and think we must put in another plant, so as to supply the demand. I do not know as yet what the result will be.

President-Elect, W. S. Purington.

T. A. Randall, Indianapolis: It is pleasant to hear these reports of prosperity. The refrain is so different from what we heard a few years ago, and particularly in the tile business. When we met in Galesburg the last time some of the tile men thought the tile business had gone to the eternal bowwows. Now we hear a different refrain. Prosperity is with us, even in the tile business. The Illinois brick men are not quite so numerous as on former occasions, but there are a good many here from Indiana, Ohio, Iowa and Nebraska, so I presume the attendance will average up about the same as usual. I presume the stay-at-homes are so busy they cannot come, and a little later on, when the pendulum swings back, they will be so hard up they can't come. That is the way with the stay-at-homes; they always have some excuse. It is very gratifying to hear the reports of prosperity from all over the country. The National Association is in the same swim. The N. B. M. A. membership roster now includes more names than ever before in the history of the Association. The organization is in a very prosperous condition, and we anticipate the largest attendance at Cleveland that we have ever had. I hope on that occasion to again see a number of those now in this room. I know I will see a few, because they attend the National Conventions and would not stay away. The Cleveland people are waiting for you with a fund of good cheer that insures a royal good time. I am glad to be with you again. As nearly all of you take The Clay-Worker, I don't have to tell you that it is prosperous, too.

T. Townsley, Alexis: We have had a very prosperous business. We manufacture both brick and tile, and the prospects are better than they have been for a number of years. Many manufacturers have discontinued the manufacture of tile, but they have made a mistake. The tile business is in its infancy in this country. There have been no tile put down, compared to what will be put down in the years to come. Our flat land must all be tiled, and all the rolling land must be tiled, just as it is in the old country. I see great prospects ahead for the tile business. We have not sold a great many tile on account of the drought, but as soon as we have rain enough to justify the laying of tile, business will improve.

W. S. Purington, Galesburg: All of the members here who read The Clay-Worker probably realize what an immense business we have done this past year. (Laughter.) However, we have had a very prosperous year in every way, and I hope to have the pleasure of showing you the improvements now under way at our plant, which will indicate that we anticipate a large business the coming year.

D. O. Loy, Wataga: It has been a

very busy year with me. I have made no brick, and I have made no tile, but I have got married. (Laughter and applause.) I have no report to make for last year, but I anticipate something for the year to come. I will give you next year's report just to let you know I am here.

I made a move, the other day,
  Into Wataga town,
No more to work the yellow clay,
  But shale, both blue and brown.

The people in our little town
  All boast about their shale.
I wondered why their brickyard brown
  Was offered up for sale.

Will I succeed, or must I fail?
  To say is not worth while.
Meantime, a mammoth bank of shale
  I'll work up into tile.

If all my hope is realized,
  My books will not show debtor.
If my fond dreams materialize,
  Even Purington must do better.
(Applause.)

President Converse: Among the last utterances of our late martyred President were these words: "I have no greater ambition as President of these United States than to see the industries of this great Nation in a prosperous condition." I could not but think, would he not be happy to be with us this morning? The Secretary will now read his report.

Secretary Stoll: The only report I have to make is in regard to the exhibit we had at Springfield.

REPORT OF SECRETARY.

Mr. President and Members of the Illinois Clay-Workers' Association:

Four years ago, at a meeting of the Illinois Clay-Workers' Association, a motion was made that the clayworkers of Illinois exhibit annually specimens of their various products at the State fair, Springfield, Ill., and that the officers of the association have charge of the exhibits. For two years the officers reported an almost total failure, owing to the manufacturer's neglect in sending exhibits. Each year the Secretary invited manufacturers to send exhibits, assuring them that their exhibits would be properly taken care of and exhibited as advantageously as possible; also that no charge would be made for exhibiting. Still we received no encouragement from manufacturers; therefore, the State Board of Agriculture almost decided that the clayworkers could not, or would not, send a creditable display and decided not to help the association to pay any expense for attendants to arrange and attend exhibits. However, the officers made another attempt last fall, and made strenuous efforts to enlist the co-operation of the manufacturers, and are pleased to report that we received splendid specimens from a few manufacturers, and with what we already had, made what we were informed by the fair management a very creditable little exhibit, and, inasmuch as it was attracting a great deal of attention and no little admiration, they hoped that next year the manufacturers would all respond, and not only do credit to themselves, but to the clay industry of our State.

Mr. H. F. Townsend and the Secretary went to Springfield to arrange and attend the exhibit, and were given every encouragement and aid by the fair management.

List of exhibits:

Newbern Brick Co., Newbern, Ill.—Panel, 36x40 inches, of red pressed brick, with strips between each brick, imitating a section of wall.

LaSalle Pressed Brick Co., LaSalle, Ill.—Fifty brick, representing some of their various colors and glazes.

White Hall Sewer Pipe Co., White Hall, Ill.—Sewer Pipe, large drain tile and flue linings.

Purington Paving Brick Co., Galesburg, Ill.—Paving brick and sidewalk tile.

Macomb Pottery Co., Macomb, Ill.—Stone fruit jars, with screw tops, in pints, quarts, half gallons and gallons.

Argillo Works, Carbon Cliff, Ill.—Fire clay cupola blocks, fire brick and sidewalk tile.

Barr Clay Co., Streator, Ill.—Paving brick and sidewalk tile.

McCabe & Son, Rushville, Ill.—Glazed and unglazed drain tile.

Mamer Bros., Campus, Ill.—Drain tile, hollow blocks, sidewalk tile and brick.

Springfield Paving Brick Co., Springfield, Ill.—One panel of street paving, 36x36 inches; one panel sidewalk tile, 36x36 inches; one panel of vitrified building brick, 36x36 inches.

Secretary G. C. Stoll, Wheaton.

Waverly Tile & Coal Co., Waverly, Ill.—Drain tile and building brick.

Ludowici Roofing Tile Co., Chicago Heights, Ill.—Specimens of roofing tile in various designs and glazes.

Tiffany Pressed Brick Co., Momence, Ill.—Enameled bricks, in white and colors.

D. M. Duddleston, Stewartson, Ill.—Drain tile, sidewalk brick and building brick.

The exhibit was given a prominent place in the Dome building, and was arranged in an octagon pyramidical form, thus displaying every piece of ware. We had several inquiries for each of the following wares: Drain tile from 12 inches to 24 inches, sewer pipe, sidewalk tile, roofing tile and building brick. These inquiries were all referred to exhibitors, giving the name and address of each, and we hope that this year the manufacturers will all send specimens, that we may have a large and creditable exhibit.

Your Secretary met Mr. F. J. V. Skiff at St. Louis, who was the director of exhibits at the Mines and Mining building at the World's Fair, Chicago. Mr. Skiff is a director of exhibits at the Louisiana Purchase Exposition, at St. Louis. Mr. Skiff said he remembered with pleasure our large and complete exhibit at the World's Fair, Chicago, and hoped we would do as well at St. Louis, and very much desired to have the matter brought before the association, and communicate with him as early as possible. (Applause.)

Secretary Randall: I move that the report be accepted and spread upon the record, and would add to this that if it is desired to further proceed with the matter of an exhibit at the St. Louis Exposition that a committee be appointed to act in confirmation of the suggestion of the report.

Motion seconded and carried.

President Converse: I think the appointment of the committee will come up later. The next thing on the programme is the appointment of committees. The only committee to appoint is that of the Committee on Resolutions, unless you have some special subjects that you must have a special committee appointed for. If Mr. Randall or some one else will compose a resolution in regard to an exhibit at the Louisiana Purchase Exposition we will refer it to the Committee on Resolutions.

Mr. Hammerschmidt: I move this matter be referred to the Committee on Resolutions.

Motion seconded and carried.

President Converse: I will appoint on the Committee on Resolutions F. Plumb, Streator; Charles Ridgley, Springfield, and W. S. Purington, of Galesburg.

Secretary Stoll then read a letter from the American League of Civic Improvements, which was referred to the Committee on Resolutions.

President Converse: I want to say a word or two about this Louisiana Purchase Exposition. They have probably a larger amount of money to be expended on that Exposition than was expended in Chicago. I understand they have in sight about $15,000,000, and they are exceedingly anxious for the good of the city, and also of the State and Nation, that all industries shall be well and thoroughly represented, and an effort is being made to interest not only the associations in the State of Illinois, but every association in every State, and I would like to have a few voluntary remarks from the members as to what our Association shall do in regard to an exhibit at the St. Louis World's Fair, and after that, when the resolution is presented by the committee, we will know how to act on it. Those who think it would be well to give encouragement to the Exposition, and are willingt to take hold of this matter as an organization and see what the State of Illinois can do in the way of an exhibit of clayworking products, can say so now. We have some little time to spare just now, and I think it would be well to devote the time to the discussion of this matter.

Mr. T. A. Randall: In regard to this St. Louis Exposition, it is taken for granted that every one of us wants to advance and help on the work of this great enterprise. It is up to the clayworkers of Illinois as an organization to decide whether they want to take an interest and give real practical evidence that they are on the map. I had a talk with the Secretary a few days ago on this same subject, so I know something of what is contemplated. His idea is that the clayworkers of Illinois, and the clayworkers of Onio and of Iowa and of other States can take up the question of having a display of brick, tile, terra cotta, etc., at that Exposition, and so, by concerted action, let the outside world know something of what the clayworkers of the country are doing. There is no question but that an exhibit of this sort, if carried out successfully, would be a good thing for the clayworking industries. It would give the world a better idea of what the clayworkers of the country are doing, of the splendid ware being turned out by the clayworkers; give the world some idea of the art and skill and labor and capital represented in the various branches of clayworking. If the Secretary and any committee you can appoint under your direction will outline a policy and inaugurate a movement which will enable you to get an exhibition of clay products in the St. Louis Exposition, it will certainly be a good thing for you to do. It is a matter that requires a great deal of thought and work. You cannot do it, of course, in a few minutes. One difficulty in this matter is the varied forms of clay products, and another is that different manufacturers do not co-operate one with another, and the trouble will be to get an exhibition that will be representative of the clay products. The Secretary has an idea which, as he outlined it to me, is the best I have ever seen. It impressed me very favorably, and if this Association can take the matter up and give it considerate attention, and appoint a committee to carry out the plans that the Secretary has in mind, it will do good work.

W. Hammerschmidt: I understand this Exposition will be in 1903. I think it would be well for the clayworkers of the State of Illinois to have an exhibit at that Exposition, but if this organization is going to be represented there, every manufacturer should send the best of his clay products. The exhibit ought to be similar to that we had at the World's Fair, in Chicago. But we got that up in such a short time. We ought to have more time for it this time. I think it could be left with the Executive Committee to appoint a committee to take charge of this work and make all arrangements, and report at the next meeting a year hence as to the progress they have made.

Mr. Randall: It was my pleasure, some months ago, to attend a meeting in New York city of a club composed of the representatives of the various arts and industries—a sort of a municipal improvement organization—and they started out with an idea to get the managers of the St. Louis Exposition to build a Service Building, a building in which the offices of all the officers of the Exposition should be placed, and where all the business of the Exposition should be transacted. Their idea was that they should have a model municipal building constructed at the Exposition for this purpose, make it the home of the Exposition officers, and surround it with all the modern sanitary improvements, model sewers, model pavements, model lighting and heating system, model fireproof walk, etc. What success they will attain is uncertain. The trouble is that the Exposition people have already mapped out their plans for buildings and the general detail of the Exposition grounds. I received quite a detailed description of all the principal buildings, and where they are to be located, and the general topography of the Exposition grounds, just before coming here. I doubt if you could hope to build a special building for your purpose. The movement which these New York people are carrying forward may result in something of the sort subsequently. But the clayworkers of the country may have an exhibit of their products in some of the buildings, and if the idea as Mr. Stoll has outlined it could be carried out it would be very commendable.

Vice-President J. M. Mamer, Campus.

Secretary Stoll: I made a little reference in my report to my talk with Mr. Skiff, and I told him I did not think it possible to make a very good exhibit if we tried to make it an exhibit from this State alone. It would be a good deal like some of the exhibits that were at the World's Fair; there would be about as much as we could get on one of those long tables, and the display would be lost in the building. But if all the States wherein clay products are manufactured would get together and put all their exhibits in one building, and make one exhibit of it, I thought we could get up an exhibit that would be very large and creditable. We could easily get up a display that would take up a space 200 feet square—not 200 square feet, but 200 feet square. My idea was to lay that space out with aisles running north and south or east and west, and bring the walls around from one aisle to the corner and back to the other aisle, and inside of these have still other aisles, and between each one of these we could have the exhibits piled up in pyramidical form, the high articles on the outside, and then take in the roofing tile, and we could walk all around and between these different aisles and see everything displayed. I doubt if we could have a large exhibit by each State making an exhibit by itself. I used to think that the best way to make an exhibit was to have each manufacturer who wanted to to send in some of his ware, and then build a building of it all. I have talked with several of the leading architects of Chicago and St. Louis recently, and I find that such a plan would not work at all. For instance, a Chicago terra cotta manufacturer would not want to put a lot of his ware in beside the ware of a St. Louis manufacturer, nor would a St. Louis man want to put his ware with that of an Eastern manufacturer, and they would each of them want their ware kept separate. I do not believe a building built from all the different materials would be very attractive, nor do I think it would do. I am going to draw out a little plan of my idea so the Committee on Resolutions can look it over and see just what it is I have in mind.

President Converse: It occurs to me that the proper thing would be for this Convention to adopt resolutions that we would be glad to co-operate with the National Association, which is to meet next month, for an exhibit of clay products at the St. Louis Exposition. Let this matter emanate from the head source. We will find that this matter will be spread over the country through our trade journals, and that other States will fall in line. Let the National Association take up the matter, and there will be a hearty co-operation on the part of the other associations.

Mr. Plumb: The National Association is the National Brick Manufacturers' Association. I understand from what Mr. Randall has said that he has in mind the clay products of the United States, not the State of Illinois. Now, it seems to me that this matter could be considered by this Association first and a resolution be passed asking the St. Louis Exposition to provide some method by which the clay exhibits of the United States can be displayed. Let the National Association pass a resolution asking the same thing. Then let the potters (I understand they have a similar organization) and the manufacturers of similar ware, ask the Exposition the same thing—that they provide a building, or some plan, or some method by which the clay industries of the United States can be displayed. Let them take the initiative of providing room and place, and send out invitations to the different States and industries to come in and fill it up. It seems to me this is a pretty big undertaking. It should be taken charge of by the Exposition. The most we can do is to send in the exhibits.

Mr. Randall: I noticed by a clipping from one of the local papers recently that Mr. de Joannis had been interviewing Mr. Day, and it may be he knows something in regard to this matter that may be of interest to the committee.

Mr. de Joannis: I was wondering whether I should say anything, for the simple reason that it seems that so many of us have so many good ideas on all these subjects; not that they are likely to clash, but what we want is concerted action in this matter. Mr. Plumb has hit a very important point. If we want to get anything from the St. Louis people, we must certainly go to work and gather our materials and then approach them. It is necessary that they should be prepared to meet us more than half way, and such a state can only be attained by petitioning these people to make contributions, send letters to all these people, such as the potters, and get them to make petitions to the St. Louis people, so that all these petitions shall come to the St. Louis people and impress them with the importance of the clay industries. Some eight or nine weeks ago I thought of the scheme of an exhibition of clay products and suggested it to the St. Louis Fair authorities. As I suggested it it was rather expensive, but I made it so, because I know if you do not ask for much you do not get much. Part of the scheme was that which has been so much considered at different conventions and which has always fallen down, and which was commented upon adversely by the Secretary this morning, and that is the construction of a house entirely of clay products. To my surprise, on going down to St. Louis, that was the one they really took to enthusiastically, that of the construction of a ten or twelve-room house of clay building material, to be given free, and also the cost of its erection. They said: "If you will go out and interview these people and find out how they feel about it and report, we shall know how things stand. I have visited some of the leading firms, terra cotta people and pressed brick people, both in Chicago and St. Louis, and to my surprise they were unanimously in favor of contributing the material and standing a proportionate cost of the expense of erection of the building. Of course, I did not make them any definite proposition. Mr. Day will, in the course of a few weeks, submit to each of these gentlemen a definite proposition from the St. Louis Fair authorities, and that part of the scheme is well under way. Mr. Day will have charge of the arrangements, architect's plans, etc., and that matter will be taken care of by the St. Louis people themselves, so the contributors will have every confidence in the scheme. Everywhere I have met the same response. I forwarded some fifty or sixty letters to people in different parts of the United States who have products of national reputation, and they have sent in their responses almost unanimously that they were willing to contribute any material wanted and their proportionate expense. That is as far as the matter has gone. Another part of the scheme was that these clay exhibits should all be exhibited together. I think it is about time we get our heads together and make an assault on the St. Louis authorities. That is what we can do here and in the National Brick Manufacturers' Association and other State Associations—make petitions to the St. Louis authorities, and by concerted action get the desired results.

D. O. Loy, Wataga.

Mr. Ridgley: Is it expected to include in this exhibit an exhibit of clayworking machinery?

Mr. Stoll: My understanding of it is that nothing but the clay products be shown. The machinery would, of course, go to some other building.

Mr. Ridgley: I think it is entirely proper either way, whether we confine ourselves to the clay products, or add clayworking machinery, that we be well represented at St. Louis. I like the idea of the President that the matter should be conducted under the general guidance of the National Association, but I do not think we should limit ourselves to that. It seems to me that the proper action of this Convention would be to place the management of an exhibit representing this association in the hands of a committee, and let them co-operate with the National Association, if they find it best, but to go on any way, cooperate with anyone else, or make the exhibit on its own hook, of the Illinois products, independent of the others, if they deem that best. My relation to this brickmaking business has been peculiar. I have only been engaged in it a short while, and not directly engaged in it at that, so perhaps I have as little knowledge of the scope of the industry as anyone can have, and I want to say I am constantly surprised and delighted with the new products I encounter as I go about. Those who have been engaged in it a long time will hardly appreciate this, but it seems to me remarkable that so many different products are made from clay in Illinois. The samples that we see in the Chicago sales offices are simply astonishing. It seems to me that a collection made up in a way of the best that can be made of the different kinds of brick, tiles, roofing tiles, flooring tiles and everything else that can be gathered together, will be something that will be very interesting, and it will aid the Association in accomplishing what I consider the very greatest of all its purposes, the education of the people who come to these universal expositions. The Exposition in Philadelphia was convenient to the people of that section, the exhibition at Chicago convenient to the people of another section, the same is true of the Buffalo Exposition, and the Exposition at St. Louis is going to give opportunities to the country tributary to St. Louis to educate themselves in a great many different directions. There will be a great many wonderful things of every sort and kind that will be interesting for the people who go there, but there will be nothing more surprising than the progress that has been made in turning the clay as a raw material into different shapes. I used to think the clayworkers were a set of mud daubers, but I find they are intelligent engineers, who manufacture a multitude of different wares, and it is a source of pleasure to everybody to see that the intelligence of the American people has been developed. If we get a good clay exhibit at the St. Louis Fair, the people who stop and see it will look at it with wonder and interest, and the people who make exhibits will find it of great advantage. We ought to vie with these people to see who will make the best display. It ought to be a pleasure to us to do this thing. Our own pride in our industry, our State pride, our national pride, our desire to help the managers of this Exposition, ought to lead us to do for the people of our neighborhood all we can. It seems to me we ought to have a committee of considerable power to have this matter in charge, if the Convention decides to have an exhibit, and leave it to the committee as to the manner in which it shall be conducted. When this Convention adjourns it will be not to meet again for a year, and don't let us have this matter fall through for lack of proper attention.

Mr. Sutton: There is one thought that has occurred to me, and perhaps the rest of you may all have thought of this thing. These exhibits at the St. Louis Fair will undoubtedly be conducted largely as they have been at other great national expositions. The exhibits will undoubtedly be classified, each industry will be exhibited by itself and in a building arranged for that special purpose, and a large part of the expense will be borne by the different States. There is no doubt in my mind but that the great State of Illinois will make an appropriation to exhibit its industries at this Exposition. Your cattle breeders will get a part of this to exhibit their industry, and the horticulturists, and the agriculturists will get part of it, and I submit to you if the clayworkers have not as good a right, or greater, perhaps, as any of these other industries. It is highly essential that you should organize, and organize at once, and have a committee to take up that part of this great work, and insist that you have a share of the State funds that will enable you to make an exhibit commensurate with the great industry which you represent.

President Converse: The chair has given encouragement to this informal discussion in an unparliamentary way for the purpose of ascertaining your opinions as to something which may be brought up later on. I presume we will have resolutions come in this afternoon or in the morning that will indicate the will of the Association.

On motion of Mr. Hammerschmidt, the Convention adjourned until 1:30 p. m.

SECOND SESSION.

Tuesday Afternoon, Jan. 7, 1902.

President Converse: Gentlemen, we have with us at this session the Hon. W. O'R. Bradley, Mayor of Galesburg, who will address us.

MAYOR BRADLEY'S ADDRESS.

Mr. Chairman and Gentlemen of the Convention—I am exceedingly glad of an opportunity to welcome to the city of Galesburg the representatives of a business that has done so much for our city. We speak with pride of our churches and schools, and we speak with equal pride of our brick industries, and the inexhaustible supply of shale so essential to the perfect paving brick. Our brick industries, started in an unpretentious way but a few years ago, have grown so that to-day we are accredited with having one of the largest, if not the largest, brick manufacturing plants in the United States. If I am correctly informed, the first, at least the first permanent, brick pavement put down was in Charleston, W. Va., some time in the early seventies. The fact that it lacked the requirements necessary for a good pavement was the cause of its failure. With the improvements of to-day we find that the brick pavement is superior to any other pavement in the world, the asphalt people to the contrary notwithstanding. It is my privilege to accord to the members of this Convention the freedom of the city. That your welfare will be looked after goes without saying. The reputation of the Puringtons as hosts has never been challenged. (Applause.)

Mayor W. O'R. Bradley.

President Converse: I am sure we all appreciate the hearty welcome given us by Mayor Bradley. We all knew the place we were coming to when Galesburg was announced as the place of meeting, and I am sure there are many here to-day who would not have come to the Convention had it been held in any other city.

Secretary Stoll: The next in order is the annual address by our President.

President Converse: Representative Dalzell some years ago, when Major McKinley was a member of Congress with him, met Major McKinley in one of the corridors one day. Dalzell was much exercised over a speech he was to make. Major McKinley also was to deliver an address, but he was quite cool, and Dalzell said to him, "McKinley, how comes it that you are so cool and composed, and I am so excited and nervous?" and McKinley replied, "The difference between us is, you have your speech in your head, while I have mine in my pocket." I did not have mine in my pocket this morning, and when one of the gentlemen suggested that we take up the afternoon programme, if I had not been master of ceremonies there would have been trouble. I have since obtained it from the editor of The Clay-Worker, and you will probably recognize it as one of his productions." (Laughter and applause.)

PRESIDENT'S ADDRESS.

Dr. A. L. Converse, Springfield, Ill.

Members of the Illinois Clay-Workers' Association:

Gentlemen—The position of President is one which is often sought and seldom attained, the seeking of which has caused many great men to sing the pathetic refrain,

"This is the way I long have sought,
And mourned because I found it not."

I stand before you as a President whose duties now commence, notwithstanding I was elected one year ago. In this audience to-day are a number of my predecessors, who have each in turn filled this presidential chair with credit to himself and honor to this association — men whose wrinkled faces and bald heads speak volumes for the faithful services rendered this association in days agone.

This honor came to me unheralded and unsought, and I to-day can heartily join with all of my predecessors in the language used by the whale when emitting Jonah—

"It is hard to keep a good man down."

I have done my best thus far to properly fill the position with which you honored me a year ago, and am now willing to cheerfully admit what so few Presidents are willing to do, that the magnificent salary received by me has been equal to the services rendered, notwithstanding the onerous duties devolving upon the office.

I appreciate greatly the honor of being called Mr. President; it is such a relief from the professional title Doctor, which seems to me is getting somewhat threadbare, and not appropriate since becoming a fellow-craftsman with professional men engaged in manipulating mother earth. I am frank to state that I do not think my present occupation less honorable than that of the practice of medicine; in fact, I find a striking resemblance in the work, both jobs having to do with clay products in both normal and abnormal conditions. Yet I must admit that an amputation with the bistoury, scalpel and torniquet is more scientifically done than by the grinding process of the pug mill.

I have struck the presidency at a time when wonderful prosperity exists, in evidence of which I give you a letter that was received by me from a rubber belting company in Ohio and my official answer to the same:

"The B. F. Goodrich Company,
"Akron, Ohio, June 17, 1901.

"To the Springfield Paving Brick Company,
Springfield, Ill.:

"Dear Sirs—Just a little message to you at a time when the whole world rejoices in the beauty of early summer, with its promise of holiday pleasure yet to come. Thank Heaven there are no trusts which control the sights and sounds of nature in these bright June days. You are very busy, we know, for who is not in these piping times of unparalleled prosperity. But you would stop for a moment, would you not, to exchange a few words with a congenial spirit about the favorite pastime of vacation days, now so near at hand?

"Well, it won't take you long to give us what we ask for, an order to-day, to-morrow or next week. Can't we persuade you to send it now, or, at least, to get quotations for Goodrich rubber goods (note the trade-mark G) whenever you need anything of this kind? You cannot do better as far as quality is concerned. Prices are very reasonable when durability and superior service are considered.

"Keep this on your desk as a reminder, won't you? Sincerely,

"THE D. F. GOODRICH CO."

We replied as follows:

"The Springfield Paving Brick Co.,
"Springfield, Ill., June 19, 1901.
"Akron Rubber Company, Akron, Ohio:

"Dear Sirs—How strange it is that the minds of great manufacturers in these halcyon days of the sweetest summer months should fleet along like summer zephyrs upon the buoyant air perfumed by the fragrant rose. How much should we rejoice together at the failure of unstable minds, when we consider for but a moment the beauties that so enrapture these souls of ours and quietly soothe our spirits into the rhapsodic condition of tranquillity? We rejoice that we have reached the day when asphalt has been relegated to the rear, and we can talk with confidence about the best paving material on the periphery of the terrestial globe.

"We ask you over in Ohio to sing the praises of the best of vitrified paving brick. Let us quote you prices for a pavement around your rubber establishment. We guarantee that our goods won't stretch, nor become soft under the effulgent rays of the celestial orb. Our pavements will last forever and are by far the cheapest in the market when durability is considered.

"Please try us, won't you?

"Affectionately yours,
"THE SPRINGFIELD PAVING BRICK COMPANY."

As President of this organization it becomes my pleasant duty to deliver this, my annual message:

I am happy to report that the Maker of the Universe has given us an abundance of material with which to work. Also that we are at peace with all the world, except the labor organizations that want better wages, the contractors that want cheaper products and our wives who have thus far failed to receive the sealskin cloaks that we thoughtlessly promised them when we undertook the laudable enterprise of making brick.

As to foreign trade, Cuba and Canada have been knocking at our doors for brick with which to improve their streets, while every known portion of the civilized world has furnished a market for our machinery and kilns. All of which has resulted from perusing the pages of our unequaled trade journals, which are so ably represented here to-day. We have kept pace with other manufacturers in our chosen industry, both in the output of our products and the extension of our plants, and have created a demand that will keep our craft exceedingly busy to supply the requirements of the trade.

The rapid destruction of our lumber resources gives assurance that a substitute for wood in building material is greatly in demand, and the very unsatisfactory results in the various asphalt products, as demonstrated by the constant and continued repairs in the streets of our large cities, gives us a renewed assurance that brick pavements have come to stay.

The unprecedented demand for our product in the last few years has given an encouragement to our industry, which had not been anticipated by the most hopeful and sanguine of our manufacturers.

While we do not wish to encroach upon the domain of the politician, we can but cheerfully voice the sentiment heard from every portion of our country, that these are exceedingly prosperous times and that with this prosperity none have enjoyed more satisfaction from the results of their labor than the members of this association.

With brick, terra cotta, fire proofing, roofing and floor tiles for our buildings, drain tile and sewer pipe for our drainage, conduits and protectors for electric wires and vitrified brick for street pavements and sidewalks, it surely looks as though the clay industries would not soon languish for want of their products.

The diversified programme submitted to this convention for discussion, it would seem, would be sufficiently suggestive to bring out the very best thoughts from the intelligent and successful manufacturers in this presence.

H. F. Townsend, Avon.

It is to be hoped that every topic will be freely discussed—not in an academic way, but from the practical standpoint so well understood by you all, that our convention may not only be a means of enjoyment, but a source of real profit to each member.

(Applause.)

President Converse: The first number on the programme this afternoon was to have been a paper on "Tiling Highways," by Mr. E. M. Pike. I am sure you all join with me in regrets that Mr. Pike is absent. He was one of the leading men in this Association, and his is a place that cannot be filled. I am going to ask Mr. A. S. Curry to lead in the discussion of this topic, which is a most important one. I understand he is well posted on the subject.

"TILING HIGHWAYS."

Mr. Curry: Mr. President, I fear you have been misinformed. I do not possess any information on the subject, except what possibly every other person here possesses. Of course, we all know that tiling highways is the only proper thing to do in a country like Illinois, where we are shut off from gravel. Where I was raised we had a gravel bed on about every other farm and made gravel roads, but in this State, gravel being an unknown quantity, the next best thing is to tile the highways. I remember in Wayne county, where I lived for several years, we tiled the highways, and then graded the roads so three teams could pass abreast. In the county where I am now living the grade is so steep (we have to have them that way in order to keep them up and have them dry) that it is dangerous for two teams to drive abreast. If the road was properly tiled we would do away with that difficulty.

The price of land is so cheap that a small expenditure on the road means a great thing. It means more trade for the farmers, more trade for the cities and villages scattered over the country, and the only way it can be obtained is by tiling the highways. It is the solution of the question that has received too little attention. The tilemakers, at least, should make an extra effort to have the highways tiled. It will benefit the tilemakers, the farmers, the town people and the entire community. Of course, it makes a higher county tax.

This is a subject on which I did not expect to make any remarks. As I understand it, I am just to do the little dog act: be the first to bark, and so get every one else to talking. I think we should keep the Secretary in the place he has held for so long, for when he once gets after a man for the programme he never lets go. He has been after me to say something before the Association for the last two years, and now I suppose he is satisfied; but I should like to hear from some one who knows more about tiling highways than I do. I would like to get a few pointers.

President Converse: We would like to hear from Mr. Townsend.

Mr. Townsend: About the only experience I have had was with about a half mile of flat prairie road, on which we put down a six-inch tile. Prior to that time the road had been turnpike, and for a long time in the springtime it was one of the worst roads I ever saw. It turned out that the farmer whose land was adjoining that road was road commissioner, and by his help we got them to put a six-inch tile clear down through that road. It was the making of the road, but the farmer never got re-elected as road commissioner, because they thought he did it to benefit his own farm. By putting tile on each side of the road the water drains off and the road dries quicker in the spring, and that is now one of the best roads in the country.

President Converse: I think that farmer was entitled to some compensation for teaching the other road commissioners something.

J. M. Mamer: We had a little experience down in our township. There was a mile of roadway that did not get really as much travel as the average road did, but at the same time it was a bad piece of road, and the commissioners, with the aid of the owners of some of the adjoining farms, concluded they would tile that one mile of roadway. The farmers among them were to pay for the difference of the size of the put in above four-inch; that is, the road commissioners paid the price of four-inch tile and the farmers paid the difference. Some places they run the tile on one side of the road and some places on the others, and some places where it was very bad they tiled both sides. In these low places they would dig about three feet deep, place the tile, and then fill that in with broken rock, so that when the water came with a rush it would get into the tile quicker than otherwise. In the spring of the year, when the frost comes out of the ground, that road is the first to get dry, and the places where the large tile cross the road are the first to dry, and those places will be dry when the rest of the road is muddy. In speaking about gravel, I think the first thing necessary is to tile the road. There was one place south of Gardner where they put in about a mile of gravel to a depth of eighteen inches, and inside of a year the gravel was out of sight; then they tiled the road, and by digging up the gravel they have made a splendid road with very little extra expense.

President Converse: I would like to have the editor of the Drainage Journal, Mr. C. G. Elliott, tell us something about tiling highways.

Mr. Elliott: I have known something of the tile draining of roads for the last twenty years, and it is not a new thing with me, nor in the section of the country where I was brought up. I think that when the tiling of farms first began, twenty years ago, when I began to survey ditches, it was the first step taken after the drainage of farms began, and in several of the townships in which I worked the bad places in the roads were drained, sometimes on one side of the road and sometimes on the other, and sometimes on both sides. It was a common thing for the road commissioners to do this work. The benefits were so marked that it became almost universal. Since that time they have begun to gravel the roads. The foundation was laid, and all they had to do was simply to prepare the surface and put down the gravel which they had obtained, and now they have a firm road. One system which I have found very good in gravel roads is to place the gravel on one side of the road or the other, making a hard road for the spring and times of the seasons when the ground would be soft. In the summertime, when the road is firm, the dirt road is used. I have known road commissioners, for the purpose of draining the road, to go six, eight and nine feet deep, and my experience and observations have been that they have always succeeded in getting good roads on this open, black, alluvial prairie soil, such as you have in Illinois. About twenty years ago, perhaps less than that, there was a subscription made up in the county of La Salle for the graveling of a certain piece of road leading out from the city of Ottawa. The plans involved the laying of the drain tile in the center of this road along almost the entire length, because that portion of the road was level. The drain tile was laid in the center of the road, and that road has been perfect and in operation ever since that time, and has never been repaired since then, although it has been subject to a great amount of travel. Whether it is best to láy the tile in the middle or on the side of the road is a matter on which people differ. I think the majority of opinion, however, favors the practice of placing the tile on one side or the other, and sometimes on both sides. If there are any gentlemen in the room who are not familiar with this matter and have never seen the work demonstrated, I can say to them that they need have no hesitancy in telling their road commissioners it is the first step to be taken in the improvement of our Illinois roads.

President Converse: The next number on the programme is a paper, "Where Are We At?" by Mr. Cook, of Odin, Ill.

Secretary Stoll: Mr. Cook wrote me a letter stating that he is detained at home on account of a severe attack of inflammatory rheumatism, but he has sent his paper, which I will read for him.

H. V. Cook, Odin.

"WHERE ARE WE AT?"

By H. V. Cook, Odin, Ill.

Mr. President and Fellow-Clayworkers:

I received from our honorable Secretary, Mr. G. C. Stoll, a notice that I had been placed on the programme to write a paper entitled "Where Are We At?" to be read at our annual convention to be held at Galesburg on January 7 and 8, 1902. "Where are we at?" Do we not occupy the same position we have always occupied? I assert yes, and with your indulgence I will endeavor to prove this proposition. Let us look back into the long past and see what position we occupied then and there. Many years in the great past our Creator transformed a portion of earth dust into a lifeless form, said to be an image of Himself. This bit of clay, or dust, was created to be a living thing, and was of little or no value whatever until it had life in it. Therefore its Creator breathed life into it, and it became alive. This piece of pottery, after its Creator had breathed life into it, He called a man. Then this piece of pottery is us. With that breath of life our Creator also placed death and decay in us. Being created of dust, we were to return to dust.

> "For dust thou art,
> And to dust shalt thou return"

Was the decree of our Creator, but with no definite time appointed. We were getting along very nicely until one day one of our neighbors, whose name was called serpent, came to pay us a friendly visit, and the subject of trees and their fruits was thoroughly discussed; fruit to open our eyes and make us wise, to be as gods, to know good from evil, which seemed to be good logic to us. So we ate of the fruit of one of the trees discussed, and, to our delight, our eyes were opened and we became enlightened, and we discovered that we were naked and many other things, and, in fact, everything occurred to us, as our neighbor had predicted. The other tree, and its fruits, that was discussed was guarded by fire. We ought not to have associated with such low-down neighbors, but we did, and got fired out of our first possessions. We lost our old homestead, and it always will be a debatable question whether the knowledge we gained had not fully compensated us for the loss of our homestead. In those days the children were the same as they now are—playing in the mud, making all kinds of mud images, such as pies, marbles and, in fact, all kinds of things out of the mud, even making little mud men, the images of themselves, which we could do very exactly, but our mud men had no life in them, and we failed to put any life in them, but we enjoyed the fun. One day we went into the woods to roast acorns. We built a large brush pile and fired it, in order to have a bed of coals and hot ashes in which to roast our acorns. We had several of our specimens of our mud playthings lying about. One of the boys got angry and threw the half dried mud into the fire. The next day, in passing by there, we found, to our great surprise, that our mud man and various other things that the boy threw into the fire had changed in color and texture—now a light red and quite hard, so that when we threw it into the water it remained perfect. Imagine our surprise. What acquisition of knowledge gained by chance!—but we must give the credit to our old neighbors. Now we could imitate our Creator. We found that we could make all kinds of useful and ornamental things out of clay. And for durability we excelled. Our Creator had decreed that we should return to dust—and do we not? But that is not so with our creations, for we never have decreed that our creations should return to dust, and they never will (return to dust) if they are sufficiently burnt. Our Creator perfected his creation with air, but we perfected our creations with fire. We were getting along with our infant industry, turning out all kinds of durable wares. As we needed things we made them. We always have a good stock of free raw material—no duty to pay, no protection, every one happy, prosperous and contended. But this state of affairs could not always last. We had progressed to such an extent that we were haughty and independent. We had become a great multitude; had all come from the East and located on a plain in the land of Shiner. We said, one to another, "Go to, let us make brick and burn them thoroughly." "And we had brick for stone and slime had we for mortar, and we said let us build a great city and a tower whose top may reach to Heaven."

And the Creator came down to see the

city and the tower we had built. It appeared that He was greatly vexed, and said "the people are one, and they all have one language and nothing will be restrained from them which they have imagined to do." Mark the position. So He said, "Let us go down and confound their language," so we could not understand one another's speech. "So the Creator scattered us abroad from thence upon the face of all the earth." We were thoroughly familiar with the soil and the surface of the earth and its formation. We knew how to utilize it in many forms so as to make it useful to man. But our ideas of space above the earth were very limited; in fact, we had no knowledge at all of the immensity of space, but still our ideas of Heaven being above the earth probably were very natural, as there was unknown space to fix it in. Another thought, "And nothing will be restrained them which they imagined to do." It appears that it might have been possible, after all. That idea is conveyed, at least, in the language quoted above.

Any other manufacturing concern would have failed, and so would we but for one cause. That was free raw material, of which we had an abundance and to spare.

We might have survived the loss of our language; could have used a code of signals and completed our tower and city. We will have to leave this immense pile of brick and mortar—one of the most gigantic enterprises ever undertaken by man away back there on the plains in the land of Shiner. We finally take a good farewell and start for Egypt, as we have all been scattered. Arriving in Egypt we find that we are soon a prosperous and enterprising people again; we find plenty of raw material even in Egypt. We have built up quite an industry again, but our greatest demand was for earthenware. That is what we call it. We had convinced our patrons that hard burnt clay was more durable than wood for mummy cases, and we were doing a lucrative business in them alone. The most of the people were prosperous, contented and happy. A great nation had sprung into existence; had been invaded by foreigners, still contented and the most noted among the nations of the earth. Such was Egypt when we were in business there.

But one Moses, who was a native born, although a child of a foreigner, who was a fugitive from justice for many years, who had killed a man and hid him in the sand, had returned from his exile; had made a demand on the king which the king refused to grant. Moses demanded that all his kinsfolks, which was a nation of itself, should leave the country. This demand repeatedly made vexed the king, until he retaliated, and the most of the burden fell upon the brickmakers, as we were required to make the same amount of brick per day as formerly and gather stubble, instead of straw, which was formerly furnished us. This trouble between Moses and the king interested but a small per cent. of the common population. As the innocent always suffer with the guilty, so it was in this case. Moses and the king carried their controversy to such an extent that all the common people wished them in Halifax, but after so long a time the king agreed to let Moses and his people depart. Moses instructed his people to borrow of the Egyptians bracelets, ear-rings, breast pins and all valuable jewelry that they could get before they left the country. Oh, what a relief to each; their trouble was turned into joy. Some of us went and some stayed. Which fared the best is another question for debate.

Fellow-clayworkers, I have endeavored, as briefly as my limited knowledge would permit, to carry our minds back through the dark ages which we, with our craft, have passed, pointing out the princpial places where we have been engaged in our craft as clayworkers. Through the middle ages we have occupied the same position as in the past, but greatly enlarged. No longer an infant, but a monster with the same star of hope in sight. Busy all over the face of the earth, turning out the same useful utensils multiplied by thousands. But Europe and America have taken the lead—thousands of men, women and children employed turning out almost every conceivable thing for the comfort, concenience and welfare of man. Thousands of acres of sheds and buildings erected for the convenience and comfort of those employed is where we find ourselves at the commencement of the twentieth century. And the whole enlightened world must admit that the products of clay were the first, best, most durable, most useful, most intelligent of all things ever created by God or man. From this point let us look back through the great rallies of death and see the thousands and thousands of our brethren in craft strewn on every side of these great highways, who have done their duty as they saw it, but have returned to the dust as decreed by their Creator.

D. M. Duddlesten, Stewardson.

"Dust thou art,
And to dust shalt thou return."

Along these same great highways we find burnt clay—their products—strewn all over on either side. We find our creation, burnt clay, in good state of preservation, as perfect as when we created it. Clay it was, but to clay it will never return, as we decreed it never should.

Now, for the future. No man can predict, but with our improved machinery and improved kilns there is no reason why we should not hold the same position we have always occupied until the end of time, and when the final winding up of time comes, if, as predicted by fire, a great many of our wares will be greatly improved. (Applause.)

President Converse: This subject is now open for discussion.

Mr. Randall: There is an old-time member of this Association, who is absent to-day, who, if he were here, I know would like to talk on this subject. He is a good Sunday-chool scholar and qualified to talk on such subjects. I refer to our good friend, Mr. Eudaly. While the paper was being read I submitted this question to Mr. Elliott, "How did Adam and Eve feel when they were put out of the Garden of Eden?" and he said "They got fired and felt hot." That's a very good answer, but the right one is "They felt put out." Dr. Converse made a remark in his speech a while ago that called my attention to another ancient story when he said it was hard to keep a good man down. I wondered if he knew the answer to the conundrum, Why did the whale throw up Jonah? Jonah was not ready to di-gest yet. (Laughter.) I have reached my limit, but I know if Mr. Eudaly were here he could discuss this subject at length.

President Converse: The Secretary will please announce the next in order.

Secretary Stoll: The next is a paper entitled "Factory Leaks," by Mr. Duddleston. It seems that we are unfortunate in having men on our programme who are not able to be with us. Mr. Duddleston writes that he has recently bought out a pork-packing establishment and is busy with his work there and cannot get away, but he has sent his paper for me to read.

"FACTORY LEAKS."

By D. M. Duddlesten, Stewardson, Ill.

Gentlemen of the Convention:

If our Secretary would have taken no for an answer I would not have had to expose my ignorance just yet, but I had to write or hide. The subject assigned me is "Factory Leaks," which are almost too numerous to mention. However, I will try and mention a few that I have noticed in my experience.

The first leak I have noticed was in locating my factory too far from market. It has been said that "the man who is farthest from market is he that has nothing to sell," but with our yard full of tile sometimes we imagine we are like him with nothing to sell. However, it's getting better.

The next leak I shall notice is the selecting of a location of the clay bank away from railroad facilities. Another bad leak, we should get near a good railroad center if possible, and be sure we have the proper clay for the ware we propose to manufacture. Next is the selecting of machinery and setting of it in proper shape to avoid those leaks that are so often made in this way. Then comes the tempering of the clay, sometimes baffling the best of us. There was once a man who said he could graduate with honors, but he couldn't temper clay. Then we come to the cutting tables, where we have had more of them when not properly adjusted and of an inferior quality. To begin with, we should have the best, to avoid cutting ill-shaped ware, and in setting of brick or tile in the shed or dryer in a careless way; also in taking them from the shed to the kiln we have seen some bad leaks. Having rough floor or tracks to haul over is another. In setting brick in the kiln by crowding or setting too close, thereby not having enough room for heat. There should be room for the proper amount of heat, or here we will find another leak; also in firing—sometimes too much fire, others not enough. The same might be said of the draft—ofttimes not enough, other times too much. Here, we believe, there are large losses. When the kiln is thoroughly heated we should have very little draft to hold and save it. We might name many leaks, but one of the worst we know of is the cutting of prices. We know of three or four factories within a radius of a very few miles that have gone out of existence, we verily believe, from this cause, and have left nothing for memorial but a lot of bats, broken tile and excavations in the ground, where there should be a thriving business, carried on in the manufacturing of clay products.

I believe the last leak I shall speak of is in the selection of careless, indifferent men, who care only for noon, night and pay day. If possible, we should employ honest, careful men, who will take at least some interest in the welfare of our business, thereby stopping many leaks that the other fellows let go. It does appear to me, with the great improvement of clayworking machinery, kilns, dryers, etc., we should be able to stop many of these leaks, and many more that have not been mentioned. Allow me to say right here that I think manufacturers of clayworking machinery deserve great credit for the untiring interest they have taken in the improvement and manufacturing of this class of machinery. Perhaps some one may say we all knew that, but is it not a fact that we all know better than we do? I think, with the flattering prospect of a great demand for our products in the near future, we should take courage, stop the leaks and go right on, for nothing succeeds like success. (Applause.)

President Converse: I know of no place where leaks can occur that will be more serious to many factories than that of bad bookkeeping, so bad that they do not know where they are at. (Laughter.)

Secretary Stoll: There is one point in this paper that is open to discussion. He says, "when the kiln is thoroughly heated, we should have very little draft, to save and hold it."

Mr. Holman: I think there is a difference of opinion and a difference in kilns. In burning down-draft kilns I have been in the habit, as soon as we get the heat down to the bottom, of shutting off the dampers and burning with a half draft. That holds the heat in the furnace, and sometimes melts the brick, especially if the burners have fired strong. In the last few years I have given it a strong draft and burned with less fuel per thousand brick, and got better bottoms than when shutting off the dampers. I set thirty-eight and forty high. This year we have burned with the dampers wide open and finished that way. We have been using the same kilns, and I have not found out why we got these results.

Mr. Mamer: I say Mr. Holman is right.

Mr. Fargo: It is a new idea to me. I have always cut my draft when we have got heat to the bottom. I always supposed it would be a waste of heat and fuel not to.

Mr. W. S. Purington: It depends in part on the clay. When you take clay like Chicago clay, it practically burns itself. There is enough vegetable matter in it to burn it. With the Galesburg shale we cut our draft down when we get the heat to the bottom. There are a good many mistakes made by cutting the draft too soon. We cut our draft when we get the bottom hot.

Mr. Holman: The brick are hard to settle. A thirty-eight kiln settles about nine inches. I always closed the draft when the heat got to the bottom. My chimneys are in the kilns, two at either side of the kiln, and my burners would try it without my knowledge, and they argued with me, and finally, by testing and trying it, they have convinced me, and it figures up less coal per thousand brick, and I have had good burns all summer and have made more money.

Mr. Swift: That will do whenever there is plenty of vegetation in the clay, and that is the only way to do when there is vegetation in the clay; but my experience is that when you have clay that has not vegetation you have got to check the draft or you do not get good, hard brick in the bottom.

Mr. Walters: My clay has no vegetation, or at least not very much, but I have burned a million of brick this past season, and I have burned them all with the draft wide open. I have not shut off the draft on any kiln, except a kiln that burns large tile, and occasionally, when we get that kiln redhot on the bottom, we shut off the draft on that kiln; but none of the brick were burned without the draft being the same as when we started.

Mr. Hammerschmidt: My twenty-five years' experience has been just as Mr. Purington and Mr. Swift say. I always check the draft. As soon as we get heat to the bottom we shut off the draft, and we get good results that way.

D. J. Christopher, Chicago.

President Converse: The next topic for consideration is "Brick Testing," by D. J. Christopher, Chicago.

Secretary Stoll: Mr. Christopher was also unable to attend the Convention, but he has sent his paper to be read for him.

BRICK TESTING.

D. J. Christopher, Official Brick Tester, Chicago, Ill.

Mr. President and Gentlemen of the Convention:

The objective points most essential or sought after in conducting or making brick tests are those which will give us the best wearing brick of a given clay, as well as a method which will show to the purchaser the best brick in a competitive test, and, in my opinion, the following are the most practical tests at present, in the order as hereinafter named: Abrasion, absorption and specific gravity.

In making the abrasion, or "Rattler," test care should be taken to use a method which will discriminate between hard, medium and soft brick, showing their true and relative standing, as well as their toughness.

—Absorption.—

The absorption test, I believe, is a very essential test to the purchaser of brick, as well as to each individual maker or manufacturer of same, as it shows a difference between a well burned brick and one not so well burned, or, in other words, it will show the different stages of vitrification.

—Specific Gravity.—

I find that the more dense and the better vitrified a brick is the better the specific gravity, as well as to show the heaviest brick or material which composes the brick.

I have seen brick or clay which showed a very good specific gravity and yet they were very poor brick, the fault being that the maker did not know how to treat his clay or burn his brick.

I would advise that the present National Brick Manufacturers' Association's standard rattler and method be used in making the abrasion tests. I would also advise the absorption and specific gravity tests, but shall not state what I think the loss or gain of any of the above tests should be, as I think that is a matter which should be left open for discussion by and before the convention.

Having made about 2,000 tests in the past two years, the same bringing me in contact with most of the paving brick plants of the country, I feel safe to say that there should be a general standard of tests, the same to be as high as possible. The aim should be good brick, instead of cheap and poor brick, as I believe that by using none but the best brick for paving purposes it will only be a matter of a few years before brick will have become the most popular paving material. (Applause.)

President Converse: Like all the other topics, this one is now open to discussion. I would like to hear from Mr. Purington on this subject.

Mr. Purington: I think Mr. Christopher has covered the ground pretty thoroughly. He has left little or nothing to say.

President Converse: We will pass on to the next number on the programme.

PIECEWORK.

By J. P. Fargo, Streator, Ill.

This important subject has many sides. Too many, I fear, for a man with the limited knowledge that I possess of the art of making brick under such conditions, to do it justice, and I do not write this thinking that my suggestions will add anything to the common stock of knowledge on the subject matter, but because it is the price I must pay for the privilege of attending this meeting, for our Secretary does not know the meaning of the sentence "I will not." What little experience I have had leads me to believe that a factory properly arranged can make more ware with fewer men, consequently less money, if the work is done by contract, or piecework, than if done by day labor. I have found that more men can work in a small kiln and not be in each others way when working by the piece. They are much more willing to work in a hot kiln and are able to handle much hotter brick, if you are in a rush for them, if they are getting a price by the thousand. As a rule, if they are working a certain number of hours for a given price the average man will handle just as few brick as he can and hold his job. There are exceptions to this rule. However, I think few yards are equipped with the exceptions. There is no place or kind of work that I know of where men can beat the foreman as badly as they can discharging kilns. If there is a laggard in the gang you will usually find him at the head. He will work while the boss is watching him, but as soon as his back is turned he will loosen up on the governor and the whole force will slow up, if not come to a complete standstill, for the balance of the gang feel (with some justice, I think) that he is getting just as much wages as they are and they will not do any more work than he does.

I hear some one say, "Why not discharge such a man?" Very well, but you may get a worse one in his place, or not be able to get any at all, and in the meantime your work is not being done. But if they are working by the piece this difficulty quickly adjusts itself, for if there is a man in the gang who is not disposed to do his work he will have to get down and out, for every man in that gang is a foreman.

There is another point in the day labor that I want to mention, namely, paying all men alike. You can go among any set of workmen and you will find two men working at the same kind of work, and that from natural or physical ability one of them is able to do, and is actually doing, more work for the same money than his weaker brother. Now, the weaker man may be just as willing and is trying just as hard as the other, but he is not earning as much for his employer. Should he be paid as much? I think not. Still we do not like to discharge him, when we know he is doing his best. Will not contract or piecework remedy this? I think in a great measure it will.

Some one will say that you cannot get your ware handled by contract with proper care, and that the loss will be greater from breakage. I do not think so. If the men understand that they will be called to account for unnecessary breakage, I think they will do their work just as carefully as when performed under the day system.

But to accomplish the most efficient and economical results of work under the piecework plan a factory should be properly arranged so as to give every man an equal opportunity. To have an abundance of power—a little surplus will not do any harm. Good, up-to-date and well-cared-for machinery, with plenty of kiln room and kilns of uniform size, placed at as near an equal distance from machine as possible, are prime requisites. Machine and kiln floors and yard should always be on a level with car floor, for I have found by experience that we can wheel brick much cheaper down hill than we can up.

When we are able to comply with these requirements and can get a scale of wages satisfactory to both parties, I venture to say that we shall be able to secure a better satisfied and more intelligent class of help, that the output will be enlarged and that at the end of the year a factory so run will have made a better showing than under the plan of day labor. (Applause.)

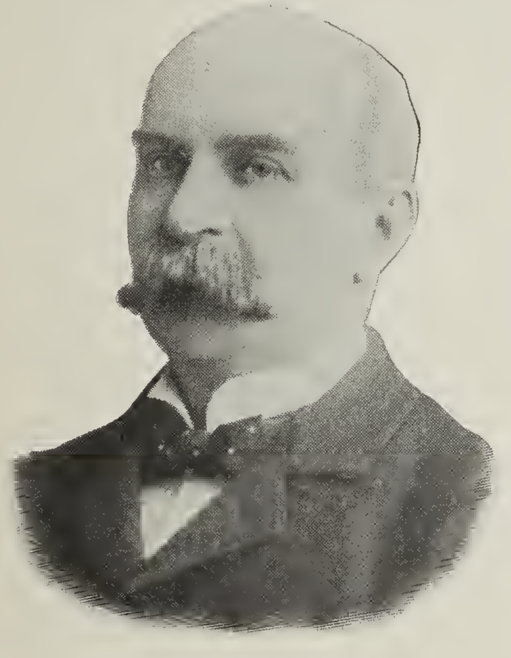
President Converse: I am going to ask Mr. Holman to open the discussion on this subject.

Mr. Holman: I certainly advocate piece-work on the yard as far as it can be carried successfully. I think it stimulates the men, gives better satisfaction to the management, and goes a long ways toward quieting the talk of shorter hours and labor troubles. We have only adopted it in setting brick and loading them and feeding the dry pans. I have set and loaded by the thousand for a number of years, the average cost being 48 cents; when we paid by the day it cost more than 50 cents to set the brick. During the hard times I cut to 40 cents, and I now pay 38 cents. They all seem to want to put in a full day's time at that price, which is below my old price. The men make all the way from $2.50 to $4 a day setting brick in the kiln. We are running now about 40,000 a day, and six men take the brick from the machine. My average for the summer was 42,000, and six men took the brick away and averaged $3 per day, and sometimes they came back after supper and put in more brick. We run six men loading in the cars. They make good wages, running from $3.50 to $4 a day. Our regular wages for the men has been $1.75 to $2 for common labor.

Mr. Barr: What is the size of your brick?

Mr. Holman: They weigh 4¾ pounds. We cut them 8½ inches long on a Chambers machine. They are 4 wide by 2¼ thick.

Mr. Turner, Portsmouth, O.: We have been working on piece-work at our fire brick department for twenty years, and when we started in making paving brick in 1894 we found it worked very well, except in the burning of the brick. I tried it in burning brick last season, and there was a continual squabble when it came to the sorting. We were only paying for No. 1, and they would claim all the time that we were culling too closely, but for everything else about the yard we pay by the piece, and in my opinion that is the only way to work men.



M. L. Emerich, Chicago.

Mr. Sutton: I would like to ask Mr. Holman about his arrangement for drying in working six men taking away the brick from the machine.

Mr. Holman: We dry on pallet racks. We have a drying capacity for 280,000 brick.

Mr. Barr: We set all our brick and load them by piece-work. It is much more satisfactory than when we paid by the day, and the men are better satisfied and we get more work done.

Secretary Stoll: Could you dig your clay by the thousand just as well?

Mr. Barr: I tried to get our men in the pit to work by the thousand, but the conditions are such that we cannot do it very satisfactorily. There cames a little bad weather, our output is cut down, and in hot weather the men cannot do so much work.

Mr. Purington: I want to tell a little story on Mr. Barr. I always argued in favor of piece-work and he argued in favor of day-work. We also had some discussion in regard to wheelbarrow wheels. He had a certain make that he thought very fine, and he suggested I get some, and I did so, and I found they did not have the strength necessary. About that time Mr. Barr wrote me that he had just made arrangements to wheel his brick by the thousand, and would like to know where we got our wheelbarrow wheels, as those he had been using were all right for day-work, but when it came to piece-work they were no good. (Laughter.)

President Converse: I think all the brick in Springfield are made by the piece, practically as Mr. Barr makes his. The next number on the programme is a paper, "Tile Draining," by Mr. G. W. Songer. Mr. Songer is not present, nor has he sent a paper. This closes the programme for the afternoon. What is your pleasure, gentlemen? It is still early, and shall we take up some of the papers on to-morrow's programme?

Mr. Purington: I move we continue in session and take up some of the papers on the programme for to-morrow morning.

President Converse: We will take this by consent.

Secretary Stoll: Mr. Rogers is not ready with his paper, and the next is "Avoid Strikes—How?" by Mr. M. L. Emerich, of Chicago. Mr. Emerich is not here, but he has sent a paper, and I am going to ask Mr. Randall to read it for us.

AVOID STRIKES—HOW?

By M. L. Emerich, Chicago, Ill.

Mr. President and Gentlemen:

To thoroughly treat this much-mooted subject, which I cannot hope to do within the limited compass of this paper, it becomes, first, necessary to inquire into the basic cause of strikes.

On the occasion of any labor strike various and numerous reasons are usually assigned, and these reasons, when the strike is of any importance, are largely discussed by those who merely regard superficially and who do not concern themselves with the underlying causes of things.

What, then, is the fundamental reason of strikes?

Shorter hours? No, that is merely a transitious manifestation; a question that must ultimately be settled, but which, when settled, will not prevent strikes. They will go on just the same, unless the deeper and more potent cause for them be eradicated.

Better pay? Another temporary dispute, which is invariably settled after a time, as, in the long run, the question of wage adapts itself to the universal economic law of supply and demand, and if all that labor reasonably required in this respect was granted, strikes would not be measurably abated.

Labor unions, sympathetic strikes and others for similar causes? Not precisely. There were labor strikes before there were labor unions, and there would be strikes to-day even if there were no labor unions. However, the strikes at the instigation of labor unions and the sympathetic strike have their immediate cause in a close relation to the basic cause of all strikes than either the wage strike or the time strike.

What, then, is the great reason for all

strikes? This momentus question can be answered in these words: Lack of confidence.

The absence of that confidence in the employer that should exist among the employed, and the lack of that confidence in his employes that should dominate the mind of the employer, are the fundamental causes of all disagreements between them.

Absolute confidence between the employer and the employed is the ideal industrial condition, and until that condition is attained I fear that labor strikes will never be entirely obviated, but as that condition is approached the number and magnitude of strikes will correspondingly decrease.

I am not referring to strikes in the brick trade, but to strikes generally.

In every strike, like in every quarrel, there are usually two sides, but the parties rarely see beyond their own side of the dispute. What is the reason for this limited horizon?

Personal selfishness, of course. Men are all more or less selfish, and this selfishness is the leading human motive, but back of all this is again that lack of confidence which should exist between employer and employed.

In whom lies the fault? Naturally with both employer and employe. Neither take the initiative in the promotion of that harmony that should exist between them. Both are distrustful. Both maintain a position approximating armed resistance toward each other.

But the ideal condition can be brought about, or, at least, closely approximated.

I will venture the assertion that if all the manufacturers present were thoroughly assured that those whom they employ were actuated by fair and considerate motives in their dealings, when vexed subjects were under discussion, that you, the employers, would abandon largely that mental attitude in which animus toward your opponents is the controlling factor.

If this be the case, then, it is not unreasonable to presume that the employed, under like conditions, would experience similar feelings.

If both were persuaded, had confidence in the fairness and consideration of the other, would not dispute be entirely avoided?

The affirmative answer is obvious.

If this reasoning, then, be correct, and the spirit of confidence and consideration be the thing essential to the averting of labor strikes, how can this long-hoped-for condition be brought about?

The solution that I offer to the problem is this:

Since it is probable that one set of men will more or less rapidly appreciate the mental attitude of another, with whom they are in direct contact, it is to be assumed that if either the employer or the employed assume the proper position that the other will recognize it and occupy a reciprocal stand.

From whom, then, should the initiative come?

The answer to this seems plain to me. While the men are of the unreasonable, the employer is equally so, and the employer is more capable, inasmuch as he is the party of the better trained and more highly developed intellect.

From the man, then, of superior intelligence let proceed the first move toward the attainment of this desired condition. Believe me, the men will respond. Humanity has quick perception, keen intuition and unfailing instinct.

Your attitude will be appreciated and you will be rewarded by your men assuming a corresponding position. Dispute and bickering will be avoided. Your relations with your men will be pleasanter. There will be less friction in your business, and, in the end, your books will show greater actual profit, besides your being relieved of the strain, mental and physical, which constantly impending trouble carries in its train.

I have superintended a plant for six years, and have endeavored, to the best of my ability, to carry out the ideas that I have here advanced, with the result that my concern's relations with its men have been invariably pleasant. We have never had a strike or any semblance of labor trouble, and I believe that the result has been in every way an advantage to our business.

If this should succeed in one case there is no reason why it should not in another, and I confidently commend the plan as one that has been tested and has succeeded. (Applause.)

President Converse: I will ask Mr. Ridgley to lead in the discussion of this important subject. He has had a large experience in this direction.

Mr. Ridgley: This is rather a dangerous subject to talk upon. There is so much to be said about it. You get a man started talking about this and it is almost necessary to make him stop. I have been dealing with trade unions myself for almost thirty years in other lines than the brick trade. I do not believe that the doctrine laid down in that paper is sound. I do not believe that the cause of all strikes is a lack of confidence. A great many strikes are caused in the brick business because the men feel when the brick are sold they are not getting a fair profit. One of the queerest experiences I ever had was in a conference in which the railway men were interested. There were half a dozen men representing the employers and half a dozen representing the men, and they were seated on each side of the table. At one of the works there had been the pleasantest relations possible between the men and the company. At one of the others there had been perpetual hostility. One of the superintendents who represented the company there treated the men as though it was his duty to stand up and talk as loud and swear as fast at the men as possible, and the men could swear just as hard at him. The man who sat next to me pursued a different policy, and when he looked across at his men and asked them a question, it was "Yes, Mr. Potter." The men treated Mr. Potter with the greatest consideration, and Mr. Potter treated them with consideration, but they were all bound up in the union system, and they had just as hard a strike in one works as in the other. It is the difference in the benefits, the division of the money. It goes a great ways to have the confidence of your men; it answers a very excellent purpose. At one iron works in which I was interested we almost eliminated strikes of one kind by providing that when a man was ill he should have half pay, and when he was able to return to work he should be given something to do at which he could work, and it was expected by the men that when a man was hurt in the employ of the company, the company should pay all doctors' bills and give the man half pay, and then he be given such work as he was able to do when he returned to work; so there was never anything coming in the way of suits for damages.

Chas. Ridgley, Springfield.

I do not believe any amount of confidence will ever have the effect of stopping strikes. We had strikes before there were unions. Every man knows when he imposes on his men, and he ought to hear from them when he does. It is not every strike that is wrong; some of them are right. The strikes that we are having in the brick business are aggravating at the present time, because the men do pretty much as they please. Every little body of men, so far as my experience goes in the brick business, is organized on its own hook. A man came into my office recently and said: "Mr. Ridgley, I used to work for you at the iron works, and now I work at one of your brickyards, and I have earned some money, and pay day has not come, and I cannot get it, and I thought maybe you could give it to me." And I said, "How much is coming to you?" He said, "Three dollars." I said, "Can't you get along without that $3 until Monday morning?" He said, "We haven't anything to eat in the house and no fuel." I asked him if his credit wasn't good at the store, and he said it was not, so I gave him the $3. The very next week that man stood at the head of a committee and stopped the work on the brickyard. The poor, miserable scamp, he could hardly write his name, yet would come and beg for money to keep his family from starving, and then act like that. It is the irresponsible men that cause most of the trouble.

In the discovery of electricity we were amazed. We knew there had been wonderful progress made in the science of electricity, and we were looking for something else, but we were not looking for what did come, and it came like a stroke of lightning out of a clear sky. It was the utterly unexpected that happened. Just exactly in that same way, it appears to me, was the organization of this immense steel trust. We all looked at it with a great deal of interest and curiosity, and hardly knew what to think about it, and when this larger trust came to put all these corporations into one still more enormous, I said that looks a little dangerous, and the next thing these amalgamated men and steel workers tackled that big trust, and we know they got the worst of it, and the next thing we hear of is that the Amalgamated Association has got the co-operation of the Miners' Union and the Federation of Labor and all the miners' organizations, and they are meeting the representatives of the steel trust, with Mark Hanna, who represents something else, people in the coal trusts and all sorts of trusts, to see if some way cannot be found by which they can get along in peace. Gentlemen, mutual respect and holy terror is a very good thing to have when you want to have peace with your men. That is the kind of confidence that will keep peace.

I like the kind of peace our President asked for. I am a great admirer of Teddy Roosevelt. I recently read in one of his books where he said: "The United States wants peace above all things, but the kind of peace we want is the peace of the strong man armed." That is the kind of peace to have, and that is the only kind of peace you are going to get with your men. Men should have fair treatment, and the employers should have fair treatment also. In that way each will have a wholesome respect one for the other. Let us have that kind of peace that Mr. Roosevelt asked for, "the peace of the strong-armed man." The peace of the man that will do justice, the peace of the man that will have justice. You can arrange with your men as to wages and hours and all that sort of thing, but what are you going to do when a strike can be caused by a question as to who shall drive the blind mule and who the gray horse? I was up in a lodge room of a union not long ago, and this was the motto over the door, "You grab for me, and I will grap for you, and we will all grab together," and that is the way it is getting in the coal trade. I hope some of you are in the coal trade and will bear witness with me. I have been in the coal trade for a long time, and now Dr. Converse is just getting into it. We say to the miners, "We will put up the prices, and we will get enough out of it for ourselves and enough for you, and the public be damned," and this is the way it will be in the brick business if the unions keep on. It is a question of fair dealing, and, to quote Mr. Roosevelt again, "Speak softly, but carry a big stick."

Mr. McHose: I do not feel that I can add anything to the value of the question under discussion. The question has so many phases that it is absolutely impossible for any one man to propose a code of rules that will solve it. I cannot help but say that I must express my contempt for any man who will write a paper that will lay a cut and dried rule for a question that has agitated and always will agitate the labor world. I think Mr. Ridgley has treated the question fully and completely. There must be justice, but there must be firmness as well. The question seems to be whether labor shall labor or not, rather than the price of labor. In our large cities it is a question whether a man shall earn his bread by day or night, unless he joins a union, the most un-American thing that we can think of. As Mr. Ridgley has said, it is a question whether the great corporation referred to shall solve the problem. I hope something will be done, but my faith is small.

President Converse: Gentlemen, there are two or three good topics on the programme for to-morrow morning, and it will not take us long to get through with them, so I think it as well not to take up any more of them this afternoon. To-night at 7:30 the annual dinner of the Association will take place at the Union Hotel. Arrangements have been made to have a late supper served, after the style of a banquet. We will have a number of toasts and a good time socially. I hope every member of the Association will be present. I trust tomorrow there will be more animation in the discussions than there has been this afternoon. I remember having read once about an individual who was unfortunate enough to have lost his life. A number of his friends got together for the purpose of paying their respects to the deceased. But no one seemed prepared for the obsequies, and finally it was suggested by one of them that a few remarks would be proper, and one man got up and said: "I do not know that I can make any remarks on this subject, but I might say something on the tariff." Some of you might have done that. (Laughter.)

On motion of Mr. Townsley, the Convention adjourned until 9:30 Wednesday morning.

THIRD SESSION.

Wednesday Morning, Jan. 8, 1902.

President Converse: Gentlemen, you will please come to order. The first number on the programme this morning is a paper,

Treasurer Wm. Hammerschmidt, Lombard.

THE SUPERINTENDENT.

By Eben Rogers, Alton, Ill.

Mr. President and Gentlemen of the Convention:

The success or failure of a brick plant depends in a great measure upon the selection of the general superintendent. He is virtually the hub of the wheel of the business, and too much care cannot be taken in testing the qualities of this hub before placing the spokes therein. Perfect spokes in a poor hub will not make a rigid wheel. A vehicle with uncertain wheels will not stand the strain of competition. Therefore, it is advisable to look well into the make-up of the hub of your industry before you invest too much in the other parts. Be sure that it is not cracked. Your spokes of men, material and appliances may be of the best but the product of the wheel all depends upon the rigidness and accuracy with which the hub holds these spokes. The tire of finances may be strong and new ones may be easily procured, but they will all be of no avail if the hub is weak. Many interesting papers have been written upon the duties of the superintendent, and it might be of some interest to enter into a brief discussion of the personal characteristics of this man upon whom so much responsibility centers. In the first place, he must be a progressive man, ever on the lookout for new and better methods of handling his business. He must be able to quickly distinguish between new ideas that are practically practical and those that are theoretically practical. Many plants have been ruined by over conservativeness or old fogyism, and many have been ruined by attempting to work out a beautiful theory that was far beyond and above the theorist himself. The most successful man will be found working in the happy medium with a keen eye out to benefit by the mistakes of his more unfortunate brothers. He must be, in a sense, a leader of men—that is, he must be sympathetic and easily approached. He must have the confidence and good-will of the men under him without becoming too familiar with them. He must know his business thoroughly in every detail, and he must prove to the men that he has this knowledge by giving them the benefit of it, without fearing that they will come to know more than he does. He must be ever ready to learn by working out new experiments with his men. When a man assumes the position that he knows all there is to know and is afraid to part with his knowledge, fearing some one else may become equally efficient with him, the time is probably near when he will find that the very man from whom he has withheld information on certain details has worked out a plan for himself that is more practical than the one so carefully guarded. This is liable to cause friction, whereas if they had worked in harmony the same idea would probably have been developed and passed to the credit of the superintendent with all parties satisfied. He must have energy in abundance and he must display it in the same abundance with which he has it. Nothing is so contagious as energy, unless it is the lack of energy. The spirit of energy with which a superintendent addresses his men and goes about his work will govern the spirit of energy with which they do the work. He, of all the men, must keep up the push, whether he feels it or not, as nothing spreads so rapidly among men as the display of that tired feeling in their labor. He must be thorough in everything. This is equally as valuable as energy. Much time has been lost and many items have been added to the expense account by letting jobs go that just lacked a little of being permanently finished. He must be system itself. The day of guessing is passed. He must know by system what each department and what each man in that department is doing day by day. The amount of time he has to sit down each day and revel in his own thoughts depends upon the amount of system he employs. If he employs a perfect system he will know exactly where to locate all difficulties and can speedily apply the remedy. If he has no system he will spend most of his time trying to locate difficulties, and many will occur that he will know nothing about until it is almost too late to apply the remedy. If the men know that system is employed to keep track of the amount and quality of the work they perform, they will begin to employ system to increase the amount and improve the quality of their work. The fact that their doings are brought to the notice of the superintendent daily is sufficient incentive for them to do their best, for they know that when men are wanted for better positions their record will stand for or against their procuring these positions. On the other hand, if there is no system of checking the amount of work done the men will soon become careless and their ambition will be to do as little as possible and put in full time. In other words, they will become variable speed men. Speed regulated by the presence or absence of the boss. He must be a man of even temper—at least outwardly. If he is subject to storms of passion he must let them spend their force within himself, for many mistakes have been made in fits of anger that have taken a lifetime or more to remedy. He must be temperate and regular in his habits, as this is the only way he can have a clear brain for ten hours' daily work and a clear, active brain is a necessity in a good brickyard superintendent.

Last, but not least, he must be free from worry. Worry is the fire that will eat up all his good qualities and replace them with nothing but bad ones. If he finds it necessary to worry he had better place the yard in charge of the man next in command and take a vacation where he can spend the fruits of worry on himself, thus preventing the pest from spreading any further. In general, the best superintendents are those that have spent some years of work and study in the business they are following and have occupied a number of the positions they are superintending. The fact that they have worked up to their present position is sufficient proof that they are progressive, thorough, energetic, industrious and practical. The school of actual experience in working up is of invaluable assistance to him. He gains a knowledge of the details of the business, the handling of the machinery and the peculiarities of the clays, both in making and in burning, that he can gain in no other way. He also has an advantage in handling his men, as he knows the amount of work to be expected from each man, having occupied most of the positions himself. The importance of this position is more often underestimated than otherwise, and upon investigation of the numerous failures in the brick business the cause will be generally found in the improper selection of the hub. There are several brands of hubs on the market, all represented to be first-class for any service, but in buying it will always be well to look carefully for cracks. (Applause.)

President Converse: No one seems disposed to discuss the paper, which is a compliment to Mr. Rogers. They evidently think his paper has exhausted the subject. The next number is a paper on

BRICK INSPECTION.

By Chas. Ridgley, Springfield, Ill.

Mr. President and Gentlemen of the Convention:

It goes without saying that if the use of brick for paving purposes is to continue and endure in competition with asphalt and all of the other materials used for the same purpose, the brick must be in all respects of the best quality that can be made. The material must be of the best. It must be uniform, whether made so by nature or by mixture. It must be ground and molded, dried and burned, in the best possible manner, and before being laid in the street the brick must be carefully sorted and tested. The effort should be to make every brick that goes into the street a good one. To do this will require the utmost care and attention at every stage of the process, and the brickmaker will find his interest in a constant and earnest effort to accomplish this, just as the purchaser will constantly scrutinize his ware as it behaves under the conditions of actual service and demand that it shall be made to meet the duty that is required of it.

There has already been a large amount of time and patient endeavor expended by engineers, and by students and brickmakers, in the effort to determine the criterion by which good paving brick may be judged. It is not necessary for me to recapitulate these, nor to discuss the propriety of the conclusions so far reached, but I wish to say that I think that all of the discussions and investigations and experiments have been in the right direction and that we may thank the parties who have conducted them for the facts which they have established and the service which they have done towards making the manufacture of brick a scientific and an accurate process. It is this—and this only—that will enable the business to endure. Assuming, then, that the engineers of both manufacturers and consumers have agreed upon the qualities that are needed to make satisfactory brick, it is evident that some mode of procedure must be adopted by which it can be determined whether any given sample will meet the requirements. The manufacturers must satisfy themselves on this point, and they must satisfy their customers as well, and then both parties must make sure that in a given lot of brick, all of which are made from the same material and by the same process, the sorting has been so done as to guarantee that all have been properly burned, so as to make them fully fit for the service to be required of them.

To do all this will require a careful, skillful and honest inspection. As it is now, in almost every contract specifications are embodied which are intended to secure the service qualities that are desired. It is hardly possible for the officials of all cities and towns, big and little, to be sufficiently expert to decide upon the best specifications to adopt when there are so many to choose from, and when the city officials and the specifications are both being constantly changed, and while the selection of brick, if not a new duty, is, at any rate, only an occasional one to the officials. And if the right specifications are adopted it is even harder for the average city official to judge as to whether the brick fully come up to them. The average mayor or alderman or member of a board of public works holds office for only a limited time. He is not chosen because of his fitness for such duty. The city engineer is, of course, more at home in it, but his hands are always so full that he cannot give it his personal attention, so it goes to his assistants, who are often not of his own choosing, nor are they fitted for the work by any previous experience or training. The great need in this matter seems to be competent expert inspection. This cannot be done except by persons who have made brickmaking a study and who have had experience enough to know good brick from bad under varying conditions, and who also know how to apply the necessary tests and to interpret them when made. An inspection by experts may be more severe at times than one by those who are inexperienced, but it should be more uniform, and, as it would be likely to secure a better article for the purchaser in the long run, it should be for the good of the trade; and the brickmaker, knowing what to expect, would soon find a way to make his wares so that they would not be rejected, and his results would be more satisfactory. Every maker of paving brick should have at his works all of the appliances needed for making complete tests of his brick, and, if the tests of them are made by experts who make a specialty of that kind of work, these men will soon become perfectly familiar with all of the characteristics of not only his wares, but of all of the others to be found in his competitive district. They will know his material and its good and bad qualities. They will know how it should be handled in order to make the best product, and their observations will go not only to the brick as ready for shipment, but will extend to every step in the process, from the quarrying of the shale and the clay to the burning and cooling of the brick and bringing them to be sorted. And they will know what objectionable features they may find it necessary to disregard in order to secure some good points that will more than counterbalance them. In no mechanical process of which I have any knowledge is it possible to make all of the product precisely alike, or so that every piece of it will comply exactly with the specifications. In the manufacture of iron and steel hardly any two bars are of precisely the same size; the wear of the grooves in the rolls that give them shape, the difference in the heat at which they are finished, and many other causes, make them vary. So in rolling plates. The spring of the rolls, especially if the rolls be long ones and the plate, in consequence, very wide, will make the plates sensibly thicker in the middle than on the edges. Persons who are familiar with these articles, expect this, and know just how far it may go without giving ground for complaint. This is true of brick, as we all know. The sizes will vary from the wear of the dies through which they pass, from a variation in the material or from the way in which they are burned. The brick may be cut a little out of square, or chipped as they pass through the cutter or in handling in the dry house or elsewhere. Your competent inspector will know just what store to set by these variations from absolute perfection, and he will not inflict needless loss on the manufacturer by higgling over slight defects, while at the same time he will mercilessly reject everything that will in any material way go to detract from the real value of the pavement when completed. An inspection of the kind herein outlined could be made best of all at the makers' works. It would be better for the purchaser that it should be so made, for the reason that, first of all, it will be made by a specialist who will not only be a judge of the finished brick, but of the materials and their mixture, of which good brick are composed and of the processes which go to make good work. Being on the ground, all of these items would be under the observation of the inspector, and the securing of better brick would result.

It would be better for the manufacturer, also, for the reason that, having to deal with inspectors of the same sort, it would soon be easy to determine just what would pass the inspection and what would not. The allowable variations from absolute perfection, as set forth in the specifications, would soon come to be well understood, and, perhaps better than all, the final sorting being done at his works, he would be relieved from the irritation and the loss caused by the inspection away from home, with the constant and ever changing requirement that his goods must be made to suit the ideas of people whom he has never seen and with whose judgment he finds himself unable to coincide. Every maker offering brick has had more or less of his brick rejected, not only after they have been shipped away at a considerable cost for freight, but also after they have been hauled onto the street where they were expected to be laid. By the time that the brick are removed from the street and disposd of, the maker is a lucky man if he gets 50 per cent. of the price for which they were sold. And this is likely to happen to any works, and at any time. The manager of a going brick works finds so many things to engage his attention that, try as he will, he cannot always have his brick sorted as he would do it himself. And it is impossible at times to prevent the loading of some that he would have rejected had he seen them. The proper way is for both parties to leave this sorting and inspecting to specialists, to have it done at makers' works and to abide by the inspection. It need not be feared that the inspectors will not do their duty. The same plans have been in use for years by the railroads and the car builders in the purchase of rails and splice bars and other track fixtures; also in bar iron and bar steel and stuff for bridges and structures of all kinds, and I have yet to learn of a single instance where any purchaser has gone back on the work of an inspector, or where any of the material has failed from any fault which could be attributed to a faulty inspection.

The men who would be sent to inspect brick would naturally have more or less of education and experience as engineers, and it would be strange indeed if they did not sooner or later become very close judges of the article, and if the average quality was not raised by their careful and intelligent selection. The price, also, could be lowered by the saving that would ensue, and the lack of risk, if all of the culls were left at home, where no expense would be put upon them and where they could be utilized to the best advantage.

It ought to be possible for the members of this association, by united action, to get this matter of inspection at makers' works adopted by the would-be purchasers, and provided for in the terms of every contract, and the subject is hereby presented in the hope that the necessary steps will be taken to secure that end. (Applause.)

Mr. Ridgley: I want to add a word verbally. This paper was written hastily, and I have found it hard to keep down to reasonable limit. I have the utmost faith in this system of inspection. There are firms already organized, as most of us know, for this very purpose of inspecting materials of every kind, so that people who are buying them know they have received value for their money. I have a great deal of faith in the concern that is doing this in the brick business. They have been doing this sort of work for years, and have done it without any sort of criticism. They have established a reputation for competency and for honesty. They have inspected millions of dollars' worth of rails, boiler plates and structural steel for buildings. I am alluding to the firm of Robert W. Hunt & Co., of Chicago. Captain Hunt promised me to come over here and make such a statement in regard to the methods they employ, and to the manner of proceeding as might be of interest to our members, but he was called to Cleveland by some important business, but he said he would send a member of his staff. I have a telegram from the latter gentleman, saying he will be here at noon, but that will not do us much good. In the manufacture of railway material, specifications are laid down that the material shall be so and so, subject to Hunt's inspection. I think it would be of the highest value to us, and the purchasers get a better article and better satisfaction all around if we could get our contracts made in that way. I am not an advocate of Hunt particularly, but I would like to see this method adopted if possible. Think this matter over. There are a half dozen or more paving brick manufacturers represented here to-day, and it seems to me as though we are hardly strong enough to start it for ourselves to-day, and still I would like to have this matter thoroughly discussed and well understood by our own people, and then get the united action of this body and urge the National Association to bear this in mind in all of the investigations they are making to determine what the test of brick shall be, and when they come to an agreement with the city and municipal engineers about the tests, to agree too, with these municipal engineers to put this clause in all the contracts. I think the National Association, if it will take hold of this thing in earnest, can accomplish that. I have a resolution I want to offer and ask for its adoption:

"*Resolved*, That, in the judgment of the members of the Illinois Clayworkers' Association, the interests of both manufacturers and users of paving brick would be promoted by the inspection of same by competent and disinterested experts, and this to be done in all cases at maker's works.

"*Resolved*, That the officers of this Association be requested to present this matter to the National Association, now soon to convene, and endeavor through them to have it understood with the Society of Municipal Engineers, or to have it otherwise arranged so that all future contracts for paving brick shall provide for such inspection."

C. G. Elliott, C. E., Indianapolis, Ind.

President Converse: This motion, which has been seconded, is now open for discussion. I would like to hear from Mr. Barr.

Mr. Barr: I do not know that I have anything to say that would give any information. I am heartily in sympathy with the resolution. I think it would be a good thing, and hope it will be carried through. I am inclined to think that the work will have to be done more largely with the engineers than with the manufacturers. I think the manufacturers of paving brick would generally agree that this is the thing to do. It seems to me that the engineers of the country are the ones with whom the work has got to be done to carry this plan into execution.

President Converse: If the Association will bear with the chair, I would like to make a few remarks. There is no question but that the manufacturers of paving brick would be interested in this sort of a project, not so much on account of a special lot of brick that we send to any one job, as for the purpose of establishing the reputation and perpetuating the durability of the material that is used on our streets. Any one who has been engaged in the manufacture of paving brick, on account of the harsh treatment received at the hands of engineers, think they would like to balance accounts, and they leave it to the engineers to see if they cannot use some brick that they cannot. Not one in ten of the engineers have had actual experience or opportunity of comparing one material with another, or opportunity of seeing streets repaired with suitable material, that are so well versed or skilled in this matter of selection of brick as to be a real success in the laying of streets and the selection of brick. While this would be of interest to manufacturers, first, for the purpose of establishing good pavements throughout the country, and, second, the production of better brick, it would be of more value to the municipalities, and I believe if they had an opportunity of looking at it in the same light as those who have made investigations on the subject, they would see that they themselves are gainers. Sometimes individuals cover too much ground, and then they become experts and have too large a field. That is one of the impossibilities. I presume the engineers would dislike to have it intimated that they were not experts in the selection of good material, and, still, if they would stop to think that better pavements would be laid, and better material used, with proper inspection, and be of more credit to themselves. I have had considerable experience in furnishing brick to these municipalities, and we have had no little trouble in trying to make them see that they sometimes reject better brick than they put down. Certain engineers go to the plants to make the selection themselves, and it would seem as if they were color blind. Influence is brought to bear on him, and I am talking about honest influence, and the engineer will start out with the intention of getting one certain brick, and before he gets through he will be influenced by someone who claims to know more about the matter than he does, and he gets something else. I think Mr. Ridgley's paper worthy of great consideration. I do not blame a man sometimes for kicking that he did not get full value for his money. If we knew, as manufacturers, just what kind of a test they wanted, we would try to conform to it. We are all anxious to make the very best material possible, and if we are undertaking to make a product out of material unsuited to it the sooner we know it the better. I think there is such a thing as unbiased, unprejudiced inspectors, and that is what we want. I am certainly in favor of the resolution.

The President then put the motion for the adoption of the resolution before the Convention, and it was carried unanimously.

Secretary Stoll: The next number on the programme is a paper:

WHAT ILLINOIS TILE MANUFACTURERS HAVE DONE.

By C. G. Elliott, C. E., Editor of The Drainage Journal.

Members of the Illinois Clay-Workers' Association:

Gentlemen—You have met here at the opening of a new year, fresh from your summary of the past year's work; you have smiled over the profits and frowned over the losses revealed as the books were balanced—or had you the courage to keep a smiling face throughout? At any rate, you pocketed the net cash along with your discomfiture and have met here together for mutual encouragement and mutual help. Some of you have not only looked back over the one year's work, but your glance has covered the ten, twenty or twenty-five years since you first built your plant. Such retrospective views come naturally with the closing year. But is it possible your backward glance has been too narrow? You have looked, perhaps, only at the cash returns to yourself, and have measured your success by the number of dollars added to your bank account, but it is only just that you should take a broader, kindlier view of what you have accomplished.

For the brickmaker, perhaps, this is not so important. The imposing walls of brick rising skyward, the miles of pavement over which we ride, the beautiful fronts of residences, business blocks and public buildings are all silent but impressive witnesses of the enterprise of the brickmaker. His work shows for itself, and he who runs may read. Not so with the tilemaker. The products of his kiln are strung along over field or through bog, and finally buried far down out of sight, and it is easy for even the tilemaker himself to fail to realize what he has accomplished. The passer-by views the beautiful brick structure with admiration, but treads the ground above the hidden tile, unconscious even of their presence. And so it is well for us to pause a moment and recount the achievements of the tile workers of Illinois.

At the start, let us not forget that it was the tilemakers who were largely instrumental in organizing, in 1879, the present strong and prosperous association which I have the honor to address, and it was as the Illinois Tilemakers' Association that its deliberations were incorporated in the State agricultural reports, because recognized as being in the line of agricultural improvement. The organization of the association at that time marked an epoch in the soil resources of the State. The wealth of unimproved soils so long dormant began to appear. From "Egypt" to the Wisconsin line could be seen that activity in drainage which was soon rewarded by plethoric granaries and sleek live stock. So great was the land owners' appreciation of tile and so ready were the tilemakers of the State to respond to the demand that in 1882 there were five hundred tile factories operated in the State, which produced, according to the best figures at hand, not less than 20,000 miles of drains, which were laid during that year. The work went on. The tilemakers met in convention and consulted as to the methods of making better ware and more of it, and also as to the best way of disseminating information regarding the use of drain tile, and it is greatly to their credit that they have had so large a measure of success in both undertakings. Their tile placed on the market to-day are vastly improved in quality; the burning, though subject to occasional bad luck, is usually excellent, thanks to that skill of the burner which is acquired by long experience. Patient presentation of argument, fact and experience as to the value of tile drainage convinced even the most skeptical and the absurd ideas held and promulgated by many—including even some civil engineers—that drainage caused floods and drouth and other grevious climatic influences are now wholly repudiated as false and senseless.

In connection with the remarks on the improved quality of the ware, a good word should be said for the machine manufacturers, who have put the shoulder to the wheel, considered every difficulty which confronted the tilemaker, and have brought their machines to a highly gratifying state of perfection. The tilemakers have been quick to avail themselves of improved machinery, and the result is a marked improvement in quantity and quality of tile.

With regard to the present status of the business, it may be said that Illinois leads all the States in the value of its drain tile product. It has the second largest drain tile factory in the world, and, notwithstanding what has been accomplished in drainage, still has vast areas of land to be improved. The drains already in operation are yielding annual returns much greater than any investment company will give.

But while the tilemaker has been so successful in the accomplishment of his purpose, and has built up so thriving a business, he has—indirectly and unconsciously—done much more. No truth has been more fully demonstrated nor its value more sensibly realized than that the soil is the source of all wealth. It is the good fortune of the tilemaker, in the nature of his business, to be the means of liberating the wealth lying unused and unsuspected in the soil. By the way, has it ever occurred to you that the buried wealth in the soil, brought out by underdrainage, is distributed over a much larger territory than any other of the hidden treasures of the earth? Our lead mines, though rich in product, occupy a restricted field. Our coal products are found in paying quantities in comparatively few localities. The supply of stone and sand is by no means inexhaustible in quantity nor widespread in extent. But the wealth of plant food contained in the soil and made available by the action of tile drains is immeasurable in quantity and as widely distributed as the soil itself, and each plat of ground yields up its profit year by year with no intimation of bankruptcy nor shrinkage of values. Thousands of acres have been increased in value 100 per cent, because of the increased productive capacity with which drainage has invested them. Thus the tilemaker, with no imposing mansions or brick blocks to proclaim his work, may feel, nevertheless, that his is no small part in the economy of life, for upon the successful work of the tilemaker rests largely the development of all clayworking industries, since the wealth which pays for brick blocks, which demands brick pavements and ornamental tiles and decorated building fronts comes originally from the soil and its production is hastened and increased by the silent force of the tile drain. He is a wise brickmaker who, realizing this fact, extends his plant so that he may manufacture tile as well as brick, for the success of all clayworking industries is linked inseparably with that of the tile manufacturer. Do our farms improve and become more productive by drainage? Then, do our villages and towns erect new edifices and pave their streets?

The work of the tilemaker has placed Illinois in the front rank of food-producing States. It has increased the value of grain lands not less than 30 per cent.—to say nothing of the increase in value of town and village property, which represents a portion of the country surplus.

There is another phase of the subject. We at times become weary of the continuous strain after profits. Is material profit all we can claim for this branch of the industry here represented? Has not the work of the tilemakers contributed its share to the intellectual, moral and aesthetic advancement of our people? Are we not better citizens because of their business? For answer I have but to review conditions with which you are familiar. The improvement of lands alone does not make millionaires of cultivators of the soil, but it furnishes an independent competence to them. The use of drain tile has given our people better health, given the young people of our rural communities a good education; has helped to place libraries in homes, improve roads, erect churches, build agricultural colleges and create a demand for the teachings promulgated in institutes and conventions. Undrained lands and poorly improved lands do not produce these results. They never have. Our people have thus become intelligent citizens, competent to meet all questions of life and government which present themselves. In other words, the use of drain tile has exercised an important function in developing men in Illinois, and that, after all, is the crowning excellence of all industry. This idea is expressed by the poet:

"A word to a restless people in a fast and feverish age:
A perfect manhood is better than any wealth and wage;
Then break up the high, bleak hillsides and trench the swamp and the fen,
For what should the land be fit for, if not for the rearing of men."

This highest office of material success has always followed the reclaiming and draining of land since the art first received attention. It is remarked by a well-known author, in commenting upon the drainage of the celebrated fens of England, which took place in the early part of the nineteenth century, that—

"The civilizing effects of the drainage of these great tracts upon the people immediately concerned are difficult to measure. It is sufficient to say, however, that it has no small part in leading men away from primitive superstitions and rude practices to higher ambitions, nobler impulses and purer morals. It is said that when the drainage of the North Level, a part of the noted fens of England, seemed assured, one of the fen poets made the following versified predictions:

" 'With a change of elements suddenly
There shall a change of men and manners be;
Hearts thick and tough as hides shall feel remorse.
And souls of sedge shall understand discourse;
New hands shall learn to work—forget to steal.
New legs shall go to church; new knees shall kneel.' "

Crude as these predictions are in form, they have been amply fulfilled in spirit. Much finer verse has been written which contained less truth.

Illinois drainage is referred to far and wide as an example of original and progressive work. When the State of Minnesota sought for a drainage law adequate to the needs of her great wheat garden of the world, the Red River valley, she found it in the Illinois law, and practically incorporated its methods and provisions into the law which is now operating so successfully in that State. It was the work in Illinois which demonstrated the practicability of light grades for tile drains and their use for the improvement of large level tracts of land. England and Canada are learning something from you, and are quoting and investigating Illinois practice.

It is, furthermore, interesting to note

that the Department of Agriculture, in accordance with the earnest recommendation of the Chief of the Division of Soils, proposes to make experiments looking to the reclamation of abandoned irrigated alkali land by the use of tile drainage. The matter has been carefully investigated in the course of the soil survey by a man who was brought up on the prairies and educated in Illinois drainage methods and results. He is confident that the most gratifying results will be obtained by the experiments about to be made.

I have recounted some of the achievements of the Illinois tile manufacturers, which have incidentally come to them in the line of their business. In the light of what has been done, who has the wisdom to predict what they may yet accomplish? The lamp of experience shines brightly, which fact, without doubt, tends to give all a feeling of self-reliance and confidence in the future. The tilemakers work on the ground floor, so to speak, near to nature's sources of wealth. Their work has to do with the homes of the poor and rich alike, and has been widespread in its results. Let the work be extended until every acre of land in the State shall be capable of producing to its utmost limit and every home be one of plenty—of luxury indeed. A key which unlocks these good things is at our command, and, knowing the history of Illinois tilemakers, I hazard nothing in assuming that it will be wisely used. (Applause.)

President Converse: There seems to be no discussion of this topic. Mr. Campbell, who was to have given us a paper on "The Tilemakers' Dream," is not present, and this brings us to the

TREASURER'S REPORT.

Treasurer Hammerschmidt: The report of the Treasurer is very short. We have had great prosperity. I have had no bills to pay. I had on hand from last year $83.70. The Secretary has just turned over $62, making a total of $145.70 in the treasury. (Applause.) I presume the Secretary has some bills he will want paid, and this will probably reduce the surplus somewhat.

Mr. Plumb: I move we accept the report of the Treasurer.

The motion was duly seconded and carried.

Secretary Stoll: I have bills for postage, printing of programmes and other necessary expenditures, including my own allowance, amounting to $52.45. In addition to this, Mr. Townsend has a bill of $9.25 for freight on exhibits at the Springfield Fair, making a total amount expended the past year of $61.70.

On motion of Mr. Mamer, duly seconded, the bills of the Secretary were ordered paid.

President Converse: This brings us to the report of the Committee on Resolutions.

Mr. Plumb read the following report, which was unanimously adopted:

REPORT OF COMMITTEE ON RESOLUTIONS.

"Whereas, The officials and citizens of Galesburg have spared no effort to make our visit to their charming city a pleasant one, and have furnished not only a convenient headquarters but a hall elegant in all its appointments, for the use of our convention, and have given us an opportunity of visiting the different clayworking establishments and machine shops in and near Galesburg, and

"Whereas, The worthy Mayor, Hon. Mr. Bradley, in his memorable speech of welcome, delivered to our esteemed president for the use of the members the keys of the city, and with the local committee, W. S. Purington and Andrew Harrington, did all in their power to assist in entertaining the city's guests in a princely manner, and the orchestra, for their music, which was enjoyed and appreciated by everyone at the banquet; therefore, be it

"Resolved, That the sincere thanks of the association be extended to them all for the happy manner in which we have been entertained, and that we will ever remember our visit to Galesburg as one of the most pleasant in our experience; we also extend our thanks to the Galesburg press for the full and complete reports of our proceedings; we also wish to thank the managers of the different local manufacturers for the courtesies extended."

"The Illinois Clayworkers desire, in an especial manner, to express the great interest we take in the coming Louisiana Purchase Exposition, to be held in 1903 at St. Louis, and we desire to urge upon the managers the consideration and preparation of some plans being adopted at said exposition whereby the great clay industries of this country shall be adequately provided for. We also ask and urge upon clayworking associations throughout the Union that they take measures to impress upon the management of the said exposition the great importance of such a display, and especially we ask that the National Brick Manufacturers' Association, at their next meeting, shall take some steps looking to the same end sought by this resolution.

"F. PLUMB, Streator;
"CHARLES RIDGLEY, Springfield;
"W. S. PURINGTON, Galesburg."

F Plumb, Streator.

Mr. Randall: I wish to call attention to one omission from the resolution, which I am sure is an oversight. We lost by death during the past year one of our faithful members, Mr. Thomas Trainor, and I move that the Secretary be instructed to prepare a suitable memorial, and that it be spread on the records of this Association and a copy be sent to the family of the deceased.

Motion seconded by Mr. Hammerschmidt and carried.

President Converse: This brings us to the last business of the Convention, the election of officers. The first, of course, is the election of President.

ELECTION OF OFFICERS.

Mr. Hammerschmidt: I desire to nominate for President for the coming year Mr. W. S. Purington, of Galesburg, and if there are no other nominations, I move that the Secretary cast the unanimous ballot of this Convention for Mr. Purington.

Motion seconded by Mr. Barr and carried.

Secretary Stoll: The ballot has been cast, and I declare Mr. Purington duly elected.

President Converse: Nominations are now in order for Vice President.

Mr. Hammerschmidt: I don't like to make all the nominations, but I nominate for Vice President Mr. J. M. Mamer, of Campus, and move that we follow the same course with him that we did with Mr. Purington.

Motion duly seconded and carried.

Secretary Stoll: The ballot has been cast, and Mr. Mamer has been elected Vice President.

President Converse: Now who will you have for Secretary.

Mr. Loy: I move that we continue in office the present Secretary and Treasurer, and that the President be instructed to cast the unanimous ballot of the Convention for Mr. Stoll and Mr. Hammerschmidt for Secretary and Treasurer, respectively.

President Converse: We are doing things a little irregular this morning, but if there is a second, I guess we might as well let it go.

Motion seconded and carried.

President Converse: I have cast the ballot, gentlemen, and the present Secretary and Treasurer are continued in office. I will ask Mr. Purington to step forward. It is with great pleasure that I introduce to you your President for the ensuing year, Mr. W. S. Purington, of Galesburg. (Applause.)

President Purington: Fellow-clayworkers, I thank you for the honor you have conferred upon me. I had the pleasure of serving several years ago in this same capacity, and I was such a failure I did not think you would want to try me again. As time is somewhat short and I have a whole year in which to prepare a speech for the next meeting, I will not attempt a speech to-day. I do want to say, however, that arrangements have been made to take the entire delegation out to the plant of the Frost Manufacturing Co. The cars will be ready at 11 o'clock. This afternoon at 1:30 we want you to visit our plant at East Galesburg. (Applause.)

Secretary Stoll: I have a letter from Mr. O. W. Dunlap, of Bloomington, stating that by next year their new hotel, which will be suitable to accommodate the clayworkers, would be finished, and that they would be very glad to have our Convention meet there next year. I think we also have some friend here from Macomb who would like to give us an invitation.

Mr. Turner: There are only two of us here from Macomb, but we speak for the rest of the clayworkers there when we say we will be glad to have this Convention meet in Macomb next year. Mr. Purington knows we have good hotel accommodations, and can take care of you. While we have no big brick plant, we have two big tile plants, and our potteries are second to none in the State. (Applause.)

President Purington: In behalf of the Convention I thank Mr. Turner for his invitation. Both of these invitations will be referred to the Executive Committee, and the matter will be determined some time the coming summer.

Mr. McHose: In behalf of the Iowa Convention, I would like to invite all the members of this Association to meet with us at Des Moines the 22nd and 23rd of this month, when the next Convention of the Iowa Association is held. We have some good paving brick works in Des Moines, and we also have a sewer pipe plant and numerous building brick plants.

President Purington: In behalf of the Association I thank Mr. McHose for the invitation, and trust as many of the members as can will go to Des Moines. A motion to adjourn is in order.

On motion of Mr. Mamer, the Convention adjourned, subject to the call of the Executive Committee.

THE ANNUAL BANQUET.

IT IS at the festal board that the Illinois clayworkers really "shine." These occasions are always joyful, and the one at Galesburg was no exception. As the guests filed into the dining room an excellent string orchestra rendered "We Won't Go Home Until Morning," and the guests proceeded to fortify themselves for such an emergency with a generous dinner, well served. While not on the bill of fare, wine was served, with the compliments of Andy Harrington. With the coffee came cigars galore, with the compliments of the Purington Paving Brick Co. When Toastmaster Converse arose to start the speechmaking he faced a very joyful audience, and was greeted with a round of applause. In his usually happy vein, he introduced the Mayor of the city, Mr. W. O'R. Bradley, who said that earlier in life he had had aspirations to become a post-prandial orator. He attended Republican and Democratic conventions, that he might feel at home in the presence of the multitude. Among other conventions, he attended one in Springfield once, and made the greatest effort of his life. The strain on his nervous system was too much for him, and he went to Dr. Converse for treatment. After carefully diagnosing his case, the Doctor told him that he talked too much for his reputation, and advised him to seek the quiet and peace of private life; he had done so and experienced no further trouble, and did not propose now to take any risks just to please Dr. Converse, the toastmaster, but would follow the advice of Dr. Converse, the physician, and refrain from any oratorical effort, and briefly express the pleasure it afforded him to welcome the clayworkers of Illinois to Galesburg.

Maj. R. M. Wood, now of Chicago, but formerly of Galesburg, was the next speaker. He accused the toastmaster of being a farmer, said at one time he tried to raise strawberries, and attempted to provide strawberries and cream for his family by crossing strawberries and milkweed. The hit was appreciated. The Major closed his remarks by reading a letter which had been handed him that evening by Dr. L. S. Lambert, a local celebrity and a great admirer of D. V. Purington. It was considered as a toast to the latter and loudly applauded.

DR. LAMBERT'S TOAST TO D. V. PURINGTON.

Col. D. V. Purington! Chief Mogul! Ultimate as well as chief push of hard brick as a utility indispensable. A piece of brains with push that can take a barren bank of clay, that would not even produce respectable smartweed, and make it a mountain of wealth. The kind of brains that can make millions of dollars from shale. I think that you and your associates have led up to one of the most far-reaching and beneficial industries of this wonderful age. Allow me to express myself as feeling always honored by the grace of your personal recognition, and I wish you would kindly express to your associates in the Galesburg brick industry the fact that myself and friends honor their enterprise and push, and gladly wish you all the best that your push may expect. By "push" I mean intellectual direction and merited presentation of the worth of your creation. Here's to D. V. Purington! (Loud and prolonged applause.)

Dr. Converse then introduced the representatives of the clay magazines, each of whom responded briefly. Mr. Loy was introduced as the poet laureate of the Illinois Association, and responded happily in rhyme. He was followed by J. B. McHose, of Boone, Ia.; Wm. Sutton, of Table Rock, Neb.; Fawcett Plumb, of Streator; Charles Burredge, of Tecumseh, Mich.; F. R. Jelliff, a local editor, and Mr. C. M. Snyder, the division freight agent of the C., B. & Q. Railroad. The last speaker called for was Mr. Andy Harrington, of the Frost Engine Co., and he was greeted with applause and cheers. As he took the floor, the song, "He's a Jolly Good Fellow," was started and sung vociferously, which did not tend to lessen Mr. Harrington's embarrassment. He thanked the gentlemen for their expressions of good will, and begged to be excused from a formal response, as he was not given to speechmaking. At this the members again broke forth in song with "We Believe You, Just Now." W. S. Purington was toasted, and Toastmaster Converse announced that the festivities would close with "Auld Lang Syne," which the orchestra played, and the function was then changed from banquet to a conversational, during which the local authorities were congratulated time and again upon their success as entertainers.

THE TRIP TO THE FROST ENGINE CO'S FACTORY AND THE PURINGTON PAVING CO'S PLANT.

THE VISITORS every one enjoyed thoroughly the visit to the great machine shops of the Frost Engine Co., which was so well illustrated in the December Clay-Worker. As the crowd was passing through one of the main buildings one gentleman, himself a manufacture of machinery, said: "I think I never saw before a manufacturing plant of any sort so tidy and orderly as this one." Another said, "A great plant this," and another, "What a splendid equipment they have," and so the remarks ranged all along the line of compliment and commendation, which reached its climax in the remark of one distinguished brickmaker, who said: "If I ever buy another engine, it will bear the name of the Frost Engine Co., for a shop equipped like this can certainly make as fine an engine as a brick man need care to have.

AT THE BRICK PLANT.

Immediately after dinner the delegates boarded trolley cars, which landed them at the very door of the factory office of the Purington Paving Brick Co., and a splendid office it is, as the readers of The Clay-Worker well know, for it has been pictured and described in these columns on previous occasions. Tarrying long enough to look about and note the splendid office equipment, accept a good cigar from Secretary Chamberlain and a souvenir miniature brick of Galesburg shale, which, though measuring but 3½x1¾x¼, weighs 12 ounces, the entire party followed Will Purington's lead in a trip through the plant, every feature of which was looked over and studied carefully. The representatives of the various machine manufacturers, including John Moroney, the King of Ireland; Charles Burridge, the "Brewer;" Davis Brown, of Chambers; J. B. Beale, of the Fernholtz B. M. C.; E. B. Johnson, of the Leader Mfg. Co.; Tom Madden, the "Hoosier," were as much interested as the brickmakers themselves, and there was not one who did not follow Fawcett Plumb's example, and take something valuable from the Convention."

LIST OF MEMBERS.

T. Townsley	Alexis, Ill.
Eben Rogers	Alton, Ill.
H. F. Townsend	Avon, Ill.
L. H. Lambert	Beaverville, Ill
M. Lareau	Beaverville, Ill.
S. H. Alsip	Bellville, Ill.
J. A. Day	Bellville, Ill.
J. B. McHose	Boone, Ia.
American Clay-Working Mch Co.	Bucyrus, O.
H. Churchill	Buda, Ill.
Mamer Bros.	Campus, Ill.
George J. Walters	Chatsworth, Ill.
Chicago Brick Mch. Co.	Chicago, Ill.
H. De Joannis	Chicago, Ill.
G. J. Hartwell	Chicago, Ill.
John Moroney	Chicago, Ill.
Simpson Mfg. Co.	Chicago, Ill.
R. M. Woods	Chicago, Ill.
Leader Mfg. Co.	Decatur, Ill.
D. C. Heagor	Dundee, Ill.
L. H. Martin	Dwight, Ill.
W. M. Pratt	Earlville, Ill.
Fenstermaker Bros.	Ellsworth, Ill.
F. Carter	East Peoria, Ill.
W. S. Purington	Galesburg, Ill.
Frost Mfg. Co.	Galesburg, Ill.
F. W. Heidenrich	Hedrick, Ia.
Fred Adams	Indianapolis, Ind.
C. G. Elliott	Indianapolis, Ind.
T. A. Randall & Co.	Indianapolis, Ind.
N. E. Potter	Kewanee, Ill.
Wm. Hammerschmidt	Lombard, Ill.
A. Connor	Montezuma, Ind.
F. A. Martin	Mazon, Ill.
Tiernan Bros.	Macomb, Ill.
Illinois Mfg. Co.	Macomb, Ill.
John Jansen	Pekin, Ill.
Charles Zoeller	Pekin, Ill.
A. D. Giles	Peoria, Ill.
Robert Unziker	Peru, Ill.
Davis Brown, Chambers Bros.	Philadelphia, Pa.
A. S. Curry	Reddick, Ill.
Robert Goodwin	Redfield, Ia.
Madden & Co.	Rushville, Ind.
C. J. Holman	Sergeant Bluff, Ia.
W. B. Lower	Sioux City, Ia.
A. L. Converse	Springfield, Ill.
Chas. Ridgley	Springfield, Ill.
Fernholtz Brick Mch. Co.	St. Louis, Mo.
C. C. Barr	Streator, Ill.
J. P. Fargo	Streator, Ill.
F. Plumb	Streator, Ill.
William Sutton	Table Rock, Neb.
George Cotton	Table Rock, Neb.
H. Brewer & Co.	Tecumseh, Mich.
G. H. Kettell	Tipton, Ia.
F. E. Swift	Washington, Ia.
D. O. Loy	Wataga, Ill.
A. E. Gregg	Waverly, Ill.
C. A. Swift	Waverly, Ill.
G. C. Stoll	Wheaton, Ill.
J. W. Skinner	Varna, Ill.

Written for The Clay-Worker.

BUTTON-HOLE TALKS.

YOU WOULDN'T THINK IT, Gates, not for a minute, but I was once a terribly green boy. Looking at me now, finished gentleman that I know I am, I feel that it is hard for you to realize that there was ever necessity for my parents keeping me away from the voracious cows, lest I be eaten along with the other green things.

"I had run largely to legs, arms, feet and hands, and in fact most of what was left after that list was apparently used on ears, and what was left over after mentioning them wasn't worth listing.

"My boyhood had been passed on a farm up in Wisconsin, and until I was eighteen I had never been out of the county. Then, someway, a wild, uncontrollable impulse seized me, and, marshalling my entire fortune of $137, I started resolutely out into the world to travel, see and conquer.

"Turning my back determinately on the lakes, woods and pastures of my home, I went out and away. Away from the old and into the new. Away from the apron strings and homely, but loving, hearts of the old home and out into the scheming and among the hard hearts of the great outside. I headed for Cincinnati.

"I was once a terribly green boy."

"The 'peanutter' on the train recognized me at sight as his own and plied me with all his wares, and I bought and ate of all he had. In those days fruits were scarce, and the banana, now so common, had only just made its appearance, and I need not say I had never seen nor heard of the fruit. After the peanutter had supplied me with everything else he had, he winked to the others in the car and came at me with the elongated tropical fruit. I bought and I bit. All the kinds of fruit with which I was acquainted were built to eat as you got them, and I reasoned that any fruit built as a banana was built was intended for biting, and so I took it that way, and ate peel and all, biting off section after section and munching it all down. That night at Cincinnati my dreams were bad. In fact, those days I was always an early riser anyway, but there I was up and out at about four, and went wandering about, seeing what I could. Finally I came down to the old suspension bridge across the Ohio—at that time the second largest in the world—and to me an object of amazement. By the time I had gotten down to the abutment it occurred to me that what few people I had met, down there in the early dawn—river men mostly—were rather a rough lot, and I felt again of my pocket to see that my 'roll' was safe, and began to question the advisability of staying where I was, or, indeed, of having come as far as I had. Just here, too, I noticed a slouchy, hard-looking customer in a red flannel shirt and smoking a short clay pipe, evidently a river man and a hard-looking case, watching me closely and approaching me. Thinking of the hard cases I had passed further back and thinking they might probably be cronies of his, I eyed him, apprehensively, and worked my way further out on the bridge, when he suddenly lifted my hair and stopped the beating of my heart by starting boldly toward me and saying, "Johnnie, I want your money."

Never 'had heard of a banana.

"Rather a rough lot"

"A hard looking case."

"For an instant I was paralyzed. I was sorry I was in Cincinnati. I was sorry for an old couple up in Wisconsin soon to be sonless, not because their sun had set, either. But I could not stay to be killed. I could not, must not give up my money. I could not fight, but I could do what every hunted, helpless, wild, untamed thing can and does know how to do—run—and I flew over that bridge and toward Kentucky, fleeing for my life. After me he came. I could hear him breathing hard and muttering, and then I knew that when he caught me he would not only take my money, but would throw me over into the river, and thus wipe out all trace of his robbery and at the same time wreak vengeance for my leading him such a chase. My flying feet would not go fast enough so but what I tripped over them and fell over myself. I was young and husky, but scared out of my wits, and he was a sprinter and he was gaining on me. My heart was in my mouth, so I couldn't get a long breath, and I was crazy with fright, and then I felt him grab my coat collar and fling me down hard on the floor of the bridge, while he stood over me and tried to catch his breath. Neither of us could speak for a moment, for we were both so winded, but, feeling that my life depended on quick action, I managed to gasp out a petition to him to take my money, but to spare my life, and when he could get enough breath to make himself understood he announced that he was going to have my money to the extent of two cents, for toll, and that next time I need not try to sneak across without paying my rightful toll of two cents for going over the bridge.

"He was gaining on me."

"He was going to have my money"

"I have spent a great deal of money since them, but I never got so much feeling and action out of the same amount of money." GATES.

Articles of incorporation have been filed by Corneer Bros. & Croft Brick Co., of Omaha, Neb. The capital stock is $10,000.

WRITTEN FOR THE CLAY-WORKER.

THE CLAYWORKING INDUSTRIES OF MARSEILLES, FRANCE—BRICKMAKING AN IMPORTANT INDUSTRY—CLAY TILES THE COMMON ROOFING MATERIAL—SHIPMENTS TO PUERTO RICO AND CUBA.

THE BRICK AND TILE industry of Marseilles is described by the Chamber of Commerce, in its last annual report, as one "which represents the most important figure in the maritime business of the port of Marseilles, where it supports thousands of workingmen, representing a minimum of 15,000 inhabitants."

The last available statistics show a total sale during twelve months of 303,230 tons, of which 156,927 tons were exported to foreign countries. There are a number of companies engaged in the business, but they are completely overshadowed by the Societe Generale des Tuileries de Marseille. This important corporation corresponds fairly well with the American conception of a trust, as it consists of twenty-one concerns, now organized under the general title above given, with works, the most of which are located at Saint Henri, a suburban district of this city. Inasmuch as the Societe Generale is the most important factor in the industry, and manufactures a more extended line of wares than any of the others, I shall confine myself in that which follows to facts obtained from a representative of this company.

The principal lines manufactured by the Societe Generale consist of roofing tiles, which are used almost universally in this part of the world, and which tend to displace other roofing materials elsewhere. The output of brick is less considerable, for the reason that stone is the prevalent building material in this country, brick being used mainly for walling, facing and flooring.

All of the local clay products are burned in kilns, and are executed in all sizes, and, in respect to tiles, in many different colors; only red bricks, however, are manufactured. While common and pressed solid brick continue to be produced in Marseilles, they may be said to have disappeared, practically speaking, as a factor in local building operations. The present-day output of the Marseilles brick kilns is a block, perforated lengthwise, which is said to be not only much lighter than the ordinary brick, but equally durable, strong and cheap, less expensive to ship, and affording protection against humidity and heat or cold. It is pretended that the uniformity of hardness obtained in the manufacture of hollow bricks provides more resistance to fracture than ordinary bricks, and power to withstand steady pressure ten times greater than may ever be required for any purpose. They require less clay and fuel to produce, less mortar to lay with tight joints, and enable the bricklayer to accomplish more work in a given time than the ordinary type. The demand for this building material for external walls is said to be growing considerably in foreign countries, as it is also in this. In France all partition walls are made of hollow brick, as are also the ceilings, upon which the plaster is laid without any lathing whatever.

At Saint Henri all the clay products are made by machinery, and of brick alone the production averages 800,000 pieces daily. My informant tells me that they have found no foreign machinery as good as the French, and the devices they use they find in Marseilles. The bricks are dried naturally as a rule, but provision is made for artificial drying in case of bad weather. Continuous kilns, in which coal is the only fuel, receive the unfinished stock, which is burnt for forty-eight hours. The output is delivered in bulk, by carts, rail or sea. The works are situated on the seashore, and have direct rail connection. As a rule, shipments by sea are made in small sailing craft, capable of touching at unimportant foreign harbors able to receive vessels of low draught only. The bricks are sold per 1,000 pieces, the present average price being frs. 25 ($4.82) per 1,000 kilos, or 1,000 pieces. The workmen lay the French bricks in mortar, as in the United States, in regular straight courses.

The evolution of the roofing tile is supposed by the directors of the Societe Generale to have been completed, and, while other patterns exist, what is known as the "patent flat roofing tile No. 1" is now regarded as the true type of the French tile, offering advantages possessed by no other. The old-fashioned half-round Spanish tiling is no longer produced at all. The tile which I have mentioned is 42 by 25 centimetres in size, each one weighing 2 kilos. (5.06 pounds), and the present price, free alongside steamers at Marseilles, is frs. 80 ($15.64) per 1,000 pieces. Reduced to other terms, the price quoted amounts to about $2 per 100 square feet laid. To these prices must be added, of course, freight, duty and whatever local charges may be involved. The business, as a whole, is brought under the general term of "Industries Ceramiques," which includes the manufacture of bricks, tiles, pottery and clay pipes. All of these articles are manufactured by the Societe Generale. This society in Marseilles employs four thousand journeymen, who are paid an average of frs. 5 (96 cents) per day. This number does not include the vast army of men who mine and manipulate the clay, but who are not, in all cases, directly controlled by the company. I am informed by the company's representative that, all told, fifteen thousand laboring men are in one way or another employed by the society. The works are built in the immediate vicinity of the beds of clay utilized. The local raw material is adapted to hard burning, and severe tests, covering long periods of time, have given to the product a very high reputation. The temperature of the kilns is brought up to 1,000 Centigrade, and even more. The raw material is remarkably uniform in quality, so that the shrinkage in the kilns is under almost absolute control. The total annual production of the works amounts to 250,000,000 pieces. The American tariff has prevented the Marseilles exporters from engaging in trade with the United States, but a very satisfactory business has been done for a number of years in Cuba, and the manufacturers are hopeful that conditions will continue favorable for an extension of this particular demand. To Cuba and Porto Rico 1,950 tons of brick and tile were exported from Marseilles in 1900.

ROBERT P. SKINNER,
Marseilles, Dec. 23, 1901. Consul General.

ANNUAL MEETING OF THE NATIONAL STOVE LINING MANUFACTURERS' ASSOCIATION.

THE ANNUAL CONVENTION of the National Stove Lining Manufacturers' Association was held at the Broadway Central Hotel, New York, Dec. 12 and 13, 1901. The Convention was called to order by H. A. Perkins, the President. Roll was called, and the following firms and companies were represented: Presbrey Stove Lining Co., of Taunton, Mass., by B. C. Peirce, their treasurer; Williams Stove Lining Co., by J. G. Williams, treasurer; Union Stove Lining Co., by G. A. Lincoln; French & Winslow, by B. C. French; Taunton Stove Lining Co., by J. W. Parker; Brooklyn Fire Brick Works, by H. A. Perkins; Rogers & Co., by F. S. Brown; E. S. Fox & Co., of Reading, Pa., by B. F. Fox; Dighton Stove Lining Co., by G. C. Francis; Brooklyn Stove Lining Co., by O. Demis; Hall & Sons, Buffalo, by C. M. Helmer; Peekskill Stove Lining Co., by S. D. Horton; McLeod & Henry Co., by H. S. McLeod, and Green Hill Fire Brick Works, by W. J. Falls.

Secretary B. C. Pierce's report for the summer meeting was read and minutes approved, and the report of Treasurer J. G. Williams showed a handsome balance on hand. Next in order was the election of officers for the ensuing year, and the President, upon motion, appointed a committee of three to make nominations to fill the various offices. They reported the following names, and the Secretary was, upon motion, requested to deposit a ballot for each, and, having done so, the retiring President declared these gentlemen duly elected:

President—H. S. McLeod, of Troy, N. Y.
Vice President—F. S. Brown, of Royersford, Pa.
Secretary—B. C. Pierce, Taunton, Mass.
Treasurer—J. G. Williams, of Taunton, Mass.

The Secretary and Treasurer were both re-elected. The meeting then adjourned to partake of a fine banquet which had been prepared in the banquet hall for the members and their guests.

At 3 p. m. the Convention was called to order by H. S. McLeod, President, and considerable routine business was disposed of, which occupied the time until 6 p. m. At 7:30 a theater party attended the Broadway Theater to see that most beautiful of all spectacular plays, "The Sleeping Beauty and the Beast." The 13th was occupied by routine business and Christmas shopping. All claim good business for the year.

C. A. B.

MEETING OF THE AMERICAN CERAMIC SOCIETY.

THE FULL PROGRAMME of the American Ceramic Society is in process of preparation, and cannot be given at this time, but the following notes have been furnished us by the Secretary:

There will be a council meeting at 8:30 a. m., Monday, Feb. 10, in the parlors of the Hollenden.

The Society will be called to order at 10 a. m., and after the reports of the officers, reading of the minutes, the installation of the new officers and the address of the retiring President, Prof. Chas. F. Binns, will be given. The business session will come to a close at 12 o'clock.

The literary programme of the Society will begin Monday afternoon, at 2 o'clock, with sessions on Tuesday morning, Tuesday afternoon and Wednesday morning, the last session closing at 12 o'clock sharp, to permit the schedule of the N. B. M. A. to be carried out without hindrance.

The following list of papers are promised, and, though the titles in some cases are not exact, the scope of the papers is substantially as indicated:

Karl Langenbeck, Zanesville, O.: On the "Relations Between Some of the Familiar Body Fluxes."

S. G. Burt, Cincinnati, O.: "Oxide of Tin in Ceramic Fluxes."

Ernest Mayer, Beaver Falls, Pa.: "Notes on the Grinding of Material Used in Earthenware Bodies."

R. C. Purdy, Zanesville, O.: "The White Stoneware Glaze, and Its Practical Range of Composition."

Edward Orton, Jr., Columbus, O.: "Notes on the Production of Easily Fusible Glasses, Without Lead or Boracic Acid."

F. W. Walker, Beaver Falls, Pa.: "Notes on the Development of Greens from Cupric Oxide in Glazes."

A. S. Watts, Zanesville, O.: "The Relations Between the Composition of Porcelain, and Its Resistance to High-Tension Electrical Currents."

W. D. Richardson, Cleveland, O.: "On the Equipment of a Modern Paving Brick Plant" (accompanied with detailed drawings and specifications).

Edward Orton, Jr., Columbus, O.: "Changes Occurring in Vitrification of Crude Clays."

E. C. Stover, Trenton, N. J.: "Bacterial Growth as a Factor in the Ageing of Clay Mixtures."

Charles F. Binns, Alfred, N. Y.: "The Opportunity for Research in the Factory."

Wilton Parker Rix, England: "English Legislation on Leadless Glazes."

A. V. Bleininger, Columbus, O.: "A Study on the Comparative Hydraulic Behavior of Lime and Magnesium Compounds."

W. L. Kennedy, New Brighton, Pa.: "Notes on the Relative Point of Dehydration of Pure vs. Calcareous Clays."

Besides these various contributions, others are expected from Dr. W. H. Zimmer, of Coburg, Germany; Messrs. William Cannan, Jr., of Syracuse; E. E. Gorton, of New Brunswick, N. J.; Samuel Geijsbeek, of Golden, Col., and possibly several others.

There are several important questions proposed for discussion, and altogether the evidence all points toward a most successful meeting.

It is expected that Volume I of the Collected Writings of Dr. Herman Seger will be distributed to subscribers at this meeting, as the printing of the volume is practically complete, and there remains only to bind the requisite number by Convention time. Mr. E. C. Stover will have this matter in charge, and it is hoped that all subscribers, either in the American Ceramic Society or the N. B. M. A., will be prepared to receive and pay for Volume I at that time.

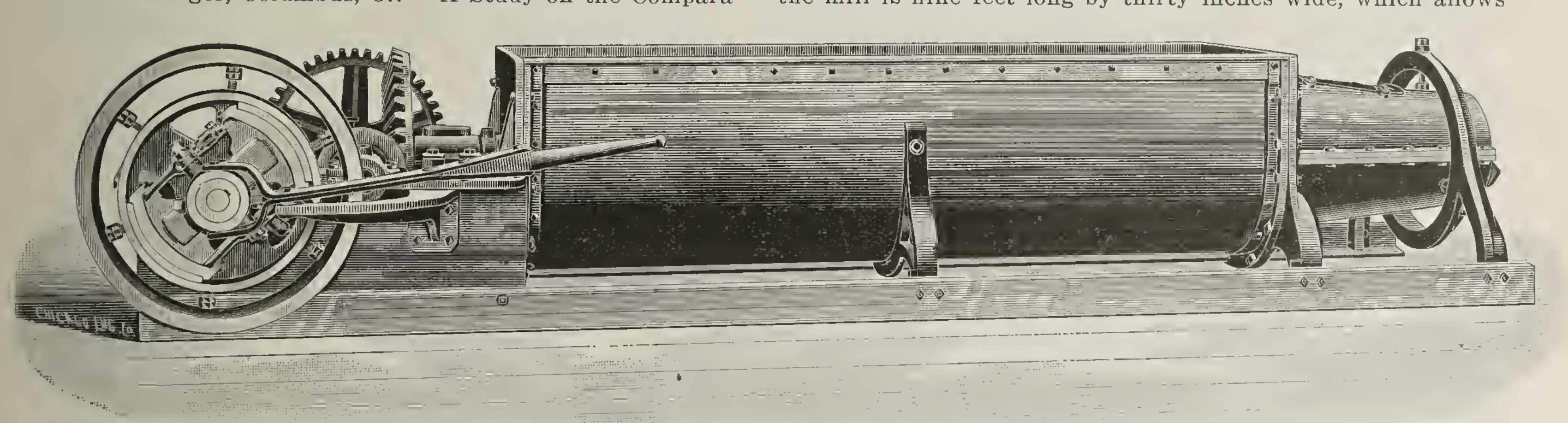
EDWARD ORTON, Jr., Secretary A. C. S.
Columbus, O., Jan. 17, 1902.

H. BREWER & CO.'S IOWA REPRESENTATIVE.

Mr. Omer Smith, of North English, Iowa., will hereafter represent H. Brewer & Co. in Iowa and contiguous territory, recent arrangements having been made between the parties concerned to that effect. Mr. Smith is exceptionally well fitted for this position owing to the fact that he has not only an extensive acquaintance with the trade in that territory, but that twenty years of practical experience in different parts of the State has given him a wide knowledge of the clays to be found there. The fact that he has been successful in business for himself, and that Brewer machinery has been installed in all of the plants in which he has been interested, would seem to place him in a position where, as the result of actual experience, he can have the courage of his convictions and conscientiously promote Brewer interests wherever he may be. H. Brewer & Co. may be congratulated, having secured so capable a representative, and Mr. Smith may well be proud, not only of the line he is selling, but of the people who make it.

AN EXTRA LARGE PUG MILL.

TO SUPPLY THE demand for a larger pug mill than previously contained in their line, H. Brewer & Co., of Tecumseh, Mich., have brought out a new mill, which they have styled their No. 3, and which is illustrated herewith. This mill is all iron and steel, having a shell in one piece, bridgetree in one piece and a tapering front or nose piece. These three fundamental parts are connected together by heavy steel angles, which also form the frame or base of the machine. The main pugging shaft is of four-inch square steel, and the back thrust of it is taken by a phosphor-bronze bearing, which has ample oiling facilities. The open part of the mill is nine feet long by thirty inches wide, which allows plenty of room for dumping and tempering, the tapering front assuring thorough pugging and grinding before the clay is finally discharged. The arrangement for driving is such that the mill may be belted from either side, and the belt may run either direction without the necessity of changing the knives, making it very convenient in regard to its position in the plant. It is supplied with a friction-clutch pulley, and is intended to be a thoroughly modern and efficient machine. It weighs 7,000 pounds. Further information may be obtained from the manufacturers, H. Brewer & Co., of Tecumseh, Mich.



New Pug Mill Manufactured by H. Brewer & Co.

THE CONVENTION CITY.

A Pleasant, Prosperous Place—Many Things of Interest to Visitors—Plenty of Pleasure Resorts—Splendid Hotel Accommodations—A Warm Reception Awaits all Who Attend the Sixteenth Meeting of the N. B. M. A., February 10th to 15th, 1902.

The NAME Convention City is very appropriately applied to Cleveland. Few, if any, of the great cities of the country entertain more conventions in the course of the year than the Buckeye metropolis, and no people know better how to entertain their guests than do the residents of the Forest City. Cleveland is a beautiful city, a wealthy city and a progressive city. Her growth during the last decade has been really remarkable. To appreciate this, one must retrospect a little.

In the early part of the year 1796 a surveying party of about fifty people, headed by General Moses Cleveland, came from Connecticut to look over this section of the country, with a view of locating, and they selected the site upon which Greater Cleveland now stands. Its first great commercial artery was the Ohio canal, which was opened for navigation in 1827. After this came an appropriation from Congress for the betterment of her harbor facilities. In due time her waterways were reinforced with the railroads, and to-day her shipping facilities are unexcelled either at home or abroad. She now boasts of a population of nearly a half a million, making her the metropolis of Ohio, which she will undoubtedly remain until the end of time.

GREAT TRANSPORTATION FACILITIES.

Cleveland is particularly proud of her street car system. Her trolley lines aggregate over 300 miles, and there are several suburban lines, which connect her with all the prominent cities within a radius of nearly fifty miles. From the public square, in the center of which stands her great Soldiers' Monument, a trolley car can be taken which runs direct to Detroit, 110 miles westward; doubtless the longest continuous trolley ride in the world.

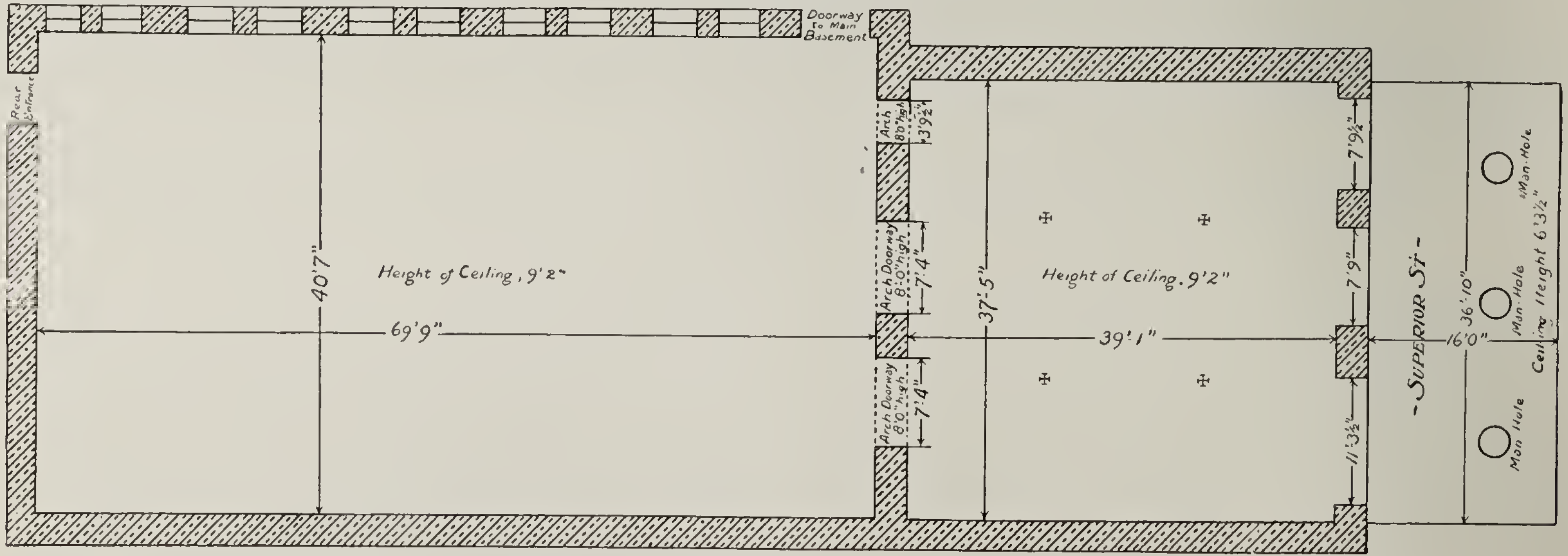
There are nine railroads running into the city, all having the best of facilities for handling both passenger and freight business. All the passenger stations are located within reasonable distance of the business district, and are readily reached by street car. Cleveland has 3,000 streets, 170 miles of which are paved. Of these, 141 miles are paved with brick. Her streets are the widest of any city in the world, Superior street, one of the main business thoroughfares, being 132 feet in width. Euclid avenue, pronounced the most beautiful street in the world from a residence standpoint, is over 80 feet in width. Wilson avenue is 90 feet wide, and most of the other principal streets are 60 feet or more in width. Her viaducts are the marvels of the world; their immensity and number are a wonder to all visitors. One viaduct, that on Superior street, is 3,211 feet in length. It cost $2,250,000. The Central viaduct runs over four great railroads, and is 5,225 feet, but 55 feet short of a mile.

CLEVELAND'S IMPORTANT INDUSTRIES.

Cleveland is acknowledged to be the economic center for the manufacture of iron, steel and their products. She has over 50,000 people employed in that line alone. It has the largest malleable iron works in the world, ranks second as a wholesale hardware market, and in the production of wire nails surpasses any other city on earth. It is a fact that Cleveland has been first in the development of the ore industry. From mines now owned by residents of Cleveland the enormous tonnage of 171,418,984 tons has been brought to the dock of the city. Twenty million tons were brought last year. The facilities for unloading ore are unsurpassed.

The Hollenden Hotel.

It now has three great steel rolling mills, two large iron rolling mills, four wire and rod rolling establishments, five blast furnaces, the Walker-Westinghouse general electric combination, the Brush electric and dynamo manufacturing plant place it the leader in that line. Of its oil refining companies and works words are unnecessary. That's history. Its two great shipbuilding concerns have placed the city in the position that it controls more than 80 per cent. of the entire tonnage of the lakes, a conservative estimate of its value being placed at $35,000,000. Two thousand five hundred factories furnish 100,000 and more different kinds of manufactured ar-



BASEMENT OF PALM GARDEN
THE HOLLENDEN HOTEL

ticles. The census of 1900 gives a capitalization of the manufacturing interests as over sixty-five million of dollars. There are eight flour and grist mills, one of which has the largest capacity of any winter wheat mill in the world; the largest shoddy mills of the entire country are located in that city; several large shoe factories, hat factories and manufactories of cloaks, suits and knit goods, etc. The manufacture of electrical appliances is largely diversified, and almost a monopoly in making carbons is enjoyed by Cleveland. They make as good bicycles as any in the world in the four factories, and one of the most prominent automobile works is located there. Street cars, wagons and all kinds of vehicles are made there. There are some thirty brass foundries, ten chemical establishments, brick in countless thousands from thirty or more yards, and one-half of all the chewing gum produced in the United States—about one ton a day—is made in Cleveland, and these are but suggestions regarding the vast manufacturing interests of the city.

CLEVELAND'S BEAUTY SPOTS.

The parks of Cleveland are the subject of comment and compliment of all visitors. They are spacious bits of natural woodland, distributed in the different sections of the city. Two have the additional value of being located along the shores of Lake Erie. A system of boulevards is being rapidly completed which will connect all the parks with a winding driveway, extending for miles in a circuit about the city. In this connection Garfield monument, that symbol of national honor to one of its martyrs, is located in Lake View Cemetery, on an eminence, from which the spirit eye of the loved President might look with protecting care upon one of the cities which he loved so well. The Euclid avenue trolley line runs to the entrance of the cemetery.

Cleveland takes a foremost rank among the Western cities in the number and beauty of her buildings of every class. In public buildings alone does she acknowledge inferiority, and this lack will soon be remedied by the erection of stately edifices, in which both local and Federal officers will be housed. Her business buildings are substantial, and during the present year many more costly sky-scrapers will be added to the list. Those who visit Cleveland this winter will look upon a building activity such as few cities can boast. Among the prominent business blocks are the Williamson, Rose Perry-Payne, New England, Garfield, Western Reserve Society for Savings, Chamber of Commerce and American Trust buildings, all modern buildings. Cleveland also boasts of the largest arcade in the world, connecting Euclid avenue and Superior street.

PLACES OF AMUSEMENT.

Cleveland has four fine theaters, at which the standard attractions are given. At the Opera House the leading people from stageland in the legitimate lines are to be found. The Empire presents the strongest vaudeville, while the Star with its burleque and the Lyceum with its high-class comedy afford ample opportunities for pleasure in this line.

C. B. Stowe.

S. M. Duty.

W. H. Hunt.

C. J. Deckman.

OFFICIAL ANNOUNCEMENT AND PROGRAMME.

The Sixteenth Annual Convention of the National Brick Manufacturers' Association and the American Ceramic Society, to be Held at Cleveland, Ohio, February 10 to 15, 1902.

AS PREVIOUSLY ANNOUNCED, the Sixteenth Annual Convention of the National Brick Manufacturers' Association and the Fourth Annual Meeting of the American Ceramic Society will be held at Cleveland, O., February 10 to 15, 1902.

The geographical location of Cleveland makes it particularly acceptable to our members in general, for it is in the very heart of the clayworking industry. No other city may be reached more readily by the majority of our members. Since we met there seven years ago Cleveland has made wonderful growth, both in population and wealth. The last census makes it the metropolis of Ohio. It is certainly one of the most progressive and beautiful cities in the world.

The brick industries of that vicinity are extensive. Every process of manufacture is represented. All kinds of plants are in operation, turning out immense quantities of common building brick, the finest of pressed brick, vitrified sewer brick, paving brick and block and fire brick of all sorts. Numerous sewer pipe, pottery and tile plants are located within easy reach. The proximity of these great clay interests and Cleveland's splendid railroad facilities make it an ideal meeting place for us. We are confident that we can have there one of the largest and best conventions held in the history of the association. Cleveland's facilities for entertaining visitors are such as to insure a most enjoyable time for all who attend.

CONVENTION WORK.

The Ceramic Society will open its meetings Monday, the 10th, at 10 a. m., and continue till Wednesday noon, when they give way to the N. B. M. A. The programme is being prepared and will be published in full on another page of this magazine, if completed in time. Those desiring same can obtain individual copies by addressing the Secretary, Prof. Edward Orton, Jr., Columbus, O. Visitors interested in the technology of the clay, glass and cement industries will be welcomed by the society. The Secretary, upon application, will be pleased to furnish full particulars as to the objects of the society and requisites of membership.

The sessions of the N. B. M. A. will begin Wednesday afternoon, the 12th, and continue throughout the remainder of the week. The programme includes the usual number of instructive papers and addresses upon various subjects of vital importance to brick manufacturers. Members desiring information upon any feature of the business can have same included in programme by making their wishes known to the Secretary.

HOTEL ARRANGEMENTS, ETC.

Headquarters during the Convention will be at the Hollenden Hotel, and all sessions of the Convention will be held in the Hollenden Palm Garden. A new addition to this great hotel has just been completed that gives sufficient capacity to accommodate our entire membership. The Hollenden has the reputation of being one of the best managed hotels in the world, hence our members may look forward to a comfortable week in Cleveland. The Hollenden is now conducted entirely on the European plan. Special rates, ranging from $1.00 up per guest, will be made to the members of the Association and those accompanying them. Those wanting rooms with bath or other special accommodations are required to write to the Secretary, or to the Hollenden direct, stating character of accommodations desired, date of intended arrival, etc., and they will be booked accordingly. The dining room and restaurant service is of the very best, and the charges are moderate. Special breakfasts, noonday lunches and evening dinners are served to those who prefer them. This, it is thought, will insure satisfactory service to everyone.

S. D. Wright

F. H. Eggers.

J. W. Hornsey.

F. E. Frey.

REDUCED RAILROAD RATES

Have been secured on the certificate plan: That is, delegates and those accompanying them, if they pay full fare going, and TAKE PROPER CERTIFICATE for same from the ticket agent, will be entitled to return ticket at one-third the regular fare, making two-thirds rate for the round trip. This covers all territory east of the Mississippi river. Those coming from points beyond this should use their local mileage to points on the east side of the river and there repurchase, taking certificate, as stated above. In that way they can obtain the two-thirds rate from river points to the Convention. Those starting from small towns should make inquiry of local ticket agent a few days in advance to insure the receipt of proper certificate. If certificates are not taken, the reduced rates cannot be secured. As it takes some little time to make out certificates, delegates should present themselves at the ticket office at least thirty minutes before the departure of trains. Return tickets will be good four days after adjournment of Convention, or until midnight of Wednesday, the 17th. If through tickets cannot be procured at the starting point, tickets should be purchased to the nearest point where such through ticket can be obtained, and there purchased through to Cleveland, and a certificate from the ticket agent at the place where each purchase is made should be requested. The latter feature is imperative. No refund of fare can be expected because of failure of delegates to obtain certificates. Should any ticket agent be unable to furnish a certificate on the regular printed form, delegates should take a written receipt, setting forth the fact that certificate was asked for and could not be furnished, and stating the amount of fare paid, the name of the station where purchased and the names of the railroads over which purchaser is ticketed. Such receipt, bearing the agent's official stamp, will enable delegates to obtain the proper refund.

EXHIBITION ROOM.

Arrangements have been made for a large basement room in the Hollenden, electrically lighted, where those desiring to do so may exhibit machinery and appliances of interest to clayworkers. Space will be *free to members* of the Association and will be allotted under the direction of a local committee, of which Mr. F. E. Frey is chairman. Electric power can be supplied to those desiring it for the operation of light machinery. Those desiring this service will be required to rent motors and pay for the power used. We are assured that the charge for same will be reasonable. Machinery may be delivered at the rear of the Hollenden and taken into the exhibition room on a level with the floor. The doorway is 8 feet high and 7 feet 5 inches wide, the top being arched. For further particulars, prospective exhibitors are requested to communicate with Edward A. Roberts, Builders' Exchange, third floor Chamber of Commerce Building, Cleveland, stating exactly what floor space they will need. There will be an entrance to the exhibition room from the main lobby of the hotel. The committee desire to make the exhibit of machinery surpass anything that has ever been done in this line in the past. There will be no charge to exhibitors for space, and the committee will be on hand to render all the assistance possible, both preceding and during the Convention. The exhibition room will be open at all times, excepting the hours when the Convention is in session, at which time it will be closed to exhibitors and visitors alike.—See plat of Exhibition Room on page 56.

DISPLAYS OF SPECIMEN BRICK.

It is thought that an interesting and instructive feature of the Convention can be arranged, if each member attending will send to Cleveland samples of the brick or other clay products he is making. A special committee has been appointed, of which E. A. Roberts is chairman, to take charge of this display. The samples furnished will be properly classified and arranged alphabetically in such a manner that any particular manufacturer's brick can be found and inspected readily. Each brick or sample of product should be carefully labeled with the name of the maker and location of factory to insure proper identification. Packages should be expressed, charges prepaid in every instance, not later than February 7, and addressed to E. A. Roberts, Chairman Brick Exhibit Committee, Care Hollenden Hotel, Cleveland, Ohio.

THE N. B. M. A. PROGRAMME.

First Session, Wednesday, 2:30 P. M., Feb. 12, 1902.

Prayer by ———.

Enrollment of New Members and Roll Call.

President's Annual Address, Wm. H. Hunt, Cleveland, Ohio.

Report of Treasurer, John W. Sibley, Birmingham, Ala.

Election and Installation of Officers.

Address, "A Twentieth Century Retrospect and Prophecy," by Clifford Chase, Milwaukee, Wis.

General Discussion, led by Samuel Holyoke, Brewer, Maine.

Appointment of Committees.

THE ANNUAL BANQUET.

An Association dinner will be served Wednesday at 7:30 o'clock in the main dining hall of the Hollenden. All delegates and guests, including the ladies, will participate in this function, which will be given under the auspices of the brickmakers of Cleveland.

THEATER PARTY AND SMOKER.

Thursday evening there will be a theater party for visiting gentlemen and ladies, after which an informal smoker and luncheon will be served to the gentlemen at the Hollenden.

John H. Wilson.

Walter H. Caskey.

E. A. Roberts.

J. N. Battenfeld.

A TRIP TO THE BRICKYARDS.

There will be no session of the Convention Thursday morning. Instead the delegates and visitors will be invited to go on an excursion as the guests of the Cleveland Hydraulic Press Brick Co. to a number of the interesting brick plants in the vicinity of Cleveland. A special train will be provided, which will leave the Baltimore & Ohio and Valley R. R. station at 9 a. m. The first stop will be at the plant of the Cleveland Hydraulic Press Brick Co., at South Park, O., ten miles from Cleveland, where the famous "Akron" red, impervious and ornamental pressed brick are made. Every feature of the plant will be inspected. The same train will then conduct the visitors to the paving brick plant of the Cleveland-Canton Vitrified Brick Co., where paving brick and block are manufactured by the stiff clay process. From there the train will proceed to the works of the Standard Brick Co., where common building brick only are made by the soft clay process. The next and last stop of the trip will be at the new vitrified brick plant of F. H. Eggers, where shale building and sewer brick are made and burned in round down-draft kilns exclusively. It is anticipated that this excursion will be one of the most pleasing and instructive features of the Convention.

PAPERS AND DISCUSSIONS FOR THURSDAY AFTERNOON AND FRIDAY.

"Experimental Work in Brickmaking." By Eb. Rogers, Alton, Ill.

"Modern Brick Plant Prospecting and Construction." By Frank Butterworth, Danville, Ill.

"Brick Roadways and the Improvements of Public Highways." By W. H. Evers, C. E., Cleveland, O.

"The Economy of the Soft-Mud Process. By William Sankey, Pittsburg, Pa.

"Clay as a Commercial Commodity." By S. J. Geijsbeek, Golden, Col.

"Burning Brick with Oil." By George H. Drew, Blue Island, Ill.

"Drying Brick with Waste Heat from Cooling Kilns." By W. L. Sibley, Birmingham, Ala.

"The Construction of Kiln Stacks." By H. B. Camp, Akron, O.

"The Face Brick Proposition." By David C. Meehan, Columbus, O.

"Salt Glazing Brick." General discussion, led by William Cannon, Syracuse, N. Y.

Is it good or bad economy to use cheap or low-grade fire brick in building or repairing permanent kilns? General discussion, led by C. B. Stowe, Cleveland, O.

Report of Committee on Specifications for the Construction of Brick Pavements. By D. V. Purington, Chicago, Ill.

QUESTIONS FOR GENERAL DISCUSSION.

Can artificial dryers be made so convenient in handling brick that the manufacturers may save in labor more than the extra expense for fuel, taking into account interest on extra capital invested?

Where there is only one boiler, and that of sufficient size to furnish power for the plant, is it practical to use exhaust steam during the day and live steam at night? Or, would it be better to put in an extra boiler and use live steam altogether?

Is the tunnel dryer practicable for drain tiles?

Is there not more danger of fire from the hot-air, direct-heat dryer than from the steam-heated dryer?

Where there are limestones in the clay, is it possible, either by grinding, burning, or any other way that is practical, to prevent the particles from exploding and chipping the face of the brick?

Although all good brickmakers expect eventually to dwell in the land where rust doth not corrupt, nor thief break through and steal, yet at present he finds he has to face the fact that rust is destroying his iron cars to such an extent that in less than a year the life is gone out of them and they drop to pieces. Has anyone had this trouble in drying their brick with heat from burning or cooling kilns? If so, what is the cause and what the remedy?

Is it best to take steam from brick dryers by up draft or down draft?

In dryers, where green bricks are put in at one end and taken out at the other, is it best for the steam from the drying brick to have to pass to the far end of dryer? Would it not be better for the steam to be taken out at several places, and thus prevent it from passing through the brick?

Where shale contains carbon, and in burning the heat concentrates in different portions of the kiln, the fire showing bright in spots, if followed up these become white hot, while the remainder of the kiln is only red hot, is it due to faulty firing, or to the character of the shale? What is the best way to treat material of this kind?

What is the chief advantage or disadvantage of round down-draft kilns compared with square down-draft kilns for burning paving brick?

Does the process of repressing paving brick really tend to strengthen or weaken the brick?

Is it best in burning pavers in down-draft kilns to close the dampers and reduce the draft when the kiln is pretty well burned, or to complete the burn with full draft?

Where a brick plant is to be located across the river from the land on which are the deposits of clay, is it feasible: First, to convey the clay to factory by the slumming process—that is, dilute it with water and pump it through a pipe to settling vats; or, second, to convey the clay in buckets or cars by an overhead cable a distance of about 1,300 feet, the factory site being about 15 feet lower than the clay bank?

SATURDAY SIDE TRIP DAY.

Saturday, the 15th, will be devoted to sightseeing about Cleveland. There are many points of interest for visitors in and about the city, and the local Entertainment Committee will hold themselves in readiness to answer any and every demand made upon them by the visitors. The great Garfield monument can be visited by those so disposed, while the immense shipbuilding establishments will prove interesting to many not familiar with this character of industry. There are many other attractions in and about the city, of which the local committee will be able to advise the visitors, and to which the badge of membership will be an open sesame.

THE SOUVENIR BADGE.

A handsome and very appropriate badge of membership will be presented to members and those accompanying them, with the compliments of the Cleveland brickmakers. It is the ambition and hope of the local committee to make every visitor happy. Every clayworker in the land is cordially invited to attend the Convention. As in the past, all sessions will be open to the public. Those desiring information relative to the requisites of membership, or any matter relating thereto, are are requested to write to the Secretary at Indianapolis.

F. B. Many, Cleveland, Ohio.

THE EXECUTIVE COMMITTEE,
T. A. **Randall**, Secretary. W. H. **Hunt**, President.

LOCAL COMMITTEES.

The following gentlemen have been chosen to look after visitors and aid in Convention work. Their efforts will be seconded heartily by every brickmaker in Cleveland:

—Entertainment Committee.—
William H. Hunt, chairman; J. W. Hornsey, F. H. Eggers, W. H. Caskey, S. D. Wright, F. H. Robinson, S. M. Duty.

—Finance Committee.—
C. B. Stowe, chairman; F. B. Many, John Wilson, J. N. Battenfeld.

—Badge Committee.—
W. D. Richardson, chairman; W. H. Hunt, E. A. Roberts.

—Exhibition-Room Committee.—
F. E. Frey, chairman; A. A. Davis, S. A. Williams, Jr.

Written for **The Clay-Worker.**

THE EVOLUTION OF THE POTTING INDUSTRY OF THE UNITED STATES.

The Primitive Methods of Early Days Compared with Those of the Present.

PROGRESS IN THE potting industry of the United States has been so great in the last twenty-five years that few of us wish to compare it at all with the potting industry at that time until, upon second thought, we think of those who laid the corner-stone of this vast industry, and then we condescend to compare.

One of the best possible comparisons was that made at the recent Potters' Convention in East Liverpool, in which H. P. Knoblock, secretary of the Potters' Co-operative Co., of East Liverpool, gave to his appreciative audience a description of his first trip in the interests of the potting industry, and in which he portrayed in full the time when the life of a crockery salesman was not crossed with the brightest of sunshine. When, with an unhandled teacup and a 7-inch plate in one side of his carpet "sample trunk" and a nightshirt and a tooth-brush on the other, he sallied forth to announce to the world that East Liverpool was first, last and forever the seat of the potting industry.

Compare these circumstances with Mr. Knoblock and his traveling outfit of to-day, or for that, any other pottery salesman, for instance, the Homer Laughlin China Co., whose salesmen, with their two and three big sample trunks, on which are emblazoned in letters of gold the full name of the firm, and below which is the spread-eagle with its claws in the dying lion, from which the blood is streaming. What better demonstration could we have of England's wounded and fast dying pottery industry and America's triumph. When these men go to the buyer with their samples, they do not have to go up and present their card and say, "We have a one-kiln pottery over there in East Liverpool," or Trenton, or elsewhere, as the case may be, "and we make yellow ware." No, they don't say that; they are past that now; it is a question of decorations, quality of goods, and, to our sorrow, prices.

In those days of long ago the manufacturer who could ship ware to Chicago was a "lucky dog" and was to be envied, and now we send it all over the world. We go on an ocean liner, an American or foreign train, hotels, anywhere, and look at the bottom of the ware and see it marked not by English marks, but such "K. T. & K," "Greenwood," "Dresden," and many other American marks.

Twenty-five years ago East Liverpool potteries were almost unheard of, and to-day we make as many shipments to Honolulu as we did then to Chicago.

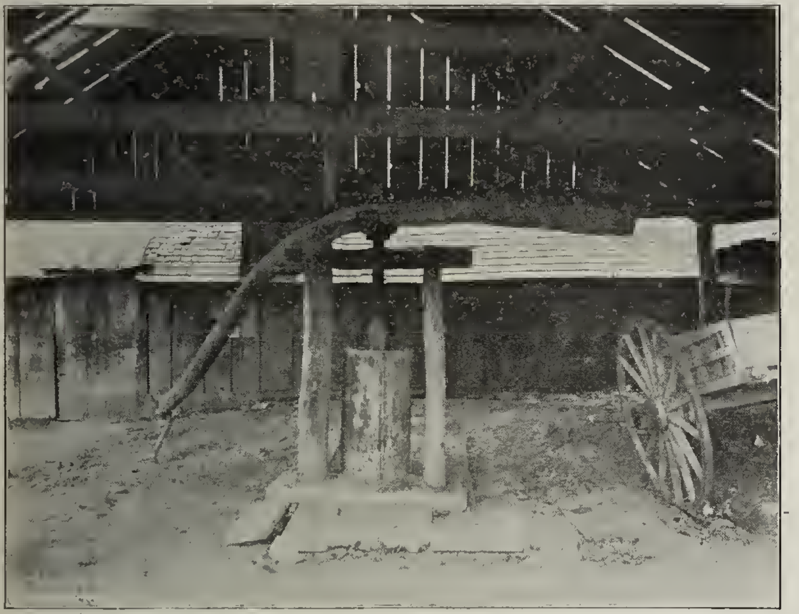
A PIONEER POTTER AND HIS WORK.

Twenty-five years ago the potteries of East Liverpool and, in fact, all of the potteries of the West, were making only yellow ware. Of the Western potters, Isaac W. Knowles was the first to attempt the manufacture of white ware. Mr. Knowles was at the time operating a one-kiln pottery in East Liverpool, but soon afterwards, in company with John N. Taylor and Homer Knowles, the firm of Knowles, Taylor & Knowles was formed, and which was later incorporated under the name of the Knowles, Taylor & Knowles Co. The company now has a capacity of thirty-one kilns and is one of the largest, if not the largest, pottery in the world.

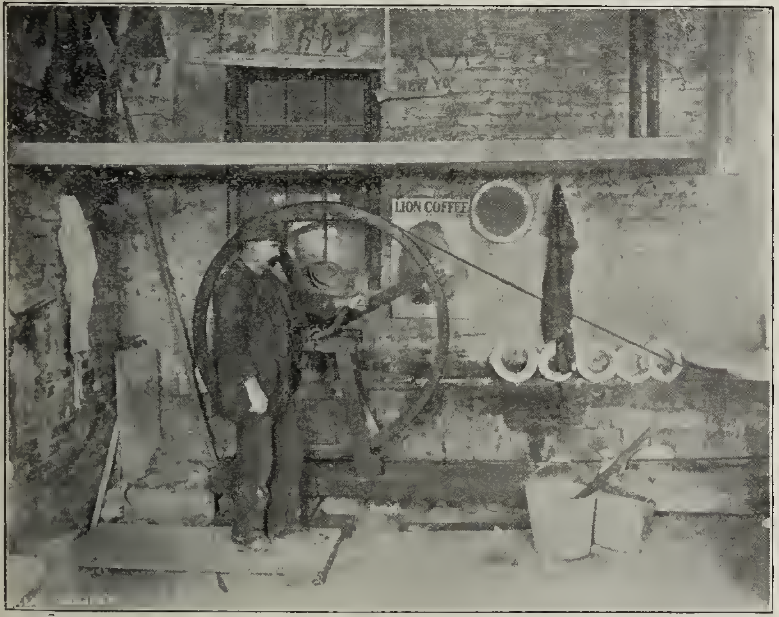
To Mr. Knowles is due the turning point of the potting industry not only in his connection with starting the manufacture of white ware in this section, but by his invention of the Knowles "pull-down." Of Mr. Knowles it is well said that he is the man who "revolutionized the potting industry from a livelihood to an industry."

In applying the above tribute to Mr. Knowles it may be well to give for the sake of those who are not directly interested in the pottery industry, a brief sketch of the slow progress made in progressive ways of manufacture.

In past years the process of manufacture had been very slow and all ware had at first been made on what was termed a jigger, but what in reality was nothing more nor less than a whirler, to which was attached a belt running to another pulley which was rotated by hand. On the top of the jigger was placed a mold, which contained the design of the interior of the plate or piece to be made. The clay was batted flat and placed on the mold, and then what is known as a hand or profile took hold of it, cutting the top of the clay in the design of the bottom of the plant and making the foot on same.



An Old Time Horse Power Pug Mill Used by the Early American Potters.

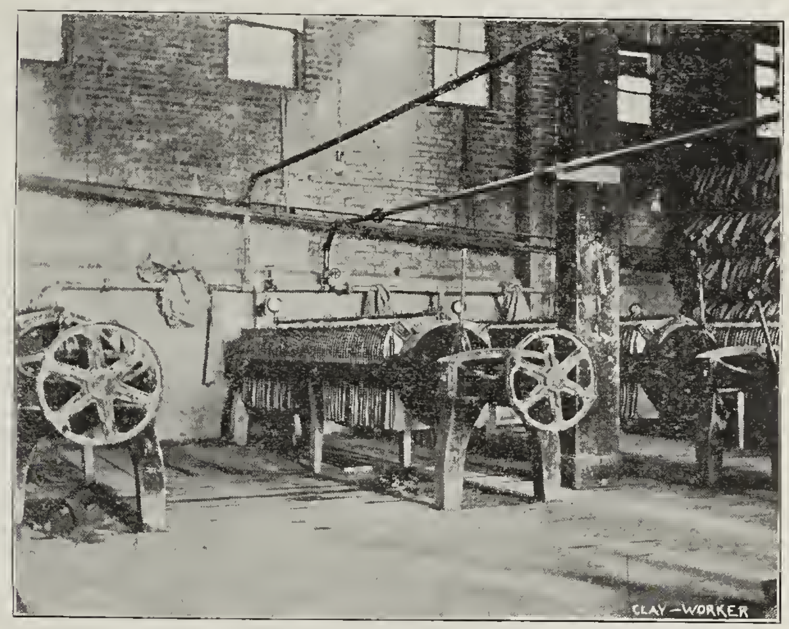


"More Truth Than Poetry; More Work Than Romance."

The jigger of to-day is a far different piece of mechanism than this simple hand jolly, which was used then. The jigger of to-day is made with its massive iron frame well proportioned and with the weight well distributed, giving strength at all necessary parts. It is now fitted with what is termed a friction attachment, which is composed of a cast iron head, on which is a rubber friction ring, which runs on a smooth friction disc attached to the end of the horizontal shaft. This attachment assures the smooth and easy running of the machine and avoids "wavy" ware. The jiggers of to-day are fitted with rings whose outside diameter are all the same to fit the same size machine. The inside diameter is made to fit the different molds, so that in this manner the rings are interchangeable, and when it is necessary to change off the making of one class of ware it is very easily accomplished.

Mr. Knowles's invention, his pull-down, sits directly back of the head of the machine. To this pull-down is attached a lever or handle, on which is fastened the tool. This lever is pulled down, bringing the tool in contact with the clay and making the ware.

Even to this invention have been added later ones which serve to reduce the cost to a minimum. There is made what is called a jumbo jolly. This machine is made with an upright shaft at the rear of the head. On this shaft works a slide, to which is attached the pull-down handle. This handle is rigged so that in making hollow ware, after the handle is brought down on the interior of the ware, a lever is pulled forward, making the bellow of the ware. When the lever is thrown back to clear the tool, it is made so that it has an upward motion, which has a tendency to throw the tool upward, thus clearing it of the clay. On this machine are made jardinieres, cuspidors, chambers, etc. Even as small pieces as individual butters may be made on it, although not profitably. It is also used for making tea-pots, sugars, creams, etc.



Filter Presses in Factory, Homer Laughlin China Company.

Pressing Room, Homer Laughlin China Company.

There is a still later machine being made which is called an oval jolly. On this machine may be made such oval pieces as sauce boats, bakers' dishes, etc. The machine is made so that in rotating the head moves in an oval motion, always keeping in contact with the tool, successfully making ovals by machinery.

MACHINE VS. HAND-MADE WARE.

There are, at the present time, in this country, two or three potteries that do not make a piece of ware by hand, all being made by machinery. When one considers that twenty-five years ago it was all being made by hand, the progress shown is not so bad.

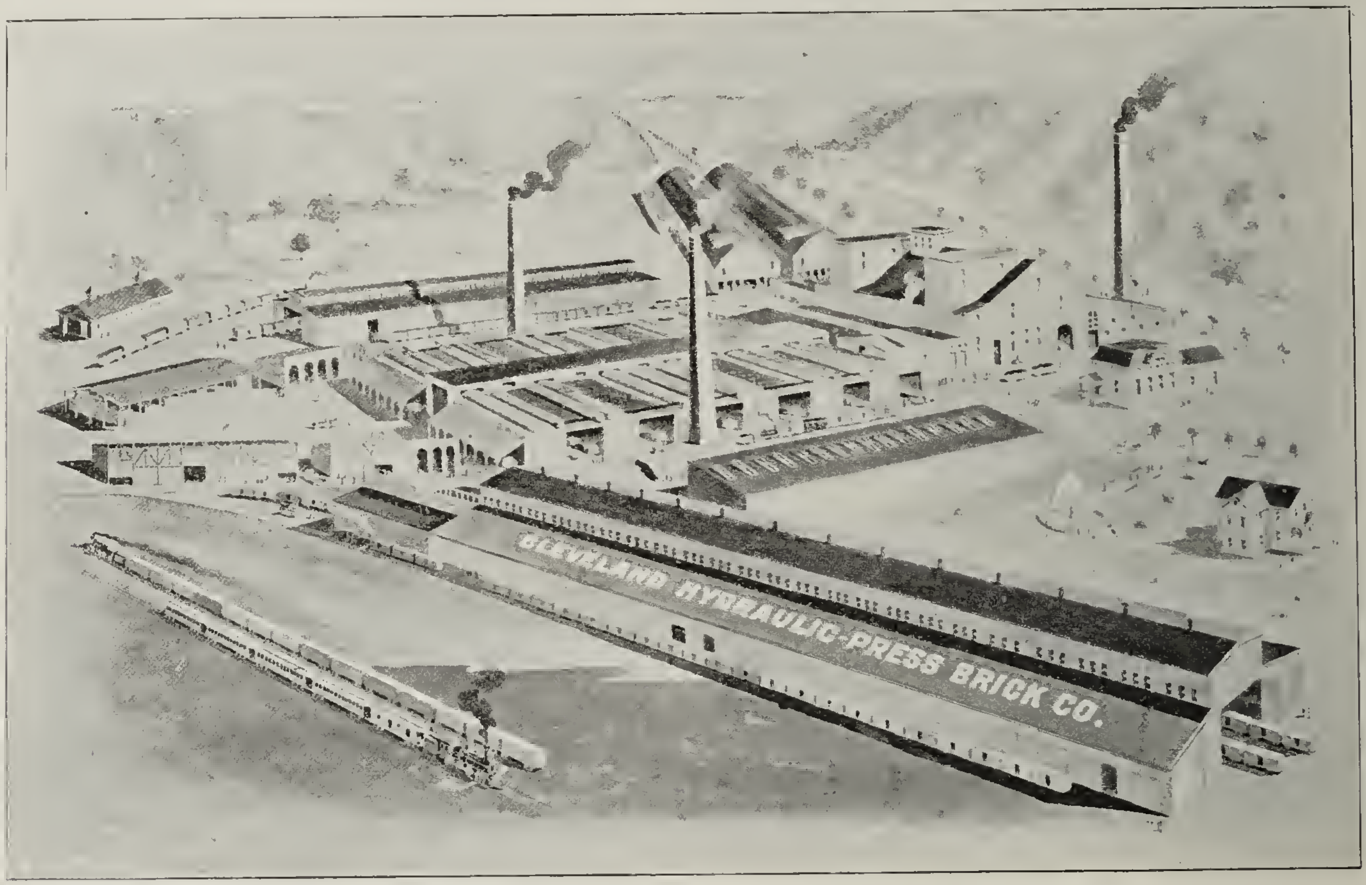
However, not only in the clay shops are the improvements most noticeable. Not many years since the potters of this country were pugging their sagger clay in mills which were made with a wooden barrel and on the top of whose shaft was attached a long pole, to which was hitched a horse, and if the potter's patience was taxed, how about the horse? The "body" clay was cut with a wire and wedged by hand.

The work of the potter, especially that of the thrower, has ofttimes been referred to as the "Merry round of the potter's wheel," and to this has been added a great deal about the evolution of the potter's wheel, meaning the andvancement and improvements on same, having taken from it all of the poetry and romance. If the writer of those lovely little snatches of song and verse would cease for a time to think of the time "When Knighthood Was in Flower," and would exchange places with the poor fellow who had to turn that "poetic," "romantic" little wheel, he would, no doubt, soon find out that in the wheel there was more truth than poetry, more work than romance.

However, those days are over. The path of the potter of to-day is strewed with roses. His future is to be one unbroken page of rest with gilded edges. In the words of our friend, Mr. B. M. Louthan, "There will be one string of potteries from New York to San Francisco." All of which will, of course, use "Louthan" stilts and pins.

There will be no strikes, no labor troubles, no crazing, no discoloration of ware. All will be tranquil. No one will cut prices, and the sea of the potter will be one undisturbed haven of rest, on the horizon of which he will see only the words "Big Sales and Good Prices." R. L. CAWOOD.

It is a common practice to look at our own faults through a glass eye, and fail to see them. —[Exchange.


CLEVELAND HYDRAULIC-PRESS BRICK CO.

Bird's Eye View of the Works of the Cleveland Hydraulic Press Brick Company.

Written for The Clay-Worker.

THE CONVENTION CITY'S BRICK PLANTS.

Varied and Interesting Studies in the Brickmaking Art—Object Lessons in Method of Manufacture of Rare Interest.

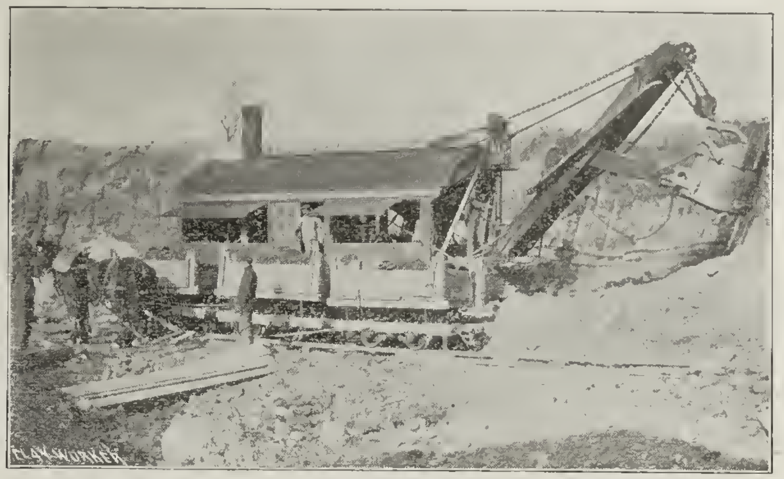
THERE ARE ALL kinds of brickyards in and about Cleveland. There is the ordinary common brick plant, the vitrified sewer brick plant, the vitrified paving brick plant and the vitrified press brick plant. One or more of each type of plant will probably be in operation Convention week, so that members of the N. B. M. A. who are seeking information touching either process will be able to visit soft mud, stiff clay or a dry press plant, as they may desire. This feature will make the forthcoming Convention in the Forest City exceptionally interesting and highly educational to those who like to mix business with pleasure in generous proportions.

As announced elsewhere in these columns, a special excursion will be run to a number of brick manufactories on Thursday, the second day of the Convention. The field will not be limited to this excursion, but many other plans will be available should the visitor desire to spend an hour or so in investigation. For instance, it is thought that many will find it profitable to inspect Cullen Bros.' yard, where brick are burned with oil. The local committee will assist visitors by directing them or accompanying them to the points of interest, and detailed information as to routes to be taken, etc., will be available in printed form when the Convention opens.

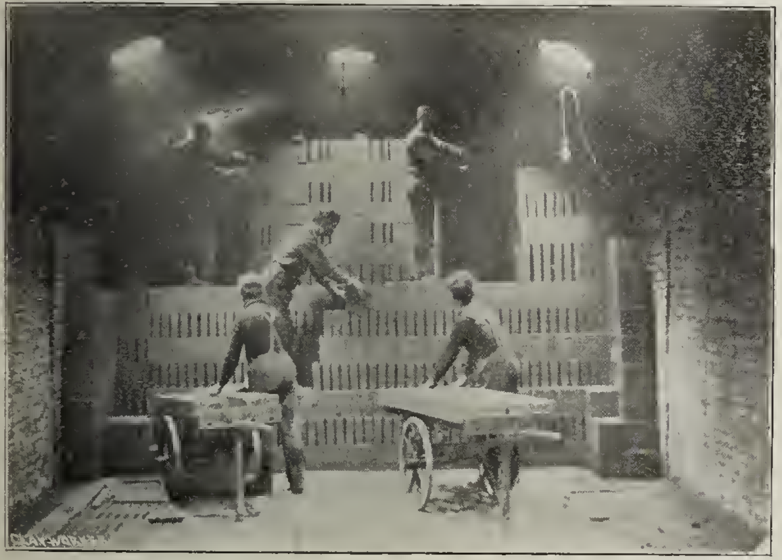
A PLANT THAT HAS MADE CLEVELAND FAMOUS.

Undoubtedly the most widely known of Cleveland's brick is the "Akron Impervious Red Pressed Brick," made by the Cleveland Hydraulic Press Brick Co. This will be the first plant visited by those who participate in the excursion scheduled for Thursday morning. It is the plant managed by President Wm. H. Hunt, and is certainly one of the best appointed pressed brick plants in the world to-day. This plant, which is now regarded among the finest in the hydraulic family, is almost directly the result of Mr. Hunt's personal efforts. It was first established in 1890, and during its early years met with the usual reverses which have characterized so many brick enterprises throughout the country. The original owners, however, were fortunate in securing Mr. Hunt at an opportune time for them, and his good business management at once was manifest in the overhauling of the plant and the placing of the same upon a sound and prosperous basis. The date of its induction as an hydraulic company was in 1895. The plant is to-day a monument to his energy and ability. Although not an experienced brickmaker at the outset, he has proved himself an apt student, and is now recognized as a leader in the galaxy of minds which make the brickmaking industry the noble calling it is. The praises of "Akron Red" brick are now on every tongue, the product being acknowledged by architects and builders throughout the land as unsurpassed building material, both in quality and in the uniformly high character of the product.

The C. H. P. B. Co.'s Water Supply.



The C. H. P. B. Co.'s Clay Bank.



Setting Brick in a Graves Kiln.

Sorting Brick in Kiln.

A Glimpse of the Stock Sheds.

In the Shipping Department.

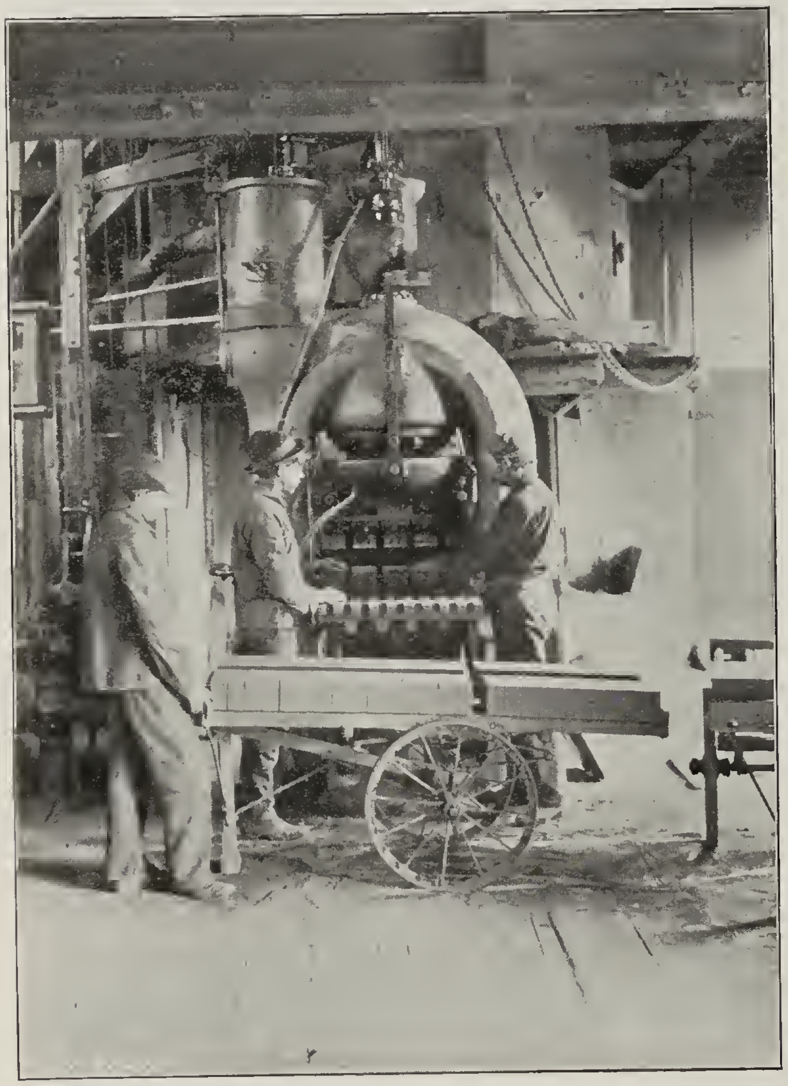
AT THE PLANT OF THE CLEVELAND HYDRAULIC PRESS BRICK CO.

There is no gainsaying the fact that the quality of the shale is fine and that there is an unlimited quantity of it. The company has seventy-five acres, and it averages forty-five feet or more in depth, all of which is good, workable clay, which burns a bright cherry red. The clay is taken from the face of the bank by a Marion steam shovel, dropped into cars, which are hauled by cable a mile in length to the clay shed, a substantial building, 100x250 feet.

The clay is dumped from the car into dry pans, and, after being pulverized, is elevated to a wooden chute or trough extending the full length of the clay shed, through which a

Jeffrey endless belt conveyor carries the fine clay. There are openings in this chute at intervals, so the clay may be dropped at any desired point. In this manner the fine clay is carried in a tiny, but continuous, stream until the clay is piled to the level of the chute, some thirty feet above the floor of the sheds. The reader may easily comprehend that when filled the shed covers a little mountain of pulverized shale.

The clay is taken from the end of the shed opposite from where it is received by cars run on portable tracks by gravity. That is, there is a slight grade from the shed to the machine house, so that the loaded cars are easily moved. As the clay is taken from one side of the shed the other side is being filled, and, as there is always a large quantity in the shed, in the natural order of the work, it remains there a sufficient length of time to "cure" thoroughly. Thus they are never at the mercy of the elements. A rainy season or a dry season makes little or no difference to this plant.



A Five-Mold Hydraulic Brick Press.

Before the clay is fed into the brick press it is again pulverized and passed through a fine screen. They have three hydraulic presses; one five-mold, of a daily capacity of 25,000; one two-mold, 10,000 capacity, and one two-mold used chiefly to make molded and ornamental brick, of which it turns out about 3,000 per day. The brick are taken from the press by spring trucks and sent direct to kiln. They have eight square kilns of the Graves type. They burn with coal, and finish burning in about seven days after the watersmoke is off.

The brick are all sorted at the kilns, taken in wagons to the stock sheds, where they are stored until required for shipment. This part of the work is characterized by unusual care and system. Every grade and shade of brick is kept separate from the rest, so that when an order for some particular shade of brick is received it can be filled promptly and without any danger of error. By this system they are enabled to keep tab on their stock and to replenish it as the demand requires. While they make red brick exclusively, and the reddest red brick we have ever seen, they produce eighteen different shades of red. They turn out an immense quantity and variety of molded and ornamental brick; there are upwards of 350 shapes and designs. To keep accurate account of all these is of itself no slight task.

Their grinding department is a feature in which Mr. Hunt takes a special interest. It is equipped with the usual "hydraulic" grinding facilities, and a few additional appliances which are the result of considerable experimenting and research, with the object of improving the already excellent equipment in this department. To facilitate this branch of the business they always carry in stock a large number of arch brick, so that all orders for shape brick can be filled promptly.

The factory is in charge of Mr. Charles Slattery, who has been identified with the plant since it was first started, and who is the right man in the right place.

Their facilities for making shipments are, indeed, excellent. A double-track railroad switch passes directly through the three main stock sheds, and a large number of cars can be loaded at one time if necessary. Order and tidiness are particularly noticeable in this department, though this is a marked feature of the entire plant. The buildings are all substantial in character, painted inside and out, lighted by electricity and fitted with every conceivable convenience for the prompt and efficient performance of the work. From office to clay bank no detail is overlooked, and no feature is too insignificant to receive thoughtful attention. This, we take it, is the key to Mr. Hunt's success.

The interest and welfare of the employes are carefully looked after. The company owns and keeps in good repair seven houses, which are rented to workmen who do not own their own homes. A number of the older employes are householders, and, in addition, a roomy and comfortable boarding house is provided, where the unmarried men can obtain homelike accommodations at a moderate cost.

The main buildings about the factory are built of brick, and so arranged and safeguarded against fire that there is little or no danger from this source, hence their insurance rate is very low. A dynamo in the machine building furnishes electric power and light, so that in an emergency the plant can be run both night and day. The driveways through the works about the kilns and stock sheds are all paved with brick, and a trip through the plant will be pleasant regardless of the weather.

The main office of the company is in the Cuyahoga Building, and visiting brickmakers are sure of a cordial welcome there at all times. It is a very comfortable and interesting place to visit. It consists of a handsome suite of rooms, in which are displayed, in the most attractive manner imaginable, the various designs and shades of hydraulic press brick, laid in different colored mortars, so that prospective builders and architects may see just the color effect of a certain shade of brick with the different colored mortars. Mr. Hunt's private office is elegantly furnished and beautifully decorated with rare pictures. Every detail bespeaks rare good judgment and a high appreciation of the best things in life.

Mr. C. A. Bliss, the assistant secretary, has charge of the accounts and general office work. He has been connected with the company for six years. He is a master accountant, and very ably seconds Mr. Hunt in the general management of the business, which is one of the details requiring a high order of executive ability.

EX-PRESIDENT RICHARDSON'S WORK.

The latest addition to Cleveland's brickmaking industry is the shale building brick plant of G. G. Greise & Co., which is being erected under the management of W. D. Richardson, an ex-President of the N. B. M. A. Unlike most of the Cleveland yards, the plant cannot be reached conveniently by street car,

F. H. Eggers's Shale Bank.

Eggers's Down-Draft Kilns.

but there is a telephone at the factory, and if visitors who desire to see Mr. Richardson and his new plant will call him up, they will be told just how to reach the plant, which is a thoroughly up-to-date soft mud yard. Though it is not completed, visitors will be welcome at all times. The machinery equipment consists of a Monarch brick machine and the necessary clay preparing machinery, all of which was furnished by the Wellington (Ohio) Machinery Co. The clay is taken from the bank to the machine house, a distance of a quarter mile or more, in cars, by a gravity railway. An A. B. C. dryer, with some new features, has been put in by the American Blower Co., of Detroit, and a new Dunn continuous kiln will be built as soon as they can make the necessary brick for that purpose. They propose to make their own brick for the building of kilns, etc., burning the same in temporary clamps.

F. H. EGGERS' NEW BRICK PLANT.

A little more than a year ago a fire put Ferd Eggers out of the brick business temporarily. The building brick plant which he had operated for a decade or more was totally destroyed by fire. As the clay at the old site was about exhausted, he decided to look for a new location. Being perfectly familiar with the city and all its environments, it did not take him long to find an available site. He purchased thirty-eight acres just beyond the city limits, on Jennings avenue and the Valley Railroad, run in a switch from the latter, which is operated by the Baltimore & Ohio, and began the erection of a modern shale building and sewer brick plant. Beginning at the base of a great hill, he soon had sufficient ground leveled off to begin the erection of the necessary buildings and kilns.

The building of a new brick plant under favorable circumstances is serious business. Mr. Eggers had been through the mill before, so he knew what to count on. He completed the works in a few months, and now has an excellent plant, turning out 35,000 to 40,000 brick daily. We can't see that the experience of the past year has added any gray hairs to his poll. This, however, may not signify much, for for some years past he has been somewhat like poor old Uncle Ned on the hair question.

He has about twenty feet of clay to start with, which burns a nice red, and beneath this is a stratum of hard, rock-like shale, several hundred feet in depth. The latter is what he is now using, his product for the past six months being almost exclusively sewer brick. Up to the time of our visit he blasted the shale with dynamite in the usual way, loaded it into iron-side dump cars, and hauled it by cable hoist to a clay shed near the dry pans. This shed holds about three days' run, and as it is usually kept pretty well filled there is little or no danger of being obliged to shut down because of bad weather. A rainy day makes little or no difference at this plant.

The only serious trouble he encountered was in the grinding of the shale. This he overcame by putting in two Stevenson dry pans, which he has found fully equal to his needs. From these pans the clay is carried in a bucket elevator and delivered into a hopper, which is about sixteen feet square at the top and tapers down to two feet at the bottom, where a slide regulates the flow of clay into the machine, which is a Freese combined pug mill and brick machine. As the stream of clay is forced from the die a Freese automatic side cut table cuts it in to brick 9½x4⅜x2¾ inches, which shrink in drying and burning to 8¾x4x2⅝ inches. The brick are piled on single-deck iron cars, holding 440 brick each, and run into tunnels and dried by the heat from the cooling kilns. There are twelve tunnels, 110 feet in length, each holding fifteen cars. Forced draft is used, a seventy-two-inch New York blower be-

Mr. F. H. Eggers's and His Three Sons.

From Dryer to Kiln.

ing used for that purpose. The fan is run by a ten-horse-power engine and does the work to perfection.

The brick are burned in round down-draft kilns, thirty feet in diameter in the clear, and which hold 85,000 to 90,000 brick. These are burned with coal in eight to nine days, the time varying according to wind and weather. They now have eight of these kilns and will build others. Leading from each kiln is an underground flue leading to a main flue, which is forty-eight inches square. The branch flues are twenty-four inches square, and can be dampered off at will; thus heat can be drawn from any particular kiln as occasion demands. The scheme has worked admirably from the start. They have had no trouble with it, nor have they had any bad burns. From the kiln the brick are loaded into barrows, wheeled and dumped promiscuously into the cars. The switch runs into the yard about three feet below the level of the kiln bottoms, so that by placing a board or runway across the bed of the car the brick are loaded easily and quickly. It is a rough way to handle brick, but Eggers' brick are tough and do not need to be handled tenderly. We saw several carloads of brick in various stages of loading, but did not see a single broken brick. The price of these brick has averaged about $8.50 per thousand on car during the past season.

Glimpses of the Works of the Collinwood Shale Brick Company.

Mr. Eggers has associated, with him in the business three sons, who are sturdy, hard-working fellows, and it is safe to predict that later on, when Ferd wishes to "sit in the cool," he can do so complacently, knowing that the work at the brickyard will go on with the same success that has crowned his own efforts.

Since our visit to the plant a Marion steam shovel has been added to the equipment, and when the delegates to the National Convention visit the works they will find this machine and a couple of men doing the work that heretofore has required about a dozen workmen.

WORKS OF THE COLLINWOOD SHALE BRICK CO.

Ten miles east of the Public Square, on the shore line of the Painesville Electric Railway, is the suburb of Collinwood. Here is located the paving brick plant managed by Spencer M. Duty. This gentleman comes of a family of brickmakers. For four generations past the Dutys have made brick for the Cleveland market, and we venture that not one of them was more enthusiastic in the work than is "Spence," as his friends love to call him.

The plant is not as well planned as Mr. Duty would like to have it, several changes having been made that makes it seem a little disjointed; but as there is an unlimited quantity of good shale within arm's reach, almost, Mr. Duty will continue to operate the plant as it is, doubtless, for some years to come, unless a fire or an earthquake should afford an opportunity of rebuilding.

The shale pit is remarkable. They are now working it to a depth of fifty-five feet. In drilling for gas or water, or something, they went down 1,800 feet and found nothing but the same character of shale. It is blasted in the ordinary way with dynamite, thrown into cars and drawn to the dry pan by cable hoist. From the pan (a Penfield) it goes to a Dunlap Perfect screen. The latter, Mr. Duty says, is well named, for it does their work perfectly. The brick are formed on a Freese stiff mud machine, from which they go either to the repress or to the dryer, as occasion requires.

The brick are burned in round down-draft kilns, of which they have eight, each holding 360,000 seven-pound blocks. Their entire product is shipped by rail, most of it going to near-by towns, though a goodly portion finds its way into the streets of Cleveland. The average price for the blocks the past season has been about $15 on board car at factory. Mr. Duty not only knows a good brick when he sees it, but he knows how to make them. As it is no trick at all to sell good brick these times, the plant will be run up to its full capacity right through the winter. Mr. Duty delights to extend the glad hand to visiting brickmakers, particularly if they are members of the N. B. M. A.

THE BUCKEYE BRICK WORKS.

This is another strictly paving brick plant. It, too, is located on the Painesville Electric Railway, but on a different division from that which runs to Collinwood. It is exceptionally well located for shipping facilities, being between the Lake Shore and the Nickel-plate Railroads, a switch from the former running into the plant. It is an old factory, having been established about fourteen years ago. It is equipped with Penfield machinery, having a daily capacity of 25,000 pavers.

The clay bank is much the same as that at Collinwood, and is worked after the same fashion; that is, the shale is blasted with dynamite and hauled in cars with cable hoist. The pit is now sixty feet or more in depth, and they can go as much below that level as they want to and still find good shale.

Being an old plant, it is somewhat picturesque, but has some modern improvements which were introduced during the last few years by Robert Twells, who until recently has been the practical man in charge of the works. The feature of most interest to visitors is that of drying brick by heat from cooling kilns. The latter are ordinary round down-draft kilns, each holding 45,000 brick. There are eight of them in two groups, one stack answering for each group. At the time the plant was built oil was used as a fuel, and the kilns were built close together. As a result, when they had to go back to coal they found themselves badly cramped for space. Otherwise they are all right. That this plant has been worked up to its capacity is indicated by the fact that for four years past they have, as a rule, emptied a kiln and filled a kiln every second day.

The brick are dried in tunnels 100 feet long. These were built originally for steam heat. A year or so ago Mr. Twells had underground flues built from kilns to dryer, and has been using the heat from cooling kilns ever since with very gratifying success. The system not only dries the brick economically, but really assists in the burning process. The system of tapping the kiln is novel and very effective. The underground flues are forty inches wide and fifty inches deep, and extend close to the door of each kiln. When a kiln is ready to be tapped, a wooden cover is lifted, an opening is made in the doorway of the kiln and an iron covering is placed over both openings. (See illustration.) The scheme has several advantages. The floor of the kiln is not interfered with in any way, and when sufficient heat has been drawn from a kiln the iron covering is removed, the wooden platform dropped in place and that part of the work is done.

Though no longer connected with the plant, Mr. Twells will be pleased to give further details in regard to this method of work to any one desiring it. He will be at the National Convention, where his buttonhole will be open to all comers. We neglected to say that the plant is located at Wickliffe, a suburb lying fourteen miles east of Cleveland.

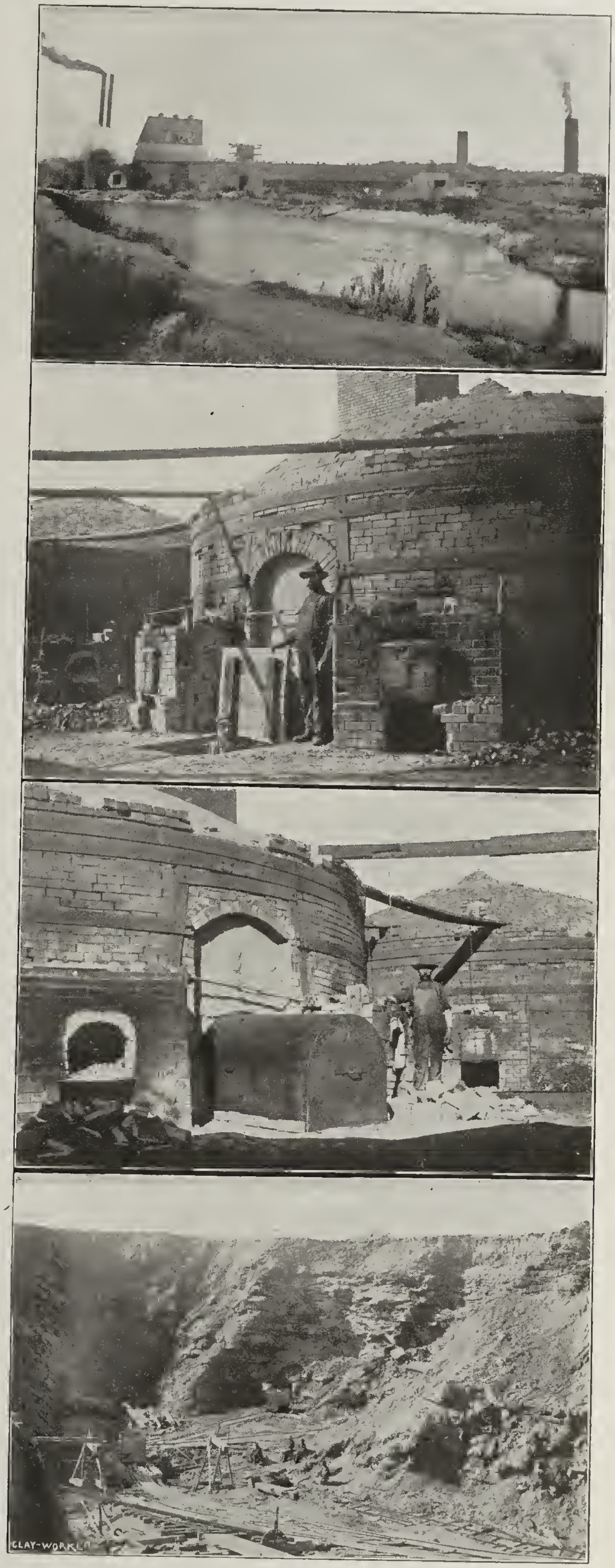
Those who visit the Buckeye plant will observe, a short distance from it, the tall stacks of a well-built plant. No smoke has curled upward from these stacks for many moons. It is the Owens hollow block factory. Its product was porous terra cotta. It seems to have been well built; the buildings, kilns, etc., are all very substantial in appearance, and evidently represent a large investment, but for some reason the venture proved unprofitable and has been abandoned.

THE WORKS OF THE STANDARD BRICK CO.

One of the largest and most successful building brick plants in the vicinity of Cleveland is that of the Standard Brick Co., constructed and operated under the direction of H. C. Bradley. This is another of the plants that will be visited by the excursionists Thursday morning, Convention week. The plant was first built in 1890. It was afterwards burned, which gave Mr. Bradley an opportunity of rebuilding on up-to-date lines, and he made the best of his opportunities. The buildings are all permanent in character, brick being used almost exclusively in their construction. They are roomy and comfortable, no expense being spared to make the plant convenient and permanent. The engine and machine house is 75x250 feet. The power is furnished by a Babcock & Wilcox water tube boiler of 350-horse power. From the machines the brick go in cars to a Cummer dryer, which occupies ground room of 82x220 feet, and has a capacity of 125,000 to 150,000 brick per day. This is a hot air blast dryer. Mr. Bradley is well pleased with it.

Going back to the clay bank, we find a Marion steam shovel eating into the face of an immense hill of excellent clay. There is a quantity of it that will suffice for several generations to come. It is hauled in cars and dumped into a Potts disintegrator, from which it goes to Hercules soft mud machines. There are three of them, with a combined capacity of 100,000 to 130,000 brick per day. Mr. Bradley expresses satisfaction with his entire mechanical equipment. The brick are burned in large open-top permanent kilns with slack coal. There are six of these, holding from 450,000 to 1,000,000 brick each. A new kiln was recently completed which will hold the latter quantity, and Mr. Bradley thinks it is one of the largest permanent kilns in the country.

The plant is located beyond the city limits on the Valley Railroad. The latter affords good shipping facilities for out-



The Buckeye Brick Co.'s Plant. 1. General View. 2. Underground Flue. 3. Flue Connected to Kiln by Metal Covering. 4. The Shale Pit.

of-town orders, while the brick for the city market are hauled in wagons.

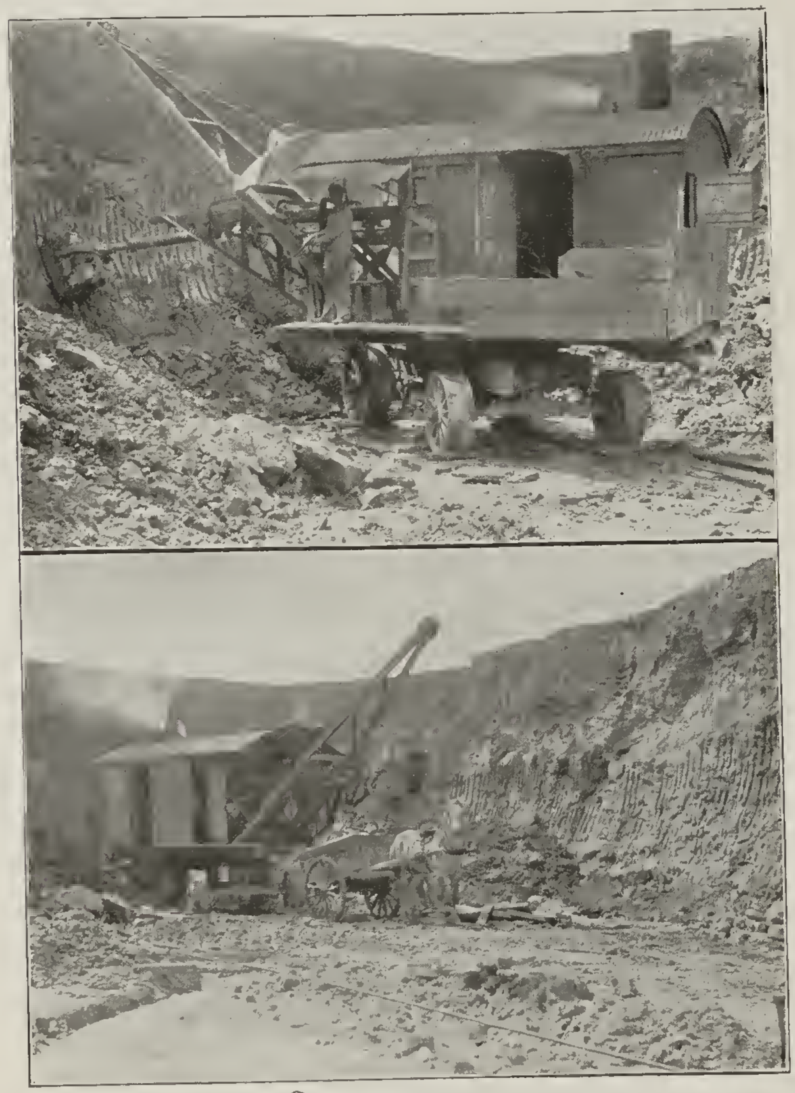
Mr. Bradley, like many another good brickmaker, is very fond of a good horse. Those who, like the writer, are fortunate enough to drive to the plant with him will appreciate this.

Works of the Standard Brick Company.

Mr. Bradley and His Favorite Nag.

The Large Kiln—Capacity, a Million Brick.

Mr. Bradley is associated with Mr. C. G. Barkwill, under the firm name of Barkwill & Bradley, and together they buy and sell all the brick for the Cleveland market; that is, the other local building brick manufacturers sell their entire product to Barkwill & Bradley. The latter book all orders, make all collections, stand good for any losses that may be incurred in connection with this end of the business, and pay the other manufacturers an agreed price for all brick delivered. With but one or two exceptions, all local manufacturers are parties to this arrangement, and the result is a uniform stable price the year round. The plan is a good one, works to perfection, and has proved advantageous to buyer as well as seller, for contractors know just what to figure on. Manufacturers who are competing with their neighbors, each seeing who can sell for the least money, will do well to come to the National Convention and interview Messrs. Barkwill & Bradley on the importance and advantage of local organization.


Mr. Barkwill's Clay Bank and Thew Automatic Shovel.

Mr. Barkwill is also a brickmaker, also a banker, and so thoroughly appreciates the importance of economical methods of manufacture and economical methods of marketing the product after it is manufactured. He is also an exceptionally clever and genial gentleman. Those who attended the last Cleveland Convention have very pleasant recollections of him, for he was a star performer at the banquet, and, of course, is expected to again take an active part at the coming function.

C. G. BARKWILL'S BRICKYARD.

Mr. Barkwill's brickyard is located at the foot of Herald street. A fifteen-minute ride on the Woodland avenue trolley line takes one within two blocks of the plant. It is a model of tidiness. The plant is located at the foot of a great hill, from which the clay is taken. A Thew automatic shovel takes the clay from the bank and drops it into carts, which are drawn by horse power to a Potts disintegrator, and from that it goes into a Henry Martin brick machine. The plant has a daily capacity of 60,000 common brick. These are placed on iron pallets and taken to a steam-heated Martin dryer, are burned with coal in permanent up-draft kilns, with furnace outside the walls. They have four of these, holding 450,000 each. It usually takes about ten days to burn.

A novelty that caught our eye here is a soot gun. As shown in the accompanying engraving, it is a long piece of iron pipe, in the end of which is placed a load of powder. This is plugged with a fuse attachment, so that when thrust into the arch of the kiln an explosion follows. The accumulated soot is dislodged, and the desired draft again secured. We did not see it operated, but the fireman said it worked like a charm. The burned brick measure 2⅜x3¾x8¼, which is the standard size made in Cleveland.

Adjoining Mr. Barkwill's plant are two other similar yards. First that of Duty & Co., and beyond that Dawson & Carder. Climbing up to the top of the hill, which was no easy task, handicapped, as we were, with a camera, we found Mr. Carder, superintending the plowing and gathering of clay. A hearty hand clasp told plainer than words that we were welcome. The work was stopped while we took a snap shot (which did not materialize), and we departed with the assurance that Dawson and Carder would do their full share to make the National Convention a success. As we descended the hill, the noon whistle blew, and by the time we reached Duty & Co.'s plant the superintendent had gone to dinner, and the men were too busy exploring the depths of huge dinner buckets to impart information about the *modus operandi* of the work. The plant is about the same as that of Dawson & Carder,

General View of George Gynn's Building Brick Plant.

(1) Barkwill's Office and Stable. (2) The Head Burner and the Soot Gun. (3) Duty's Suspension Bridge. (4) Dawson & Carder's Machine House.

Rear View of Warren Farr's Building Brick Plant.

where, by the way, they make 30,000 a day on a Martin machine, dry by steam and burn in common clamps. The yard was run all last winter, and will probably be so this.

CLEVELAND'S OLDEST BRICKMAKER.

Mr. John Wilson is probably entitled to the credit of being the oldest brickmaker now actively engaged in the business in Cleveland. He is still making brick on Independence street, near Canal, on the same site where he started in the business twenty-seven years ago. If Wilson gets his finger in Gates's buttonhole the readers of The Clay-Worker will be relegated with some interesting stories touching on brickmaking in Cleveland in years gone by. Mr. Wilson now has a rack and pallet yard, and makes about 30,000 a day on a Martin machine during the summer season. The brick are burned with coal in common clamps, in three brick benches set thirty-nine high. His season's output amounts to about 4,000,000 brick, most of which are delivered by wagon, though occasionally he ships a cargo by canal boat.

Glimpses of Cullen Bros.'s Plant. (1) Setting a Clamp. (2) The Oil Tank. (3) Where the Clay Is Hauled In.

GEORGE GYNN'S PLANT.

A block or two from Mr. Wilson's yard is the plant of George Gynn, which is conceded to be one of the best managed plants in the city. Mr. Gynn is a born and bred brickmaker, and gives his entire attention to the running of the yard. He has a fine bank of yellow and blue clay, which he is now working to a depth of 20 feet. As our picture shows, he is using a Thew automatic shovel, and commends it very highly. The clay is hauled in cars, first by horse power and then by cable, to a Potts disintegrator. The latter is a very popular machine about Cleveland, as is also the Martin machine, which we find installed here and in the other neighboring yards. A Cummer dryer and five up-draft kilns complete the equipment. Mr. Gynn is proud of his plant, and will take pleasure in showing visiting brickmakers what he is doing and telling them how he does it.

There are two similar plants nearby—Warren Farr's and John Cullen's.

BURNING BRICK WITH OIL.

At the corner of Winnenden & Beyerle streets is the plant of Cullen Bros. Here we find another Martin machine, on which 30,000 brick are made a day. These are dried in steam-heated tunnels. The distinctive feature at this plant is the use of oil as fuel. The Cullens appreciate the advantage of oil as a labor saver. Their brick are burned quicker and, they think, considering the saving of labor, cheaper than can be done with coal. They can give reasons for the faith within them, and will be pleased to demonstrate this to members of the N. B. M. A., who visit their plant Convention week.

THE SCOTT METHOD OF HANDLING BRICK.

A GREAT LABOR SAVER—CHEAP IN FIRST COST—EASY TO OPERATE—NO REPAIR BILLS.

THE OLD EXPRESSION that "There is nothing new under the sun" no longer holds good. In these days of new inventions one must be up and doing to keep track of the improvement in mechanical contrivances in all lines of trade, brickmaking as well as any other. As our readers will see, by turning to pages 166 and 167, Messrs. Alex. A. Scott & Co., of Knoxville, Tenn., offer brick manufacturers an improved method of handling green brick, for which many advantages are claimed over methods now in use. Any appliance that reduces the amount of labor required to handle his product is of decided advantage to a manufacturer. Hence, this invention of Mr. Scott should be thoroughly investigated by every brickmaker. It is adapted to both the soft clay and stiff mud process, and the inventor claims that it is cheaper in first cost, as well as being less expensive to operate than prevailing methods. This is a broad claim, but Mr. Scott is prepared to demonstrate its truth.

The method is equally well adapted, he says, to either a small yard or a large one. The illustrations shown on the pages referred to indicate the character of the appliance and the manner of handling the brick by the Scott system, which, in brief, is as follows:

From 200 to 500 brick are taken from the machine and placed on a pallet, which is placed in position over the tracks and is supported by rests on each side of the tracks. The car is run under the pallet, the lever lowered, thus raising the pallet off the rests. The load being then on the car, the latter is run on the yard, where there are tracks and rests along each track to support pallet and brick. The lever is again raised, thus lowering the upper deck of the car, which places the load on the yard rests. Here they are left in the air and sun to dry before being transferred in a similar manner to the kiln.

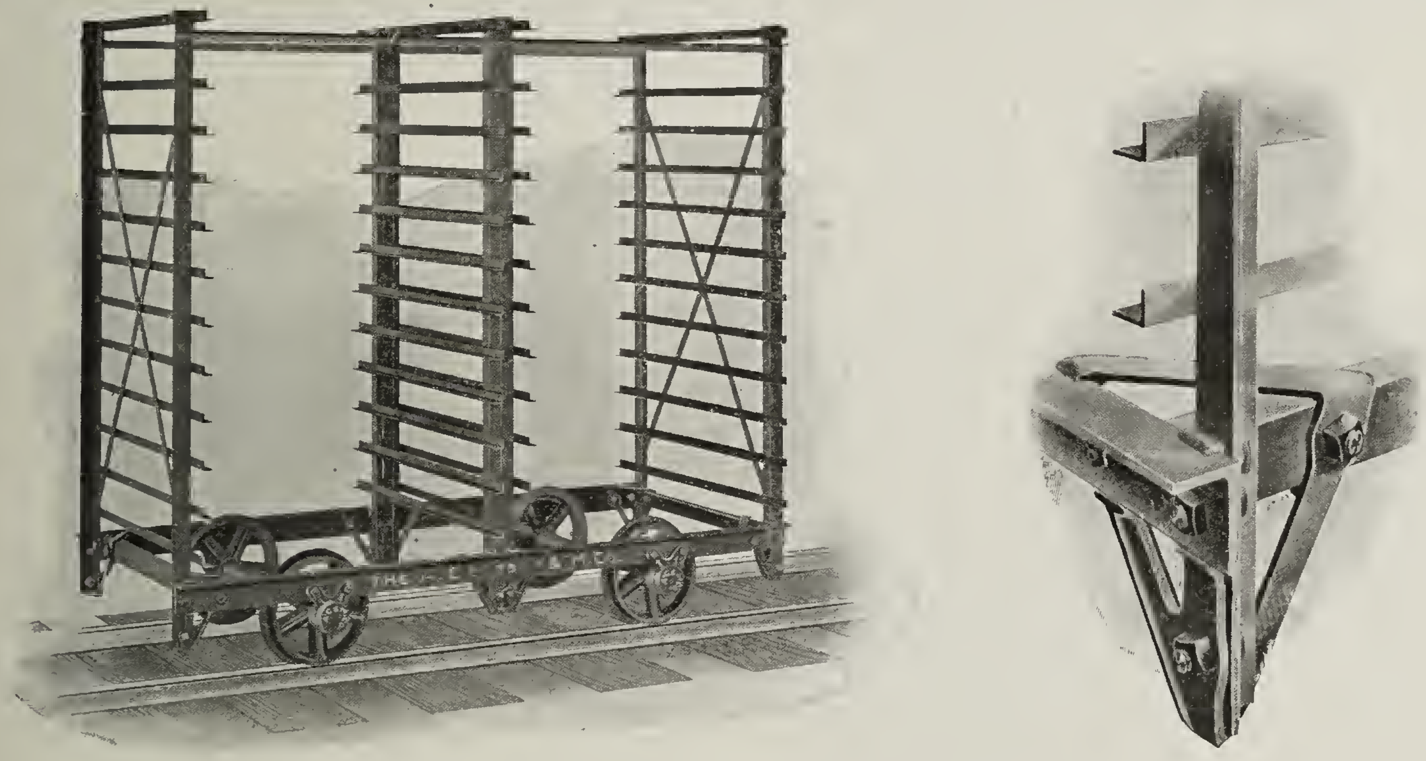
The entire car is of iron and steel, with four 18-in. roller-bearing wheels. There are no complicated parts, a fact which renders it a simple matter to effect necessary repairs. The track may be made of wood, 3x3 for rails, 4x5 cross ties and 2x3 for uprights fastened on each tie, with a 1x8 fence plank nailed on the uprights.

It is preferred by many brickmakers to dry their product by air and sun, as it costs nearly as much to use dryers and fuel as it does to make the green brick; but the expense of handling and the damage done the ware by out-of-door methods formerly in use have induced many to use artificial dryers and fuel in order to get system and car service. Some important points in connection with the operation of this system are as follows: Brick are never handled individually after being taken from the machine until tossed into kiln; there is no mud to contend with; every advantage of an artificial dryer is obtained without the first cost or daily expense; and only two men and two cars are required to give a perfect car system, and to take from the machine and put to the kiln 40,000 brick per day.

THE NEW ATLAS CAR AND MALLEABLE BRACKET.

THE DEMAND FOR more perfect machinery in the manufacture of brick is exemplified in the accompanying illustrations. Brick manufacturers as a rule have taken what they considered a rack car that would not rack, but a few weeks' experience showed them, to their sorrow, that they were "up against" a new kind of trouble and expense. How often can be seen a car of brick all tumbled together, pallets having fallen off the slides, all on account of the uprights swinging endways and sideways. Machine manufacturers have aimed to overcome this fault for years, in all kinds of ways, but never has it been so completely eliminated as in the construction we herewith illustrate.

The reputation of the Atlas Car and Manufacturing Co. as manufacturers of high-grade cars has been demonstrated to the world for years. Simplicity, combined with maximum strength and minimum weight, is covered by the "Wright Patent Malleable Bracket." At a glance the vital points can readily be understood. The bracket connects the side and end frame pieces in a rigid construction. The uprights rest on a recess, taking the bearing strain off the bolts. Also, being bolted in both directions, makes it impossible to work loose.



The Atlas Car & Manufacturing Co.'s New Rack Car and Bracket.

The bracket is provided with lugs, into which the angles fit tight, allowing no movement of bracket, either sideways or endways, thereby making the uprights rigid in every direction. The bracket is connected on top from both corners in such a way that it keeps the frame square and in alignment. The bodies of cars can be shipped set up. This bracket is used in double and triple-deck cars, as well as on cars as shown.

The bracket, being made of malleable iron, will stand all the strains and blows that such cars are subjected to.

Brick manufacturers readily see the merits of such an article, from the number of orders booked by the manufacturers.

If you are contemplating the purchase of dryer cars, or are having trouble with your cars, write the Atlas Car and Manufacturing Co., Cleveland, Ohio, for further particulars.

GRATH HAND AND STEAM POWER BRICK PRESS.

Through an oversight, that part of the Illinois Supply & Construction Co.'s ad., in the December Clay-Worker, which referred to the Grath hand power brick press was illustrated by a cut of their steam power press. As the reader may see by turning to page 13 of this issue, on which both style of presses are illustrated, they are prepared to supply the demand for either style of press. Each has its advantages. Those of our readers who want to make a limited number of press and ornamental brick will find the hand power press just what they have been looking for, while the one and two-mold steam power press has a capacity of from five to ten thousand brick a day. Mr. Grath will be very glad to give further particulars about these presses or any of the brick machinery, supplies and kilns which bear his name.

BUSY DAYS AT LANCASTER.

A recent visit to Lancaster, Pa., a name made very familiar to clayworkers throughout the country by the advertising of the Henry Martin Brick Machine Manufacturing Co., found the latter firm running their immense factory to its full capacity, and even then they were barely able to take care of the orders for brick machinery that came their way. At the time of our visit they were building a new addition to the plant, which will give them increased facilities, and the probabilities are they will need it and more, too, for Martin machinery grows in popularity from year to year, and they are continually adding to their line. Originally they manufactured soft mud machinery only. Now they offer the trade almost any kind of a brick machine or appliance that may be desired. They expect to make their stiff clay and dry press machinery fully as popular as their old, reliable tempered clay outfits, which are known and commended around the world. When Henry Martin, the founder of the business, first began making horse-power brick machinery and tempering wheels he little dreamed that it would grow until the name "Martin" would become a familiar phrase to brickmakers throughout the United States, and as well to those of foreign lands. He has now retired from active business, having handed same down to the next generation, which, thanks to his tutelage, is thoroughly competent to conduct it successfully, notwithstanding the demands and requirements are many times greater than in earlier days. Lancaster will continue to be a familiar name to the clayworkers and Martin will be linked with it.

WILL BE AT CLEVELAND DEO VOLENTE.

Friend Randall:

Your kind favor received, with bill for Clay-Worker inclosed. If I can borrow the cash, I will be at Cleveland, and, as usual, hand you the price for The Clay-Worker. If I can't get it, please don't deprive me of the best clay journal in the world. Let it come along just the same. R. G. EISENHART.

Horseheads, N. Y., Dec. 30, 1901.

WRITTEN FOR THE CLAY-WORKER.

BENEFITS OF CONVENTION WORK.

Do Delegates Make the Best of Their Opportunities?—Observations, Criticisms and Suggestions by a Working Member of the N. B. M. A.

THE MOST valuable and also the most eagerly sought after and most widely read number of The Clay-Worker is undoubtedly that which contains the report of the annual convention of the N. B. M. A. All progressive brickmakers, even those who are so neglectful of their duty as to fail to maintain membership in the Association, now generally admit the value to the craft of these annual gatherings, though some may foolishly think that they are getting all the benefit, outside of the Association, by staying at home and reading the report so generously published for all.

W. D. Richardson.

It is not the purpose of this article, however, to show the great value to brickmakers of these conventions of our Association, but, on the other hand, to criticise, in a friendly spirit, what I conceive to be some of the shortcomings of these meetings, and, if possible, say a few words that may be helpful towards the improvement for which we are always striving. Knowing something of the difficulties of securing papers for such a convention, I cannot criticise the programme prepared by our Secretary. In preparing a programme it is impossible to please everybody or even onesself. It is not an easy task even to make a proper selection of subjects and ascertain who are competent to handle them on such an occasion, but the real trouble begins when it is attempted to secure the presentation of the papers.

Many who are requested to prepare papers will either ignore the request entirely or tardily send their excuses for refusal, so that the programme which must in due time be given out may represent the best that could be done after much effort, rather than what was desired. On the whole, however, our Association has little to complain of in this respect, thanks to the tact and knowledge of our genial and efficient Secretary.

The only criticism I would make upon the programme heretofore is that there have been too many papers—too many subjects treated at each session. The object of these sessions is not literary entertainment, and hence a diversity of short, spicy papers is not required. In my opinion there should be fewer papers, with practically no limit placed upon their length. When a man preparing a technical paper is limited to ten minutes he will not enter upon the details that are desired by those who want to know more about the subject, but will deal in witticisms and general statements that do little to advance knowledge.

The grouping on the programme of allied subjects, those of special interest to special manufacturers, is to be commended. The most successful sessions are not necessarily those that have the largest attendance, but those where all are interested listeners or participants.

The papers presented at our conventions are generally deserving of much praise, as the contributors usually treat of subjects concerning which they have had special experience and have given time and care in preparation. It is of the discussions following the papers that I would speak more particularly at this time, since it is from these discussions, if carried on in a proper manner, that the greatest benefit may often be derived. The thoughts that have come to me upon this subject while attending our conventions were expressed so well in an editorial in the British magazine, *Engineering*, that I cannot do better than to quote verbatim:

"In spite of all the good speeches that are made, it must be confessed that the average of oratory at technical meetings is low. There is, in general, no lack of speakers, and neither is there lack of knowledge, but it often happens that the men who speak do not know, and the men who know do not speak. In addition, we have the man who both knows and speaks, but cannot express himself to any purpose. It is often a wearisome business to sit while one member after another struggles with his ideas, or his want of ideas, and one thinks what an advantage it would have been if the speakers had taken the trouble to commit to paper beforehand what they wanted to utter. This lack of preparation is one of the great evils of discussions at these meetings. Often the discussion is turned towards some side issue, the main question being entirely ignored, and much of the labor of the author of the original paper in gathering facts and preparing to meet possible queries is wasted. If half a dozen men had come with their minds fully made up on that part of the subject with which they were best acquainted, such a thing could not happen, for each would raise a definite issue of importance, and there would be some real and valuable criticism.

"The good speeches which are never heard exceed in number those which are heard. How often one feels, in looking around the benches, that there are several silent members who have a knowledge of the subject in hand far beyond that of the speakers! Diffidence holds them back; their very familiarity with the subject leads them to take a depreciatory view of their knowledge, and, besides, they are not prepared. If they had only taken the trouble to put their ideas in order, to search their stores of recorded information, and to crystallize the theories which—perhaps unknown to them—dominate their practice, they might have taken a most useful part in the debate, adding credit to the society, and gaining reputation for themselves. It is no slight labor to write a good paper, and such an effort deserves far more recognition than a perfunctory vote of thanks. The writer lays his stores of knowledge before his associates—often before his rivals—and it is a poor spirit which is content to make no return when the opportunity arises."

The value of our conventions, however, does not rest wholly upon the papers and discussions in regular session. The broadest influences which result from these meetings of fellow-workers in the same or allied branches of clayworking are those which are not recorded in the transactions nor published in the trade journals—the influences which pass from man to man outside of the convention hall, broadening the field of view and preventing that excessive conservatism so fatal to all real progress. The effect upon general development and material progress of this personal contact, this rubbing together of minds, this intimate association of successful manufacturers from nearly every State in the Union, cannot be easily explained or estimated. Every regular attendant at our conventions realizes it—feels that he is thereby stimulated to better, truer and more effective work, within his own special range of action.

The Sixteenth Annual Convention promises to be a notable one, surpassing all previous meetings not only in attendance, but also in social and intellectual entertainment. Fellow brickmakers, you cannot afford to miss this meeting. Come to Cleveland February 10-15 and help us to make the Sixteenth the best convention ever held. W. D. RICHARDSON.

OHIO BRICKYARDS CONSOLIDATE

The brickyards in central Ohio, with the exception of four or five, have been consolidated, and will in the future be operated by the Capital City Brick Co., of Columbus, O. The companies that were consolidated include: E. W. Dow Brick Co., C. A. Ford Brick Co., Hagerty-Stevens Brick Co., J. A. Conrad Brick Co., J. Kulp Brick Co., S. J. Isabell Brick Co., E. W. Dow Co., Raymond-Campbell Brick Co., David Gale Brickyards, and the two plants of the Fish Brick Co.

Offices of the new company will be located in the Ruggery Building. The business of the company will be in charge of the following officers and directors: President, William H. Fish; vice president, John G. Drayer; secretary-treasurer, C. F. Harrison; directors, W. H. Fish, J. G. Drayer, C. F. Harrison, F. N. Sessions and E. W. Dow. The company has secured control of ten plants. Three or possibly four others will be acquired. The output of the new company will be 35,000,000 soft, common, hard and lime brick annually. The output will be sold through the Union Brick and Supply Co., Columbus.

Four plants will be closed, and the employes at the plants to be shut down will be assigned to work in the other plants, which are to be enlarged. New machinery will be bought and improvements made to the extent of $50,000, which amount of preferred stock has already been sold.

WRITTEN FOR THE CLAY-WORKER.

PROSPERITY AT THE MOUTH OF THE MISSISSIPPI.

NEW ORLEANS OR LOUISIANA can to-day boast of having the largest naval dock in the world, the same being located across the river, immediately opposite the lower part of the city, known as Algiers. Work has already begun in the building of a power house and several machine shops. The many buildings in contemplation will be of brick and steel, at a cost of about $500,000.

In consideration of the naval dock and the contemplated improvements which will shortly begin, this State will have the largest brick, tile and sewer pipe plant in the South, the calculated output to be 30,000,000 brick per annum. This great industry will be operated by Southern capital, headed by men who are thoroughly experienced in the brick manufactory and all of its requirements.

The object which prompted these gentlemen to engage in such a gigantic enterprise is the great number of buildings and improvements which will be made at the United States naval station, together with the enormous drainage and sewerage plant now in course of construction.

This brick plant, when ready, will be able to meet competition both in New Orleans and throughout the surrounding country. The plant is to be built at Port Vincent, on the Amite river, about one hundred miles northwest of New Orleans. The shipping facilities will be by water, through Lakes Maurepas and Pontchartrain. The projectors of this enterprise are S. J. and F. B. Stubbs, W. A. and D. W. Jeter and H. N. Fagin, all residents of Macon, Ga. A charter has been applied for.

New Orleans, during the past year, has made great strides in the advancement of the building industry, as shown by the following statement: Two grain elevators, one on the left bank of the Mississippi river, built by the Illinois Central Railroad, with a capacity of one and a half million bushels, and one on the left bank of the river, constructed by the Texas Pacific Railroad, with a capacity of one million bushels.

One of the latest completed and most praiseworthy institutions in the city is the Frank T. Howard School, a brick building, donated to the city by the gentleman whose name it bears. The same was turned over a few days ago, with appropriate ceremonies, to the New Orleans School Board. Several large brick cold storage buildings have been completed, with one at present under construction. The Louisville & Nashville Railroad, at the head of Canal street, has recently completed its beautiful brick passenger depot, which was opened to the public during the early part of the week. It is well fitted up for the accommodation of passengers. The freight train depot, to be constructed of glass and steel, will not be completed until the old sheds, now on the ground, are demolished and removed, which work is assured before the end of this year.

A brick annex has been added to the Whitney National Bank, making it to-day one of the most complete and handsomest banks in the Union. The Nurses' Home, of the Charity Hospital, has recently been completed, adding greater comfort and a much needed want to one of the greatest charitable institutions in the country.

Among many of the attractive and costly buildings completed during the year can be mentioned the New Orleans Furniture Manufactory, New Orleans Tank Co., National Rice Mill, the Tulane School Refractory, the arcade of the St. Charles Hotel and several large warehouses. In addition to the already great number of magnificent churches can be numbered the Prytania Street Presbyterian house of worship, a construction of stone and brick, which, in point of artistic work and architectural display, will compare favorably with any church in the Union.

The St. Charles Theater, built of brick and iron, rendering it absolutely fireproof, is receiving the finishing touches of the mechanic, and will be open by the end of January next. This theater is one of the most attractive in the city, with a seating capacity of 3,200. and built at a cost of about $125,000. The old structure was destroyed by fire several years ago, and was built in the early forties, at which time it was the largest and finest theater in the country.

Included in some of the new work to begin early next year is an elegant eight-story brick office building, on Camp street, which will be built by the Tulane Educational Fund; also a six-story medical office building, a seven-story dry goods store, on Canal street, and a three-story stone and brick addition to the present large and commodious Elks' Home, on Basin street.

A building worthy of consideration is the large brick edifice known as the House of Detention, now being constructed, and rapidly pushed forward towards completion, at a cost of about $125,000.

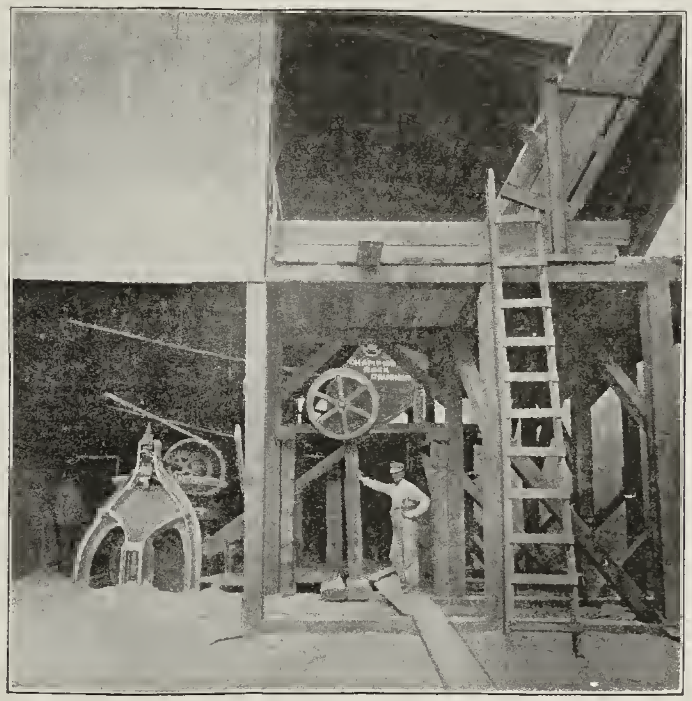
Buildings are being erected in all the towns in Louisiana, along the different lines of railroads, within a radius of two hundred miles of the city. Slidell has added many new residences; Covington a shoe factory, church, convent and many residences; Lafayette an institute; Baton Rouge a dormitory to La State University, stores and dwellings. In the midst of Louisiana, Crowley, with its immense rice industry, is replacing all its old and premature frame buildings with modern brick structures.

New Orleans shows a record during the year of buildings completed: 1,030 dwellings, 43 stores, 15 manufactories and power houses, 10 churches, 9 public buildings and 8 large stables, with a bright future for a good building business.

New Orleans, Dec. 28, 1901. C. E. D.

A CRUSHER THAT CRUSHES.

IN MANY BRICK plants it is the practice to break rock shale, fire clay and other hard material, preparatory to grinding it in the pan, by means of sledges. This is an expensive method for two reasons: First, because sledging any kind of material is a slow and costly process; second, because much of the material broken by the sledges is too large to be handled easily and economically by the pan. A much better and more up-to-date plan is to use a rock crusher in breaking all material before it is delivered to the pan. Conservative brickmakers who have adopted the use of the rock crusher claim that it will pay for itself in a few months.



No. 4 Champion Rock Crusher.

The illustration shows a part of the brick plant of the Miller Brick Co., of Rochester, Pa. A No. 4 Champion Rock Crusher is used in breaking shale and fire clay to the size of a man's fist and smaller, which is delivered by means of a chute from the bottom of the crusher jaws to the pan. These people state that they are highly pleased with the crusher, and would not be without it. The American Road Machine Co., of Kennett Square, Pa., who manufacture the Champion crusher, advise us that they have furnished a large number of their crushers to brickmakers during the past year. They issue a special catalogue for brick manufacturers, which will be furnished free on application.

FROM NORTHERN NEW ENGLAND.

SELDOM, IF EVER, in the history of New England has winter produced such destructive floods as up to the present time she has shown. The elements have been on a rampage. In Maine, especially, the damage has been exceedingly great. Millions of logs in the Penobscot, Kennebec, Androscoggin and other streams have gone down to the sea amid the torrents of water and ice which the flood carried with it as it went, taking along bridges, dwellings, mills, storehouses and wharves; and, although cold weather has somewhat subdued the torrent, yet most of the rivers are above flood pitch on account of the anchor ice which chokes them. In many places this bottom ice is nearly twenty feet in depth, rising clear from the bed of the rivers to a height of five and even ten feet above the surface, forming hills and valley up and down the streams. In this anchor ice lies the danger of still more destructive floods in March and April, unless the winter henceforth proves of a medium character. If too severe weather comes, holding the waters ice-bound till the spring thaws begin, then will the waters rise and cover the earth; and, on the other hand, should the weather maintain its present mildness, the catastrophe will happen very soon. At Veazie, a suburb of Bangor, Me., the river is choked with solid ice, forming a jam seventeen feet in height at the present writing, and it is still growing. If this enormous mass should move suddenly it means devastation among dozens of mills and scores of other structures, including ice houses, for a distance of twenty miles or more. And the city of Bangor is fearful of the consequences. To-night the city is in darkness, the flood being several feet deep in the generating room of its electric plant, which was supposed to be far above the reach of floods. It is a time of grave apprehension.

THE PASSING OF THE MUDYARD.

The march of progress has at last penetrated the staid old brick plants of this section, and now it is but a question of a few seasons when the mudyard as it was can only be seen in some secluded hamlet where the world is not known, or seldom heard of.

When Hugh O'Brien, of Brewer, struck boldly out a few years ago and imitated the action of the few hardy pioneers who tried sand machines in the past, his mudyard confreres were inclined to scoff. To-day but one yard of the old-fashioned kind remains, or will remain when spring awakens. William Burke has his yard all prepared and has purchased the latest and best production of the famous Henry Martin, machine manufacturer, and intends to whoop things early in the season. Hugh O'Brien, also with an eye to advancement, has remodeled his plant, and, with a brand new outfit from the American Clay-Working Machinery Co., thinks he will lead the procession. This is but the beginning, but reform and progress has hit, and hit hard, and the machinery men will bag some more good orders in and about here in the ensuing months. The labor question has had much to do with this change, and the concern that can, through its machines, produce the best solution of the hired-help puzzles will prosper like a green bay tree.

THE MARKET PROSPECTS.

Sixty-five thousand of bricks unsold on Jan. 1, 1902, in a district that will demand at least 2,000,000 at the first groundhog is the present status of the market in eastern Maine. The same condition applies in nearly every section east of Portland. The prices, however, will not range much above $6.50 for good up-and-down lots, as, with modern machinery, the manufacturers believe they can catch up with the demand in double-quick time, which, by the mudyard process, was impossible.

THE HOPE OF THE BRICKMAKER.

In the loss of wood as fuel the New Englander feels a decided disadvantage. But the loss is not without its compensation, for necessity, the mother of invention, as well as expediencies, will lead them into better methods, to which, under former conditions, they would be a great while in arriving. The New England of the future will make better brick than before, and when that fact is demonstrated the natural result of better buildings and better roads and sidewalks will follow. With the years that bring the improved methods of manufacturing will come the era of brick pavements and the era of clay products in general. But to the citizen not directly interested in brick, and especially to the owners of clay lands along New England water powers, is dawning a bright prospect. Two things point to the rise, in the not far distant future, of a clayworking industry undreamed of twenty years ago. These two things are the magnificent water powers of the Northeast, which almost invariably flow through banks of brick clay. This water power will be used to generate electricity, which, in turn, will be applied in extracting from the clay the rich deposits of aluminum, which, from its creation, has lain unnoticed in the clay banks, awaiting, first, discovery, and, second, a practical way of extracting it. The way is found: water power and electricity. We may live to see the time when New England, once famous as a shipper of lumber and bricks, shall be famous for its output of bricks and aluminum. I am speaking from certain knowledge that the pioneer aluminum factory, to be built upon an extensive scale, and with millions behind it, will soon occupy the land once used as brickyards. The plans are nearly completed, but further than that I shall disclose no more just now.

PROSPECTS FOR PAVING BRICK IN RUSSIA.

Moscow, Russia, Nov. 30, 1901.

Editor Clay-Worker:

I desire to thank you for sending me The Clay-Worker, and wish to say that up to now I have been too busy to write.

From Halle-an-der-Saale (Germany) I transferred my residence to Moscow, Russia, and have opened up here a technical consultation office. My work embraces everything referring to the clay industry, the sale of ceramic products, as well as the construction of clayworking plants.

I am following with special interest the contents of your esteemed journal, which, as no other trade journal, reports the remarkable development of the vitrified brick industry and the use of brick for street pavements in the United States.

For a long time I have felt indebted to you, and it was my intention to send you some matter which might be of interest to your readers, and have, therefore, prepared this article. It was my intention to send you some photographs for the illustration of the article. However, it is impossible to obtain them now, but I may be able to send them later on.

A few days ago I sent you a piece of paving brick from the paving brick works of Barowitsche, mentioned by you. This is the only paving which is being produced in Russia. Its quality is not of the best. As you know, I am intensely interested in brick pavements, especially since in Russia cobblestone is the only kind of pavement in use and the paving question is troubling the cities a great deal. Vitrified brick are the only suitable material for pavements in Russia. Lately I had occasion to see the chief engineer of Moscow and showed him an imported English paving brick. He said that any such proposed pavement would have to be submitted to a test, for which purpose the city would furnish a portion of a street, the test pavement to be put down at the expense of the brick manufacturer. The engineer was much pleased with the brick.

Owing to the extraordinary opportunities which are open to a good vitrified brick in Russia, I intend to work up a company for the manufacture of vitrified paving brick, and I would like to ask you what the possibilities are of interesting American capital. There is no question but that a reasonable undertaking would be sure to be a financial success. All Russia is open, and it would be advisable to start on a somewhat large scale in order to discourage competition which might develop. As soon as some foreign capitalists are interested it would not be difficult to obtain Russian stockholders.

The selection of proper clay deposits would not trouble me, as a number of very desirable ones exist in all parts of Russia. Freight conditions are very favorable, by railway as well as by boat. I shall be pleased to furnish any information desired. Kindly scrutinize the inclosed price list:

	At Works.	At Moscow.
Vitrified building brick, per M........	40 rubels*	70 rubels
Vitrified paving brick, per M. cubes...	46 rubels	66 rubels
		At Petersburg.
Face brick, per M....................	50 rubels	60 rubels
Shape brick, per M...................	60 rubels	70 rubels

Size of paving brick, 10½x5x2⅝ inches.

Size of front brick, 10½x5¼x2⅝ inches.

B. SCHWENNICKE.

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*A rubel is the equivalent of $0.77.

WRITTEN FOR THE CLAY-WORKER.

IOWA BRICKMAKING INDUSTRIES.

In KEEPING WITH the trend of the times, the brick and tile industries of this county have surpassed all previous records, and the year 1902 will be ushered in with promises that warrant the belief that what at present appeals as a high record will have been surpassed when the books are closed at the end of the coming year.

A BUSY YEAR FOR BRICK AND TILE MANUFACTURERS.

The unusually prosperous condition of the country and especially of the farming communities, has been the chief factor in heaping up a new record in the manufacture of tile for farm purposes. Of the firms that make this product, all unite in the statement that never in the history of their business have so many tile been made or sold. Fortunately, the weather has been conducive to a longer continuation of manufacture than on previous occasions. While some of the plants are now closed, several are still working on late orders, and in more than one instance the proprietors have made the statement that their plant will continue all winter, an unheard of plan in this county. Many tracts of low land which have heretofore held but small values for farm purposes are being drained, and not only add to the wealth of the farm lands, but will also produce a very general increase in acreage of tillable farm lands. Such has been the history of this section of the State with regard to the manufacture and sale of tile.

BRICKMAKERS NEVER SO BUSY.

The unusual amount of building throughout the northwestern part of Iowa during the year just past has given to the brick industries the greatest year's business in their history. The greatest obstacle encountered in filling orders for building brick was the lack of help necessary to ship with any degree of dispatch and certainty. The labor which has usually been obtained for such work as loading cars and other parts of the work not requiring any particular amount of skill has been scarce, and much delay has been occasioned on this account. Lack of cars in some instances has added to the sorrow ot the manufacturer, although this has not been a frequent occurrence.

The Fort Dodge Brick and Tile Co. have enjoyed the largest year's business in their history. Their plant will close at the end of the first week in January. The products of the plant have been about equally divided between brick and tile. The proprietors, Messrs. Abel and Moeller, feel confident that next year will be productive of a business equal, if not greater, than the one just passed.

Bradshaw & Co., although located at a disadvantage from convenient shipping facilities, have been unable to supply the demand for farm tile manufactured by them. They manufacture very largely of this product, and while the capacity of their plant has been kept up to the limit, the demand could not at all times be supplied.

The Corey Pressed Brick Co., of Lehigh, report that while the capacity of their plant is 25,000, the supply has not been equal to the demand by about half. They manufacture a shale pressed brick, in buff, red and mottled, but no tile. Besides the standard sizes, they also make shapes. The plant was closed December 1.

The Lehigh Clay Works have announced their intention to run all winter. Their capacity is 35,000. They manufacture tile from 2½ to 13 inches, and report the demand greater than the supply. In addition to a heavy sale of tile, they have put out a large number of paving and building brick and fire brick, a three-foot vein of fire clay being a part of their deposit.

The Lehigh Brick and Tile Co. is one of the pioneer plants re-established after an idleness of several years occasioned by a fire, which reduced the plant to ash heaps, but did not destroy the confidence of one of the original stockholders, who has reconstructed the plant, and reports that, while it was late in getting started, has enjoyed much more business than was anticipated.

Straight & Co., of Lehigh, is the style of a new brick and tile company which has recently located in the productive valley of the Des Moines river. The promoters and proprietors of the new concern are experienced workers from Illinois, and feel very confident that the coming year will bring for them a liberal share of the prosperity now enjoyed by the older and better established plants of this county.

The Kalo Brick and Tile Co., of Kalo, report a prosperous year's business and a ready sale for all the product their plant could turn out. Their location enables them to supply the farm trade in a section of the county somewhat remote from the other plants. The year's business just closed has been the largest in the history of the firm, and the prospects are bright for the coming season.

Johnson Bros., of Kalo, are among the younger firms of brick and tilemakers. They started their plant last April, and announce that the season has been far more prosperous than had been anticipated. They have made rapid strides in securing trade from a considerable scope of country, and feel enthusiastic over the prospects for the coming year.

JAMES E. DOWNING.

MILWAUKEE, HO!—THE WISCONSIN CLAYWORKERS' CONVENTION.

THE SECOND ANNUAL meeting of the Wisconsin Clay-Workers' Association occurs at Milwaukee, Jan. 28 and 29. A large attendance is anticipated, and the local brickmakers have perfected an organization for the purpose of entertaining their visitors. Brick, tile and pottery manufacturers are cordially invited to meet with the Badgers and participate in the festivities. A social, gastronomic and mental feast is in store for all, as will be seen by the following interesting programme:

PROGRAMME.

TUESDAY, JANUARY 28, 1902.

—Afternoon.—

2:30—Reception of members and registration.
3:00—Addresses of Welcome.
On behalf of the City..............Hon. D. S. Rose, Mayor
On behalf of the Milwaukee Brick Manufacturers.. ....Mr. Henry Hermann
3:45—Response to Addresses of Welcome...Mr. C. S. Morris, Berlin, Wis.
4:15—Report of the Secretary.........Mr. E. R. Buckley, Rolla, Mo.
4:20—Report of the Treasurer...Mr. Wm. E. Finnegan, Green Bay, Wis.
4:30—"Tile Drainage"............Mr. C. G. Elliott, Indianapolis, Ind.

—Evening.—

The Milwaukee brick manufacturers will entertain all visiting members and their wives at a theater party, place to be announced later.

WEDNESDAY, JANUARY 29.

9:30—"Our Experience in the Manufacture of Soft Mud Brick"..
..............................Mr. F. L. Sanborn, Portage, Wis.
..............................Mr. L. H. Cordes, Watertown, Wis.
Discussion.
10.30—"The Minimum Cost of Burning Cream Colored Brick from Wisconsin Calcium Clays, and How It Can Be Accomplished"........Mr. P. L. Youngren, Milwaukee, Wis.
Discussion.
11:15—"What We Have Learned About the Manufacture of Stiff Mud Brick"...Mr. Clifford Chase, Milwaukee, Wis., and
Mr. William Meadows, Burlington, Wis.
Discussion.

—Afternoon.—

2:00—Appointment of Committees and Miscellaneous Business.
2:30—President's Address........Mr. E. W. Drake, Milwaukee, Wis.
3:15—"Paving Brick, Sewer Pipe and Other Clay Products Used in City Improvements".................................
....Mr. G. H. Stanchfield, City Engineer, Watertown, Wis.
Discussion.
4:00—"Clay Building Materials from the Standpoint of the Architect"....................Mr. A. C. Clas, Milwaukee, Wis.
4:30—"Technical and Trade Literature and Its Value to the Clayworker".............Mr. J. W. Hinkley, Green Bay, Wis.
Discussion.

—Evening.—

7:00—Banquet, complimentary to the visiting members, by the Milwaukee brick manufacturers.

THURSDAY, JANUARY 30.

9:30—"Wisconsin Clays and Some of Their Characteristics"..
..................................Mr. E. R. Buckley, Rolla, Mo.
Discussion.
10:15—Question Box.
10:30—Reports of Committees.
10:45—Election of Officers.
11:00—Determination of Place of Holding Next Meeting.
11:30—Adjournment.

You are urgently requested to be present at the first meeting, Tuesday afternoon. One of the most important papers of the session will be given at this time.

Executive Committee—E. W. Drake, chairman, with C. T. Burnham and Firdinand Vogt.

Finance Committee—Henry Hermann, E. W. Drake and M. Daveiaar.

Programme Committee—E. R. Buckley, E. W. Drake and Ferdinand Vogt.

Committee on Headquarters, Halls and Transportation—J. Q. Burnham, Clifford Chase and E. W. Drake.

Reception Committee—C. T. Burnham, chairman, all Milwaukee members assisting.

Entertainment Committee—Clifford Chase, Henry Herman and J. T. Burnham.

WRITTEN FOR THE CLAY-WORKER.

BUFFALO BRICK AND BUILDING NEWS.

PROSPERITY AND GOOD FEELING NOW THE THING—A GOOD LOCAL ASSOCIATION—ITS BENEFITS AND BLESSINGS—A NEW REFRAIN.

A SUMMARY OF business in the building line shows that permits were issued by the Bureau of Buildings for 1,058 structures, valued at $4,338,771, or nearly one million dollars more than in 1900. It also shows that the month of December was the most active, there being 105 permits issued during that month for brick buildings, to cost nearly one and one-half million dollars.

A structural iron manufacturer informed me to-day that business in their line never was better than last year, and that the outlook for the coming year was even brighter than last. A builder of gas engines and bakers' machinery says: "We have more than doubled our sales, and orders are coming in from all parts of the States." In fact, prosperity exists in all branches. Our stores never had such a trade as they did during the holiday season. I know of one large dry goods firm that on Monday before Christmas broke the record of retail sales of any time during the period of its thirty years of doing business in this city, while our department stores ran short in some of the lines they carry.

The criticism of your correspondent on the Hamburg canal sewer, or reservoir, has stirred up a hornet's nest. The *Morning Express*, quoting from The Clay-Worker, brought the subject before its readers in a half-column article, and the *Evening News*, in a long editorial, tries to smooth over what seems to be a stupendous makeshift blunder. It says the plan was submitted to some of the best sanitary engineers of the country. That proves nothing, as one noted expert, some fifteen years ago, when building our main trunk sewer that was intended to relieve the Hamburg canal of its stench and filth, agreed when the trunk sewer was completed he would drink a glass of water from the canal. He never was able to do it.

Several years after, when Contractor William Franklin was building his plant to pump it out, he dropped a brick into the canal near Hamburg street, and he claimed the scum was so thick that the brick floated. Of course, it was an open ditch. It is to be hoped the water in our new reservoir won't get quite so thick.

One of the former presidents of the National Brick Manufacturers' Association, in his annual address, said: "If any-one of this Association can evolve a scheme, with sufficient elasticity to meet varying conditions in different localities, that will prevent competing brickmakers from forming a mutual society for the extinction of profits, he will be hailed as a benefactor by thousands of struggling brickmakers."

Thinking it might interest some of the thousands of readers of The Clay-Worker, I send you our plan and its history. In the spring of '97 the demand for brick was good. Most of the yards had large stocks on hand. You have to carry large stocks when apart in order to meet any demand that may come up. Well, it was every man for himself, all anxious to sell, and contractors ready to take advantage of our condition. Prices were ruinously low. One large job, taken at $4.50 per thousand early in the spring, delivery way at the southern city line, set the price. Not to be beat, another yard bid the same figure in order to get a two-million contract at near the north line of the city.

Well, some of the wise ones sat down—just would not sell at the prices—and everything looked blue enough. Just about this time O. W. Weyer, who was born on his father's brick-yard, in Elmira, in talking over the situation, conceived the idea of forming the yards into an association and selling all their output to one man, but this was afterwards dropped.

The first thing was to get them together, which was finally accomplished after a personal interview with each one of them. The great sticker was to fix the ratio each yard was entitled to. It was suggested that about two million brick for the summer season was a fair output for a soft-mud machine. Then the rack capacity for drying and the kiln capacity was next considered, and by a little persuasion and giving and taking a little, the ratios were finally agreed upon. Articles, were drawn up and signed, and our troubles were soon over.

Every man controlled his own yard and run it to the best advantage, the only stipulation being that he should deliver when called upon good merchantable brick. In a very little while contractors were satisfied, as they knew the price was the same to all. It changed the mode of doing business. Some contractors had been paying their brick bills in notes and any old time when they got ready.

The Brick Association sold only for cash, but the liberal discount of 2 per cent. for cash on or before the 10th of the month succeeding the sale brought prompt settlement, and we soon heard from the other material men that brick bills were paid in preference to any other. Then, again, the members of the association knew that when the 17th of the month came around they could count on getting their share of the money every time. At the end of the year the expenses per thousand for selling footed up about 22 cents per thousand, and the losses were so small that no one of the members felt it. I was told about $90 was the total for the year.

The penalty fund of $10,000 is divided pro rata, according to the ratios of the members. It draws interest, and that is divided up once a year.

Care should be taken not to fix the price so high as to encourage competition from the outside. The benefits to be derived from an association are numerous:

First. Your product is sold for cash. No notes to be discounted or renewed.

Second. United, better freight rates can be secured.

Third. Its purchasing power for coal, coke or wood is greater.

Fourth. You are not obliged to carry such large stocks of brick, as the association can take and supply all contracts that come along.

Fifth. No more overproduction, as each member knows about what they will have to supply for their quota.

"The Old, Old Story" has been changed, as follows:

Prosperity in business, good times,
  Bricks above cost in the category;
No more failures now appear,
  As I write this new, new story.

Business away above ebb tide,
  No collections to dream of or worry;
Overproduction *Nit* the cause of all,
  As I write this new, new story.

Buffalo, N. Y., Jan. 11. NORTON.

WRITTEN FOR THE CLAY-WORKER.

THE BANNER YEAR FOR PHILADELPHIA BRICKMAKERS

THE YEAR OF 1901 proves to have been one of unusual activity, progress and profit to our Philadelphia men. It may be said, without fear of contradiction, that not one season since the year 1893 have the yards been so thoroughly cleaned up and out of brick. In the year just spoken of some twenty-four million dollars was expended in real estate operations, and fortunately this included the building up of many houses of two, three and four stories, to the glorious tune of 6,300. Again, it was before the advent and invasion in wholesale of the modern sky-scraper, and its steel and iron construction. There was, however, at that period some eighty-four brick plants, from which the trade might draw upon to the extent of 450,000,000 brick of every kind and description, and the supply always ran ahead of the demand.

At this period of writing the Quaker City possesses only thirty-three yards, with a capacity of 250,000,000, or maybe 275,000,000. The output for the past year, from an analysis in the distribution from the yards, points very clearly to a total of 218,000,000, with a couple of yards still to be heard from, and these would doubtless bring up the figures to 225,000,000, with prices ruling better in the west and northwest sections of the city. In many of the yards during the past season it was no uncommon thing on entering the yard to find the "boss" absent; forced to quit kilns and office to go from one yard to another to find a stock sufficiently large enough to fill the bill of demand and supply.

Over in West Philadelphia, at the plant of a well-known member of the N. B. M. A., the season's output usually figures at 6,000,000 or 7,000,000, yet during the baking days of July and August the shipments ran some days as high as 140,000.

This means toil, sweat and profit; only to be appreciated and realized by those handling a yard with a capacity of six to seven million.

Brother Conway, I learn, has secured the contract for the new building to be erected for the Pittsburg Glass Co. at the northeast corner of Twelfth and Arch streets. This will soak up some two and a half million of his best hard and stretchers, a task that will make all hands hustle at Fifty-eighth and Walnut streets, since it means a long haul of nearly four miles. Those who know Mr. Conway, however, need have no fear of his not being able to live up to the last letter of the specifications.

Webster & Nephew report conditions as generally fair. They have, however, been able to lay by a little surplus stock of hard and salmon, which may prove a veritable nest egg if this weather continues, for the air is full of big operations that are to be started at the earliest opportunity.

As an example, we will quote some half a dozen, and you can see what the prospects are for this young sweet year of 1902. George C. Boldt, the proprietor of the Waldorf-Astoria, of New York, proposes to demolish that good, old-fashioned hostelry, The Stratford, at the southwest corner of Broad and Walnut streets, this city, and erect thereon a fourteen-story hotel, designed on lines similar to the Waldorf. This is to be completed in eighteen months at a cost of $3,500,000.

At Broad and Jefferson streets we are promised a new apartment house, to cost $90,000, while the Land, Title and Trust Co. have issued a statement that they will erect a twenty-two-story office building on the site of the old Lafayette Hotel.

The lines are unlimited. Up at Harrisburg the plans have already been selected for a $4,000,000 capitol building, and plans are out for the three new buildings to be erected for the Pennsylvania State Hospital for the Insane, also at Harrisburg, covering the appropriation of $130,000.

At Norristown the residents are all agog awaiting the breaking of the ground for a quarter-of-a-miller-dollar court house, from plans supplied by two Philadelphia architects.

Many others might be quoted. The above, however, are all-sufficient to show that Philadelphia brickmakers need have no fear for the morrow, for this year, from present indications, will far excel the good generous dealings of the past season.

Michael Carroll, who is at the present time suffering, contemplates an immediate trip South, and this will interfere with his present intention to be among "the boys" at Cleveland on the 10th. During the past fall he has improved the yard at Fifty-eighth and Girard avenue by the addition of a new dry shed measuring 60x100 feet; also a steam tunnel dryer, 150 feet long and 32 feet wide, 10 coils high, with a capacity of 36,000; built on the same lines as those adopted in the yard at Fifty-eighth and Haverford avenue. Renovating the kilns generally, and putting the yard into such shape and condition as to meet any rush that may precipitate itself upon them in the forthcoming spring.

The heaviest demand in this section of the city has been for hard and machine-made stretcher. A growing demand since 1895 for the natural black header has opened the eyes of our local men to the importance of sorting these out from the well-burned hard, since these are at all times able to command nearly two dollars per thousand more than the selected hard; and, since architects feel they cannot do without them, the common concurrence is that they should be able and willing to pay for them.

All hands are now debating the question, "to be or not to be" absent from the forthcoming jollity and business at Cleveland next month. In view, however, of the uncertainty hanging over many, I must perforce leave the schedule list to follow this by mail.

The Main Belting Co. express themselves as very well satisfied with the past year's business, and while they will be represented at the Convention, they take this opportunity of pledging the readers of The Clay-Worker to a prosperous New Year, to which I say Amen. W. P. LOCKINGTON.

PRESS AND ORNAMENTAL BRICK.

Many of the readers of The Clay-Worker are contractors and builders as well as manufacturers of brick. A great majority make common building brick alone, and when ornamental brick are needed for some particular job they needs must buy them from other manufacturers. To these contracting brickmakers the ads. of the Hydraulic Press Brick Co., on pages 14 and 15 of this issue, will be of special interest. The large variety of hydraulic press brick turned out at the various branches of this great concern, and the immense stocks carried enable them to fill orders very promptly. They solicit orders of this sort, and will be pleased to send catalogue and quote prices to any Clay-Worker reader.

AS OTHERS SEE US.

A GOOD HELP TO EVERY CLAYWORKER.

Friend Randall:

—Inclosed please find P. O. money order for $2.00 in payment of The Clay-Worker for 1902. It is a positive pleasure to pay for such a good help to the craft. Wishing you and yours a prosperous and Happy New Year, I am,

Yours truly, J. W. McMILLAN.

THE CLAY-WORKER HIS BEST INVESTMENT.

Editor Clay-Worker:

Inclosed please find our check for $2.00 in payment for The Clay-Worker for 1902. We will just say, we consider this $2.00 investment pays us better than anything we have. We are putting in some extensive improvements this winter, and will have something more to say later on.

Very truly yours, J. V. WILLIAMS & CO.

THE CHARACTER OF THE CLAY-WORKER A MATTER FOR CONGRATULATION.

Editor Clay-Worker:

You will please find inclosed your bill to close of 1902 and check to balance same. Allow us to congratulate you on your most interesting and well gotten up paper.

Yours truly, THE GRAHAM KAOLIN CO.

THE LEADING JOURNAL IN THE CLAY FIELD.

Editor Clay-Worker:

Inclosed please find $2.00, the subscription price for The Clay-Worker for 1902. We heartily appreciate your journal and often note the practical ideas you publish. In all lines of work one should take the leading journal pertaining to that work, so The Clay-Worker is our journal. Wishing you continued success, I am, sincerely, J. M. CARTER.

SUBSCRIBERS FOR LIFE.

Editor Clay-Worker:

Inclosed please find check for amount of bill, which please receipt and return. I can sincerely say that I think you can count us life subscribers, as we would hardly know what to do without it. I have a family of boys, one of whom is connected with me in the business, under the corporate name of Raritan Ridge Clay Co., and if the business remains as prosperous as it has been the past year, we are certainly in to stay. With our best wishes for yourself and your valuable paper, and wishing you a prosperous and Happy New Year, we remain, yours truly, AUGUSTINE CAMPBELL.

"THE BEST OF ITS KIND."

Editor Clay-Worker:

Please renew my subscription for The Clay-Worker for 1902. Accept my best wishes for your continued success. The magazine is clean and fresh, and you deserve all the success you have attained by making The Clay-Worker the best of its kind. Wishing you a prosperous New Year, I remain

Yours respectfully, JOS. L. SINER.

THE CLAY-WORKER AN EDUCATOR.

Editor Clay-Worker:

Inclosed find check to cover amount of subscription for 1902 and kindly change address to the above. I do not know much about the brickmaking business, but I am learning, and cannot get along without the paper. Would sell out if I could get some one in my partner would accept. Business has been quite good the past season.

Yours truly, JNO. H. MONTGOMERY.

AN INDISPENSABLE ADJUNCT.

Editor Clay-Worker:

Inclosed herewith find $2.00 to pay for another years' subscription to your valued paper. I know of none covering any topic as neatly as yours does the clay industry and consider it an indispensable adjunct to the business. We, like the great majority of brickmakers, are enjoying our full measure of prosperity. Good prices and an unlimited demand, with good manufacturing facilities, are the best conductors thereto.

Wishing The Clay-Worker a very prosperous year, I am yours very truly, JAMES C. HARRIS.

Monroe, La.

Written for The Clay-Worker.

AMONG THE POTTERS.

IT IS SAID THAT the C. C. Thompson Pottery Co. will build a new decorating department during the early part of this year. The Thompson Company have been increasing their clayshop capacity and warehouse room so much recently that the new addition has become an absolute necessity. The company are also installing a new kind of printing machine in their works. The same kind of machines have been used in England for some time, but their introduction into this country is something new.

East Liverpool is at the present time shipping in the neighborhood of twenty-two carloads of ware a day. It is estimated that one-half of the population of the United States eats their meals off of ware made in this city. Eight thousand five hundred people are required to make this vast output.

It is said that the Knowles, Taylor & Knowles Co. will, in the spring, build a big adddition to that works which is known under the name of the "Buckeye" plant. Just what the addition will be is not as yet definitely known, but it is thought that it is the intention of the firm to build a three-story brick building and possibly several kilns. Business has been very brisk with the Knowles Company, and this latest move is no surprise.

The Universal Sanitary Manufacturing Co., at New Castle, Pa., are installing a new surface grinder. The Patterson Foundry and Machine Co., of this city, have secured the order. The size will be eight feet.

The new buildings of the No. 3 plant of the Homer Laughlin China Co. are fast progressing, and the new pottery is fast gaining shape, and now presents a very nice appearance. All of the machinery is ready to go into the new works, which will be only of the most up-to-date pattern. The new works will be operated by the engine in the No. 2 plant, with the help of a smaller gas engine in the new plant. The engine in the No. 2 works is a massive "Brown," and is amply sufficient for the purpose.

Work has been begun on the new additions to be made at the G. F. Brunt Porcelain Works. The company are building two new kilns and some additional buildings, which will be used as warehouse room principally. They are also installing some new machinery made necessary by the enlargement. One of the machines installed is a new patent tube-squeezing machine.

The Potters' Co-operative Co. are building two new kilns to their already extensive works. This company have been so rushed with orders since their starting up after being burned down that they cannot fill half of them. The new addition will, therefore, be built to accommodate the trade.

The new sample rooms of the Homer Laughlin China Co. have just been opened up in all of their grandeur. The fittings for these rooms is reported to have cost in the neighborhood of $10,000. The woodwork and furniture of the rooms is of antique style. Photographs of former President Laughlin and of the present president, Aaron, hang on the wall, and at the front of the building is located a clock presented by Vice President Clarke. The woodwork of the clock is solid mahogany, and the clock is said to have cost in the neighborhood of $500.

A new plan has been adopted by the potteries of this city regarding discounts, which, it is thought, will, to a certain extent, keep some of the firms from cutting prices to the extent that they have in the past. In addition to the regular discount, the potteries will allow to regular buyers the following extra discounts: $5,000 per year, 2 per cent.; $10,000, 2½ per cent., and over and above the last figure, 5 per cent. These discounts are based on the amount of goods bought yearly.

Extensive improvements are to be made at the East End works of the East Liverpool Potteries Co. The improvements will consist of two bisque kilns, one glost kiln, and possibly one decorating kiln. The present capacity of the East End works is limited to three kilns, although the pottery is a good one and very up-to-date throughout.

The walls at the new works of the Shenango China Co., at New Castle, Pa., collapsed week before last, taking with them that part of the roof immediately overhead. The foundations for all of the buildings had been laid in concrete and the walls laid immediately on top of it. The frost getting into the concrete caused it to give way, letting the walls crumble down. The company have decided not to risk the concrete, and are putting in a stone and brick foundation under the walls to insure the full strength. It will take lots of work to go all over the immense building after the walls have been built and put the foundations under it, but the company have decided that it must be right, and it is to be done.

The new pottery for Salineville, O., seems to be a "go" at last, and Mr. Deidrick, who has just returned from Europe, and who is at the head of the new company, has made the Salineville Land Company a proposition which will be probably accepted by them, and whereby the pottery people are to receive a bonus of $10,000 if a two-kiln plant is to be established, or, if it is to be a six-kiln concern, the pottery is to receive a bonus of $25,000. The land adjoining the site has been laid off into town lots, and already over $2,500 worth of lots have been sold, although they have been on sale only a few days.

The Moore-Sweatnam Pottery Co., at Trenton, N. J., are installing a new grog pan in their works. The installation of this machine was made necessary, owing to other improvements and additions made by the company.

The Trenton potters are well pleased with the business done last year, which amounted in all to something like $17,000,000.

The Elite Pottery Co. has been incorporated at Trenton, with the following officers: John Brian, George Page and R. C. Chamberlain. The capital stock of the new concern is $50,000, and the plant will have two kilns.

The Trenton Potteries Co. recently made a shipment of 200 bath tubs to France.

The Meyers Clay Manufacturing Co., at Toronto, O., have purchased the clay rights of a tract of land of 216 acres. The price is said to have been somewhere in the neighborhood of $12,500. This purchase, together with the company's other purchases and holdings, will give them almost an inexhaustible supply of both clay and coal.

The New Barberton Pottery Co. have taken another step towards advancement by building their new plant—fireproof. Mr. Ambrose Cartwright, of East Liverpool, who has long been a practical potter of much experience, will have the general management of the new plant, and will move to that city in a short time. The plans also come from East Liverpool, being drawn by Architect Adolph Fritz, and are now completed and show a great step forward in pottery construction. The entire building will be 326x160 feet long and 130x160 feet in width. The warehouse and packing department will be three stories in height. The warerooms are to be 130 ft. x 150 ft. The kiln sheds will be one story in height, and are 463 ft. x 160 ft., containing 7 kilns, four glost and three bisque. The glost kilns are 16 ft. 5 in., while the bisque are 18 ft. 5 in. in diameter. The bisque warehouse and dipping room measure 130 feet in length by 52 feet in width, and the bisque sheds 46 ft. x 130 ft. The clay shops will be two stories in height and will measure 77 ft. 3 in. x 130 ft.; the green room, 44 ft. x 72 ft. 5 in.; sagger shop and sagger dry room, 57 ft. 5 in. x 40 ft. 3 in.; the slip house, 37 ft. x 130 ft. and 32 ft. x 37 ft.; clay cellar, 20 ft. x 30 ft.; mold shop, 37 ft. x 523 ft.; boiler room, 18 ft. x 52 ft. 3 in.; engine room, 30 ft. x 27 ft. The decorating kiln shed will be one story in height, and will contain two double decorating kilns. The walls and roof of the building will be of tile, the only brick to be used being for the floor of the kiln sheds and floors of all the lower story of the building. This will make the plant practically fireproof. The foundation of the plant is also of tile and is almost complete. The plant will be ready to operate by next June, according to the present plans.

A NEW INDUSTRY.

A new company has been formed in East Liverpool, O., for the purpose of manufacturing seggars, pins, stilts, etc. Mr. Edward Scott, formerly with the Potters' Supply Co., and also with the Southern Supply Co., and an expert in this line of work, will be general manager. A deal has been closed for the purchase of the old electric light plant, and also a piece of property adjoining. The dimensions of the light plant are 70x60 feet and the other property 60x60 feet. Work on the buildings, etc., will be commenced within a few weeks. One kiln will be erected at first, and it is expected that this will be finished about the middle of January, so that actual operations can begin at least by the 1st of February. They will be incorporated within the next few days, with $20,000 capital stock. Geo. Croxall will be the president of the new company and Alex. McBane secretary. Mr. Scott will be the general manager.

PRAISE FROM A HUDSON RIVER BRICKMAKER.

Editor Clay-Worker:

Inclosed find check for $2.00 to cover year's subscription to The Clay-Worker. We could no more live without The Clay-Worker in our business than we could without the sun.

Yours very truly, BROCKWAY BRICK CO.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

NINETEENTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

Foreign subscriptions 65 cents additional.

☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
27 Monument Place.] T. A. RANDALL & CO., Indianapolis.

XXXVII. JANUARY 1902. No. 1.

CURRENT COMMENT.

We have received, too late for publication in this issue, several very interesting communications from Old World contributors. These were intended for our Anniversary Issue, but will be just as readable in subsequent numbers.

* * *

A brave start, this, in the new year: An issue numbering 164 pages and containing more instructive and entertaining matter than was ever before bound between two covers of a clay magazine is an achievement of which we are quite proud, and which we are sure our subscribers will fully appreciate.

* * *

The covers themselves are the same stable gray garments that have grown familiar to clayworkers of every clime, and for that very reason are prized too much to be laid aside even for a month. They are not as gay as some, but they are clean and comfortable. With The Clay-Worker, it is not the cover (clothes) that make the book, but the inner make-up, and this is of a quality that entitles it to a front place among the world's best trade publications.

* * *

The advertising pages of this, our Nineteenth Anniversary Issue, will prove a source of vast interest and help to the English reading clayworkers both at home and abroad. All of the representative and most reliable American firms are represented. Though there are over 200 ads. in this issue, there is not a particle of gift space nor a single cut-rate ad. among them. It is a great showing, especially when it is considered that we have no advertising solicitors on the road. Our advertising patronage is largely voluntary, and is accorded us because the advertisers know from actual experience that The Clay-Worker is the most widely circulated, the best read, and hence the most influential magazine in the clay field.

* * *

Those who are intending to go to Cleveland, and participate in the annual Convention to be held there, February 10 to 15, are requested to read carefully the Official Announcement on pages 58, 59, 60. It is an interesting document, and will well repay careful scrutiny. Those who read it entire will be able to form something of an idea of the preparations being made for the entertainment of visitors by the clayworkers of the Convention City. A glance at the faces of the Clevelanders who compose the various committees, which are pictured on pages 57, 58, 59, can but impress the reader favorably, for they are all "good lookers." More than this, and better, they are enthusiastic workers, and will spare no effort to make the coming National Convention the most pleasing and most beneficial in the history of the Association to all who participate. For full particulars read the Official Announcement.

* * *

We call the attention of our paving brick readers to the paper and resolution presented to the Illinois Convention by Charles Ridgley on the testing of paving material at the works of the manufacturer, instead of on the street. If the suggestions of Mr. Ridgley can be carried out successfully, the manufacturers of paving brick will be benefited materially. As now conducted, the inspection of paving brick ofttimes is a mere farce. The manufacturer is at the mercy of men who know comparatively little or nothing about the work and material they pass upon, and yet their decision is final. This is a menace to the paving brick industry, and a plan such as Mr. Ridgley advocates would, if accepted by the city engineers, prove a decided advantage both to the makers and the users of paving brick.

CLAY PRODUCTS AT THE ST. LOUIS EXPOSITION.

The proposition to make a great exhibition of clay products at the St. Louis World's Fair, as suggested by Secretary Stoll at the Galesburg Convention, naturally appeals to every clayworker. To center upon some well-defined plan for an exhibit that will comprehend or take in all the various branches of clayworking is an extremely difficult matter. There is so little in common between several of the different branches of clay work that it scarcely seems possible to reconcile one with another in an exhibition of the character contemplated. That is, they do not belong together any more than iron and glass. The producers of clay structural materials might easily unite in such an enterprise, but to include in one and the same category the fire clay interests, for instance, which has no connection whatever with structural work, and the brick, terra cotta or fireproofing interests is incongruous. The matter will come before the National Convention, and perhaps some master mind may suggest a line of procedure, or formulate a general plan that will be feasible, and will lead up to a really great and representative exhibit of clay products. If the agitation of the matter leads to better individual displays than have been made at previous expositions, the time given to it will have been well spent.

THE NATIONAL CONVENTION.

Every clayworker in the United States who can ought to attend the National Convention at Cleveland. There is not one among them all now actively engaged in the business to whom the trip would not be a profitable one if made in the proper spirit. Many who do go and who profit by the trip might also profit by having their factory superintendent accompany them. It would cost something to do this, of course, but it would simply be an investment that would pay a very handsome return in the course of the year. At least, large manufacturers who have taken their superintendents with them to former conventions have found it of real advantage.

The Cleveland Convention bids fair to be of unusual interest. The splendid character of the programme, the exhibition of machinery and brickyard appliances, the display of specimen brick and the social features, all in all insures unusual interest and unusual facilities in the educational development of the clayworkers' art. We have said before that every succeeding Convention has seemed the best. This is natural. Every Convention brings the science of clayworking down to date, and hence ought to be an improvement on those that have gone before.

None of our conventions, however, have been devoid of social interest. The Cleveland meeting will be remarkable in this respect. Beginning with the Associational Dinner, Wednesday evening, there will be a round of entertainment such as brickmakers know well how to enjoy. The annual dinner, or Powwow, as we used to call it, is held the first day, in order that new members may become acquainted, and so more readily take an active part in the following sessions. It is always best to get acquainted before we get down to business. It develops greater freedom, a happier interchange of thought and experiences.

After the Powwow there are no strangers at the Convention. The new member is soon on a level with the old ones in the lobby talks, and it is here that the real practical information is imparted and where "trade secrets" are freely exchanged. Here is where the "silent member" finds his voice. Many who attend Convention after Convention and never say a word in any of the sessions are the most persistent lobbyists and "buttonholers," and these take home with them many valuable ideas that never find their way into print, either in the Convention reports or any other form. So it is that the clayworker wanting information on any branch of the business can illy afford to miss the Cleveland Convention. Go yourself and take your factory superintendent with you, and don't forget your "silent partner"—take her with you, too. The ladies will be royally entertained at Cleveland.

AN EVIDENT ERROR.

In referring to the immense business of the Purington Paving Brick Co., in the December issue, we tried to say, "their daily shipments average 50 to 60 cars," and the types made us say "50,000 to 60,000 cars." Mr. D. V. Purington says their shipments are quite heavy enough without any padding.

JUST A HINT.

In the opening paragraph of his very interesting article on the benefits of Convention work, on page , Mr. Richardson says: "The most valuable and also the most eagerly sought after and most widely read number of The Clay-Worker is undoubtedly that which contains the report of the Annual Convention of the N. B. M. A." As the coming Annual Convention bids fair to be the largest and most successful in the history of the Association, the next February Convention number of The Clay-Worker will undoubtedly be a very valuable issue. There is a hint in this to advertisers which many of them will not be slow to take.

THE EVENT OF THE ST. LOUIS WORLDS FAIR.

A few years ago, in the callow days of youth, we cherished the fond belief that, in our own time and generation even, we should see aerial navigation an accomplished fact. Later on, when added years had made us less confiding, and we viewed the fake air ships advertised to appear at the Chicago World's Fair, and again a similar fiasco at the Nashville Exposition, our faith waned, and we said, "It is an idle dream; it can never be." But now comes our South American aeronaut, Santos Dumont, whose successful exploits at Paris revives our faith and hope. We are gratified by the announcement that a dirigible airship tournament is to be a feature at the St. Louis World's Fair. Who so bold as to dare predict that that event will not usher in the era of aerial navigation? Mayhap the charter members of the N. B. M. A. who have attended every Convention of that body to date, not even missing one, may yet journey to a future Convention city each in his own air ship.

A NEW CROP OF CALENDARS.

THE FIRST of the new crop of calendars to reach The Clay-Worker sanctum bears the name of the Henry Martin Brick Machine Manufacturing Co., Lancaster, Pa. From an advertising standpoint, it is an excellent calendar. We judge it is a Lancaster product, being printed on heavy white cardboard, 11x14 inches. Its principal feature is a fine half-tone plate of an upright soft-mud machine, opposite which, in a scroll, is a list of clay machinery which they manufacture. The calendar pad is of the average size, on each side of which is shown small cuts of barrows, molds and trucks.

A VERY HANDSOME calendar has been received from the Roessler & Hasslacher Chemical Co., New York, N. Y. The calendar pad is small, but conspicuous, because the figures are shown in white on a black background. The face of the calendar is black, the lettering appearing in gold. It is decorated with a very pretty chromo, "The Three Chums."

ONE OF THE LARGEST and showiest of the entire lot comes from the Marion Steam Shovel Co., Marion, O. A birdseye view of the company's extensive works is shown at the top, while at the bottom is pictured a steam shovel at work in a clay bank, and back of this a dredge-boat appears to be making a channel for itself as it goes along.

WE ARE INDEBTED to the Dunlap Manufacturing Co., Bloomington, Ill., for a very pretty hanger. The picture is a rural scene, in which fierce cows and pretty calves are the prominent features. It is very attractive, so much so that the observer may not see the ad. at all, but center his attention upon the picture instead.

THE OFFERING of D. J. C. Arnold, New London, O., is both a handsome calendar and a beautiful picture, "The Raffle." It is fine wall decoration, but not a very good ad., as the name and business card is not distinctly printed.

THE CALENDAR of the First Avenue Brick and Tile Co., Evansville, Ind., pictures a little maid whose arms are extended in a vain effort to reach about the neck of an immense mastiff. It is a pretty picture, but the calendar is very small in comparison.

THE BROCKWAY BRICK CO., Fishkill-on-Hudson, N. Y., use the same card as a year ago—a view of their brickyard and two of their brick are pictured, one of the latter being Mr. Brockway himself. The calendar pad is one of the largest and best of the season.

THE LACLEDE FIRE BRICK MFG. CO., St. Louis, Mo., have favored us with a very handsome calendar. On a background of royal purple, the name and reading matter appears in white letters bordered with gold, while in a scroll of gold is pictured a fine view of their immense plant.

THE SALEM BRICK & LUMBER CO., New Orleans, La., have selected a quaint design, a combination of Southern products—posies and a blue-eyed miss in scant attire, and a mischievous looking kitty, with the starry heaven for a background.

THE DANTIEST and most attractive calendar received is the "Janice Meredith" calendar of the Canton and Cleveland Brick Co., of Canton, O., and it is safe to predict that it will find its way into the homes of those fortunate enough to receive it.

LAST AND HOMELIEST of all is our own Clay-Worker slate calendar. The nearest to a compliment that we have received in that connection this season was from our good friend and patron, E. M. Freese, who, when we last saw him, said: "We always keep The Clay-Worker calendar—because it gives us the Convention dates."

H. C. BAIRD & SON, Park Hill, Ontario, have an excellent combination of ad. and calendar. Cuts of their factory and products are both shown, and the firm name stands out bold and clear, so that he who runs may read.

THE ALONZO CURTIS BRICK CO., Grant Park, Ill., have a fine combination—a bold calendar pad in black and white, and a life-like picture of a beautiful maiden, at whom somebody has been throwing bouquets; at any rate, she has an armful of roses.

THE FERNHOLTZ MACHINERY CO., St. Louis, Mo., contributes a dainty desk calendar and a thermometer combined. It is so pretty and useful both that it is sure to find a permanent place upon the desk of every recipient.

JUST ADD A POSTSCRIPT.

This issue of The Clay-Worker numbers just 10,000 copies, and many of them will reach clayworkers who do not receive the paper regularly. To each any every one of these we extend a cordial invitation to join our happy family. Don't stand on ceremony, but send in your name and $2.00, and we will do the rest. You will get your money's worth many times over. Another word. Our advertisers like to know the source of inquiries, so when writing them for catalogues, etc., our readers are requested to mention The Clay-Worker. It is not necessary to go into any detailed explanation. Just add the words "Clay-Worker" as a postscript to your inquiry, and the advertiser will understand and be duly grateful.

OPENING THE NEW LEDGER.

The new year is yet largely a blank, and the pen of the scribe has made but few notes on its white pages. The man of business has had his annual opportunity of looking over the old ledger of 1901 and the tablets of his personal experiences. If he is wise he will profit by his mistakes, and few men there be that can claim exemption from blunders large or small. Now and then every man makes a fool of himself in his business, however closely he may rank with Solomon the First. He may have been reckless in credits, impulsive rather than deliberate in buying or selling, irritable and befuddled by strenuous competition, and perhaps selfish, arbitrary, and indifferent to the interests of others. Some genuine repentance in this direction would not be amiss, unless the practice is made of burning the fingers twice on the same stove.

It may be that zeal to succeed has developed into the rabies, and worry has consumed the vital pith of nerve and mind. Insomnia and neuresthenia have broken rest and health, and for petty gains the sacrifice has been made of what alone can enable a business man to enjoy the fruit of his labors. There would be few mental and physical breakdowns if business men realized the meaning of the old motto: "Sufficiently fast—sufficiently well."

During the past year prosperity has been general. It has had its benefits and perils. It is easy with some men to be careless when business comes without the asking, and to let such essential qualities as thrift and foresight go to the flies. The evil effects are not always immediately revealed. It takes time for bad blood to show through the skin. There can be no conditions of business, however rich and creamy they may be, where prudence, patience, economy and common sense can be left in the back yard with impunity. Nor should it be overlooked that in dealing with employes a personal regard for their interests and welfare is the keystone of harmony, and loyal service. Hardness of speech and usage may pay in a cattle driver, but not in a business establishment. If any of our readers have been of this hard-shell type we advise reformation. 1902 will not be what it might be if a business man is not what he ought to be, and this will be true to the closing of the last ledger at the end of time.—*Age of Steel.*

CHICAGO TO CLEVELAND.

THE WINDY CITY WILL SEND A LARGE DELEGATION TO THE NATIONAL CONVENTION.

DELEGATES FROM POINTS NORTH AND WEST INVITED TO JOIN THE CHICAGO PARTY.

KNOWING AND APPRECIATING the superior service offered by the Baltimore & Ohio railway between Chicago and Cleveland, and incidentally the additional fact that the fare is $1.00 less by that route than the other direct lines, the official party, headed by ex-Presidents Purington and Gates, will go by the B. & O., and cordially invite all delegates from points beyond Chicago to join them. As those who have attended previous conventions know, the best is none too good for the Chicago delegation, so that those who join them can count on enjoying the finest service and the very best of company.

The old and ever popular B. & O. Line runs a special Pullman sleeper between Chicago and Cleveland, daily the year round. It leaves Chicago at 8 p. m. and arrives in Cleveland at 8:20 the next morning. Returning, it leaves Cleveland at 6:30 p. m., and arrives in Chicago at 6:50 the next morning, thus making good connections with all morning trains west.

A special rate of a fare and one-third on the certificate plan has been granted from all B. & O. points. On this basis, the rate from Chicago to Cleveland and return, via the Baltimore & Ohio railroad, will be $11.35. Tickets will be sold from February 6 to 12, and certificates for the return trip will be honored until February 19. The sleeping car fare from Chicago to Cleveland is $2.00 per berth.

Those of the official party desiring to attend the sessions of the American Ceramic Society expect to leave Chicago on Sunday night. This party will be chaperoned by Mr. Gates, and he assures us his buttonhole will be open to all comers. Those wishing to attend only the sessions of the N. B. M. A. will leave Tuesday night, the 11th, and will be expected to smoke Mr. Purington's cigars. Those desiring to join either party are requested to write at once to William W. Picking, General Agent Passenger Department, B. & O., 244 Clark street, Chicago, Ill., stating the sleeper accommodations desired and the date of departure, etc., and they will be booked accordingly. Come early and avoid the rush. The trip on the sleeper is one of the most enjoyable features of the week. Our friends are invited to join the Chicago party and by their presence lend to the enjoyment of the occasion. FAX.

Chicago, Jan. 20, 1902.

THE MAN WHO MAKES THE MOLDS.

"The brick mold business is good," said S. B. Gray, the man who makes brick molds, as related in his ad. on page 106 of this paper. Time was when brickmakers generally purchased their molds from a local manufacturer, but it is different now, for a firm having a shop equipped with special machinery, as Mr. Gray's is, can make better molds far cheaper than the small manufacturer, who depends mostly on hand labor. Mr. Gray's little ad. brings him inquiries from all sections of the country, and the character of his molds and prices are such that an inquiry is very apt to develop into an order. He is now turning out a special lot of molds for a party in Jamaica, and another lot for a firm in Denver. Last season was a very busy one, and from present indications the coming year will be even better, he says. Mr. Gray's factory is located at 1510 West Washington street, Indianapolis, Ind.

S. A. Weller, at Zanesville, O., is building extensive additions to his pottery, among which is a handsome new office building, which, it is said, will be fitted up luxuriously. The other buildings will be used as warehouses.

Written for The Clay-Worker.

RING OUT, WILD BELLS.

[A Serious Parody.]

> "Ring out, Wild Bells, to the Wild Sky—
> The old year's dying! Let him die."
> —Tennyson.

I.

Ring out, wild bells, and raise a din!
The New Year's coming. Whoop him in!
We call him new, but to the wise
He's just the old year in disguise.
The old year's dying! Hold your yap!
He's merely on another lap.
The man who named him Old and New
Had very little else to do.
Ring out, wild bells, though, just the same,
Let's raise the whoop and join the game.

Ring out the new; ring in the old—
[This deal may strike you rather cold,
But when you've learned the change I ring
You'll find it quite a different thing.]
Ring out the new; ring in the old.
Ring out the brass; ring in the gold.
Ring out the false; ring in the true.
[This line reads well in either view.]
Ring in the old of solid worth—
Ring out the new that soils the earth.

II.

Ring out, wild bells! Just cut 'er loose!
The old year's on another cruise,
And though he travels 'round incog.
He's every whit the same sad dog.
Though he has swapped his 1 for 2
He brings the same old jobs to do—
He brings the same gold bricks and woes
Of rain and mud, of frost and snows;
Of tears and smiles, of joys and cares—
Don't let him catch you unawares.

Ring out the new; ring in the old.
Ring in the warmth; ring out the cold.
Ring in the old stuff, made to last—
Ring out the veneer of the past;
Ring out the new of weak assent,
Ring in the old of good intent;
Ring out the new expediency,
Ring in the old that ought to be;
Ring in the old that made us free,
Ring out the new false Destiny.

III.

Ring out, wild bells! Just make things hump!
The old year's coming on the jump,
And if you'd catch him on the fly
You've got to be almighty spry.
Ring out, wild bells, and say to men:
"Just grapple with your jobs again,
And, though, amain you wrought before,
The old year snorts for more—still more.
No half-way effort soothes his brow—
He's scoring for a record now."

Ring in the old; ring out the new.
Ring in the days of much to do;
Ring out the new of sluggish rest;
Ring in the old of fire and zest.
Ring out the new. "What need to fret?"
Ring in the old. "Still higher yet."
Ring out the new of soft moonshine,
Ring in the old of rare old wine;
Ring out the new of sordid pelf,
Ring in the old—"The last, Myself."

IV.

Ring out, wild bells! Just shriek it free
O'er all the land, from sea to sea!
This message bear to every heart:
"You've got another chance to start!"
Go tell the toiler in the mine;
Go tell the idler, drunk with wine;
Go tell the weary man of wealth;
Go tell the one of shattered health—
The men who build, the men who mould—
"The year demands the best you hold."

Ring out the old; ring in the new.
Ring out the strange, false point of view.
Ring out the new of senseless broil,
Ring in the old of honored toil;
Ring out the new of fads and creeds,
Ring in the old of noble deeds;
Ring out the new of whited death.
Ring in the good old-fashioned faith;
Ring out the new of devious ways.
Ring in the good old-fashioned days.

BRIAN J. DUNN.

TABLE OF CONTENTS.

Color and Form in Brick Architecture 19
Selling Brick for a Profit.... 21
Out-of-Sight Brick 22
Opportunities of the Young Clayworkers of the Twentieth Century 24
Programme of the Iowa Brick & Tile Association... 25
A Remarkable Stein........ 25
Brick Pavements in the City of Cleveland 26
A Gigantic Fraud Exposed.. 28
The Best Education for the Twentieth Century Clayworker 30
The Clay Industries of Texas 31
Burning Money 32
The Clay Industries of Germany 34

THE ILLINOIS CONVENTION.

Report of Secretary........ 37
Mayor Bradley's Address of Welcome 40
President Converse's Annual Address 40
Tiling Highways 41
"Where Are We At?"...... 42
Factory Leaks 43
Brick Testing 44
Piece Work 44
Avoid Strikes—How? 45
The Superintendent 47
Brick Inspection 48
What Illinois Tile Manufacturers Have Done..... 49
Treasurer Hammerschmidt's Report 51
Report of Committee on Resolutions 51
Election of Officers........ 51
The Annual Banquet....... 52
List of Members of Illinois Association 52
Buttonhole Talks 53
The Clayworking Industries of Marseilles, France....... 54
Annual Meeting of the National Stove Lining Manufacturers' Association 54
Meeting of the American Ceramic Society 55
The Convention City........ 56
Official Announcement and Programme 57
A Fog and Smoke Destroyer 27
The Evolution of the Potting Industry of the United States 60
The Convention City's Brick Plants 62
The Scott Method of Handling Brick 70
Will Be at Cleveland........ 71
Benefits of Convention Work. 72
Prosperity at the Mouth of the Mississippi 73
From Northern New England 74
Prospects for Paving Brick in Russia 74
Iowa Brickmaking Industries 75
Programme of Wisconsin Clayworkers' Convention.. 75
Buffalo Brick & Building News 76
The Banner Year for Philadelphia Brickmakers 76
As Others See Us........ 77
Among the Potters 78
St. Louis Brick and Building Notes 96
Western Pennsylvania Industries 98
Pacific Coast News........ 100

EDITORIAL:

Current Comment 85
Clay Products at the St. Louis Exposition 85
The National Convention.... 85
Just a Hint 86
The Event of the St. Louis World's Fair 86
A New Crop of Calendars... 86
Just Add a Postscript........ 87
Opening the New Ledger.... 87
Chicago to Cleveland........ 87
The Man Who Makes the Molds 87
Editorial Notes and Clippings 90

Index to Advertisements on Front Inside Cover Page.

Errata—The first word of the sixth line on the 25th page of this issue should read burning not "running".

A RARE OPPORTUNITY TO OBTAIN INTEREST IN AN ESTABLISHED BUSINESS.

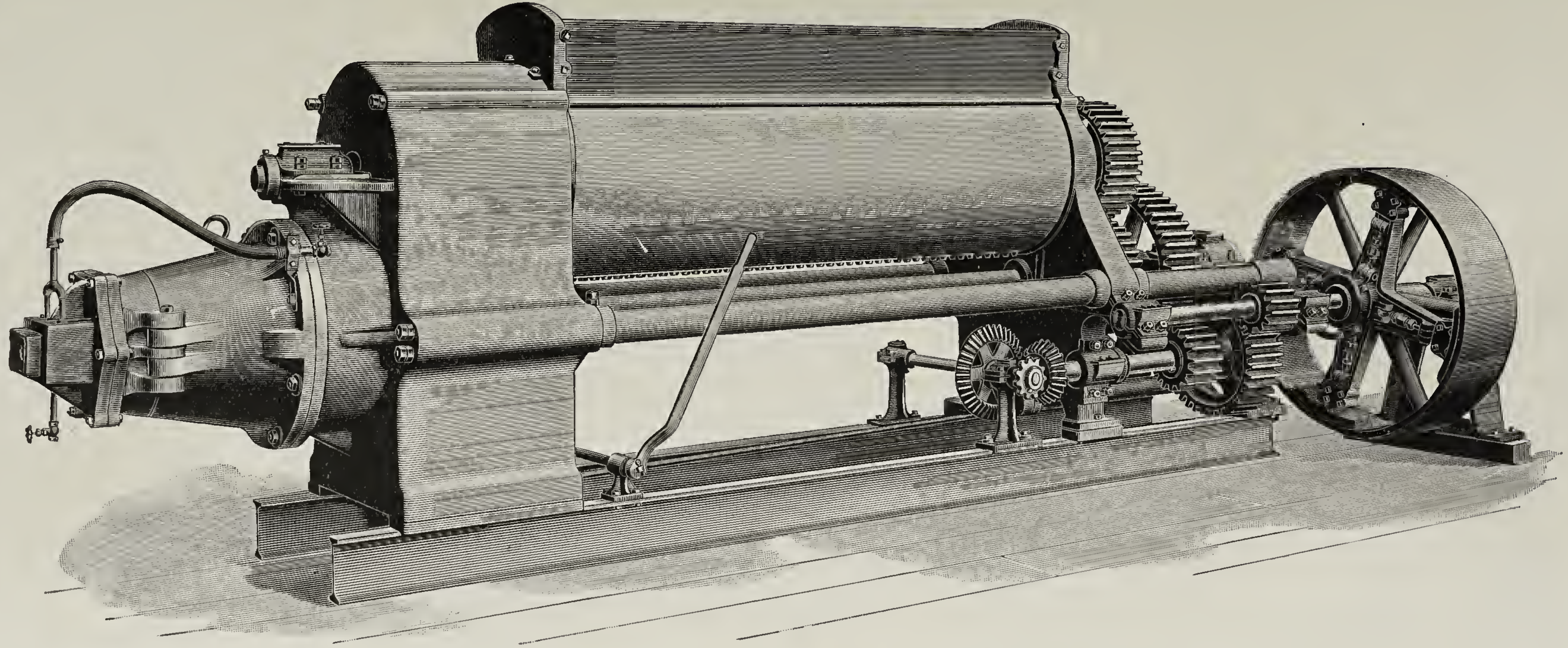
FOR SALE—All or three-fourths interest in a brick plant; capacity, 6,000,000 a season; 5,000,000 made last season and all sold; good market and finest clay; 125-horse power Corliss engine; two boilers, 125-horse power; brick machines and all necessary buildings and tools of all kinds; racks, pallets and also steam dryer with engine, boiler, pumps, etc., etc. There is a saw mill in connection with the plant to run in winter time, when too cold for brickmaking. Principal owner, whose interest may be purchased, will retire, and the owner of the remaining interest, who is thoroughly conversant with the business and will oversee plant and educate the purchaser to manage the business, if he is not an experienced brickmaker. This is an exceptional opportunity for a young man to become established in a sound, legitimate business in a healthy and delightful climate. For further details, address

11 d WOOD, care Clay-Worker.

Mention the CLAY-WORKER
WHEN WRITING TO ADVERTISERS
Mention the CLAY-WORKER.

THE HEAVY BRICK MACHINERY

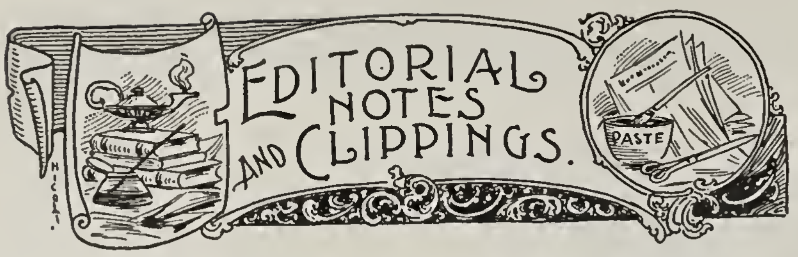
Is made by Raymond. ✠ It is not as Cheap as some others, but it lasts. ✠ It has Staying Qualities. ✠ You Avoid Expensive Break Downs, and Incidentally Break up by using it. ✠ ✠ ✠ ✠ ✠



WE DON'T MAKE all the Brick Machinery sold in the U. S., but those who use it say it is the best. We have every reason to believe this is true because that is just what we try to make. We can attribute the unprecedented demand for our machinery to no other reason than the fact that it is strong and heavy and satisfies the trade. Users of our machinery are our friends because they get good value for their money.

The C. W. Raymond Co.
DAYTON, OHIO, U. S. A.

NEW YORK OFFICE: 39 and 41 Cortlandt Street.



A brickyard is wanted at St. Henry, Ohio.

J. W. Willard will establish a brickyard near Lewes, Del.

H. Vogel, of Rockdale, Tex., will establish a brick plant at that point.

Moore Bros. will erect a brick plant at Akely, Minn., in the near future.

H. E. Jennings writes that a company has been organized to establish a brick plant at New Castle, Ind.

Fred Eighinger writes that Bristow, I. T., offers a good opportunity to an enterprising brickmaker.

The New York Brick and Paving Co., of Syracuse, N. Y., are making arrangements to enlarge their plant.

The Fullerton (Ky.) Brick Works will increase the capacity of their plant from 35,000 to 50,000 brick per day.

Marshalltown, Iowa, is to have a pottery plant. J. P. Sunde, of McCallsburg, Iowa, is at the head of the movement.

F. R. Covert, of Illinois, will establish a brick plant at Iola, Kan., for the manufacture of building and paving brick.

The Idaho Brick and Lime Co., of Spokane, Wash., contemplate the erection of a plant at Cœuer d' Alene, Idaho, in the spring.

Carl Ballard will erect a brick manufacturing plant at Greenfield, O. He expects to have same ready for operation by spring.

John Frazee, who recently sold his interests in the brickyards at Warren, Ind., will start a new brick plant at Van Buren, Ind.

G. W. M. Simpson writes that he contemplates going into the brick business at Corsica, Pa., and is in the market for machinery, etc.

Bartlett Bros. will improve and enlarge their brick plant at Lead, S. Dak., in order to enable them to meet the growing demand for their brick.

George W. Ives, the well-known brick manufacturer of North Haven, Conn., was thrown from his buggy, and besides other injuries, had three ribs broken.

C. L. Randall has purchased land at Girard, Pa., on which he will erect a press brick plant in the near future. A stock company will probably be organized.

The Blossom (Texas) Brick Co. has been incorporated with a capital stock of $30,000. The incorporators are G. W. Campbell, R. V. Womack and W. E. Lenoir.

You are invited to stop at Dayton, O., on your way to or from the Convention. The C. W. Raymond Co. offer a display of modern brick machinery in operation.

H. Babcock writes that he will open a brick plant at New Hampton, Iowa, in the spring, and would like to correspond with manufacturers of brick machinery.

Any one looking for a position as traveling salesman is referred to the ad. signed "Box 99," in our "Wanted" columns. This is a good opening for a good man.

Ammorn & Co., formerly of Galesburg, Ill., will put in a plant at Little Rock, Ark., for the manufacture of pressed brick. They will expend $40,000 on the plant.

The Boulder Shale Brick Co. has been organized at Boulder, Col., for the purpose of manufacturing pressed brick and sewer tiles. It is expected to have the plant in operation by spring. A. W. Osborne, of Denver, is president; U. Sprague, of Victor, Col., secretary, and S. L. Garigher, of Denver, treasurer and general manager.

J. Frank Plumb, vice president of the Onondaga Vitrified Brick Co., Syracuse, N. Y., slipped and fell on the street recently, sustaining a compound fracture of his left ankle.

David Daryon, an employe at the Sands Brick Co., at North Cambridge, Mass., fell into the clay crusher while unloading a car of clay, and was killed before the crusher could be stopped.

The Pioneer Hardware Store Co. write that they are going to put in a brick plant at Arapahoe, Okla., and desire to receive catalogues, price lists, etc., of brick machinery and brickyard appliances.

W. H. Hoover, Laporte, Ind., writes that he is looking for a suitable location for a brickyard or for a small yard already established, in a good town. He prefers a location west of the Mississippi river.

Seely McCord and J. J. Miller, of Benton Harbor, Mich., have formed a partnership for the manufacture of brick and tile, to be known as the Benton Harbor Brick and Tile Co. They have been incorporated with $40,000 capital stock.

J. E. Horne, of Waco., Tex., has discovered an immense bed of fine clay on his farm. He has had the clay tested with very satisfactory results, and it is now thought a company will be formed for the manufacture of pressed brick.

The Fombell Brick Co. is the name of a new concern recently incorporated to manufacture brick at Fombell, Pa. Pittsburg capitalists are interested, and the head office will be in Pittsburg. The company is capitalized at $100,000.

The plant of the South Zanesville Sewer Pipe Co., at Zanesville, O., which was illustrated in the December Clay-Worker, was completely destroyed by fire January 14. The loss is placed at $50,000. The plant will be rebuilt at once.

G. M. McDonald sends in his subscription to The Clay-Worker and says a new brick plant will probably be built at Wenatchee, Wash., in the spring, and that he himself will be in the market at that place for soft-mud brick machinery.

The Denny Clay Co., of Seattle, Wash., have just booked an order for 100,000 brick to be used for trial purposes for street paving in Manila. If they prove successful, brick will in all likelihood be adopted as the chief paving material for Manila.

Those attending the Convention will be highly interested in the display of modern brick machinery in operation at Dayton, O. The C. W. Raymond Co. invite all brickmakers who can do so to stop off and spend a day in the Gem City of Ohio.

The firm of Murdaugh & Mayo, at Norfolk, Va., brick manufacturers, has dissolved partnership, and the business will hereafter be continued under the firm name of W. R. Mayo & Sons, S. D. Mayo and William M. Mayo, Jr., having been admitted to the business.

M. M. Sherwood writes that he is interested in a company at North East, Pa., which contemplates the erection of a dry press brick plant, and that he is in the market for a dry press machine, either new or second-hand. The latter is preferred if it is in good condition.

William Minnigerode, Lynchburg, Va., writes that he is in the market for iron dry kiln cars. He would prefer second-hand cars if in good condition, and the gauge is not important, as he can lay his tracks to suit the cars. He also wants 2,400 feet of good wide pipe with fittings.

Robinson Bros., of Akron, O., have leased the plant of the Lock Haven Fire Clay Co., at Lock Haven, Pa., which they will operate in connection with six other sewer pipe and fire brick plants. Mr. H. A. Robinson will have the management of this plant until it is in good working order.

In a recent letter the Green & Hunter Brick Co., Thurber, Tex., say they have been very busy the past season. They

[CONTINUED ON PAGE 92.]

See! See! See!

Our Continous Motion

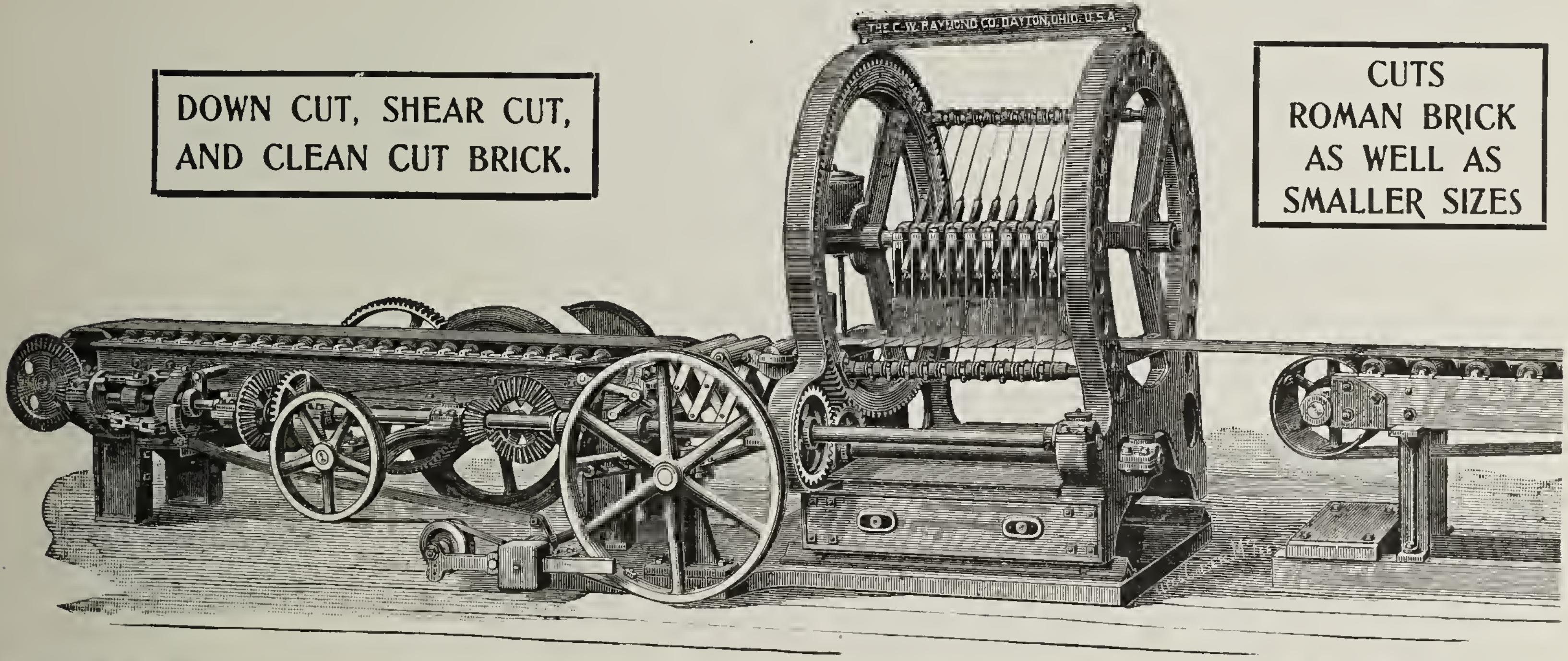
Down=Cut

CUTTING TABLE

The Most Practical Device for Cutting Brick yet Invented. - - - - - - - An Absolutely Down and Shear Cut.

DOWN CUT, SHEAR CUT,
AND CLEAN CUT BRICK.

CUTS
ROMAN BRICK
AS WELL AS
SMALLER SIZES


THE C.W. RAYMOND CO. DAYTON, OHIO. U.S.A.

Do you want your brick cut of uniform thickness, perfectly straight from end to end, with smooth clean edges? This Table will do it and it is the only one made that will.

All
Brickyard Machinery

The C. W. Raymond Co.

DAYTON, OHIO.
NEW YORK OFFICE, 39—41 Cortlandt Street.

EDITORIAL NOTES AND CLIPPINGS—Continued.

have recently placed two large contracts for paving brick in South Texas, and are at the present time supplying all the brick for the streets that are being paved in Houston and Beaumont. All told, the above contracts aggregate over 5,000,000 brick.

Beem Bros., of Summit, O., have organized a stock company and are enlarging and improving their plant. They are installing machinery and appliances for the manufacture of building block and tile, and are building a Barron dryer, which has proved so successful in drying tender clays.

The Glen Elk brick plant, owned by W. Wilkinson and William Thompson, of Clarksburg, W. Va., was burned to the ground early New Year's morning. This was a new plant, and the loss is estimated at $20,000, on which there is $5,000 insurance. The plant will in all probability be rebuilt.

George B. Perry, a brick manufacturer and prominent citizen of North Adams, Mass., died in Boston, Mass., January 13. Mr. Perry was president of the Mechanicsville (N. Y.) Brick Co. for a number of years, but had recently returned to Boston. He leaves a widow and three children, all grown.

Smith Bros. Brick Co. have purchased the plant of the Wittmer Brick Co., at Pittsburg, Pa. Mr. Xavier and his associates will devote their time in the future to their extensive natural gas business. Smith Bros. Co. are overhauling the plant and making a number of important changes in the same, among which is the installation of an Ironclad dryer.

The Rome (Ga.) Brick Co., after a sixty days' trial of their "A. B. C." induced draft apparatus, state that they are convinced that within six months' time it will more than pay for itself in fuel saved. The American Blower Co., of Detroit, who furnished this apparatus, will be pleased to send their Mechanical Draft Catalogue to any one interested in the subject.

Early in the morning of December 23 the entire plant of the Broughton Brick Co., at Lewis Run, Pa., was almost completely destroyed by fire. The only buildings saved were the stock sheds. Mr. Broughton has not decided as yet whether he will rebuild the plant, but if he does rebuild the buildings will be of brick and the entire plant made as nearly fireproof as possible.

In the death of Daniel Duty, which occurred Jan. 8, Cleveland loses one of her pioneer brickmakers and a man who was held in high esteem by all who knew him. Mr. Duty was senior member of the firm of Duty & Co., composed of Daniel and Andrew Duty and father of Spencer M. Duty, Secretary of the local association organized to take care of the coming Convention.

The plant of the Atlanta Brick Co., located at Bolton, Ga., was totally destroyed by fire December 27. The plant had been in operation about two years and a half, and had a capacity of 40,000 a day. The loss is estimated at $12,000, on which there is $5,000 insurance. The plant will be rebuilt at once. Mr. E. H. Thurman, general manager, states that they expect to have the plant ready for business by April 1.

G. W. Trammell, J. H. Rhodes and W. F. McDuffie will erect a $30,000 brick plant at Rome, Ga. Work will begin at once, and the plant will be completed as soon as possible. These gentlemen are already operating a plant in another part of the city under the name of the Rome Brick Co., and the machinery will probably be transferred to the new works, as the location of the old plant is undesirable, owing to the frequent high water.

J. H. Connely, who has had charge of M. E. Jacobs' brick plant at Berlin, Conn., for a number of years, and prior to that time was foreman of W. L. Davis's brick plant, has severed his connection with Mr. Jacobs, and will start a brick plant of his own. He has purchased a site and will at once begin the erection of the plant, which he hopes to have in operation by May 1. We wish Mr. Connely all the success he well deserves.

Oscar F. Bledsoe advises us that he has immense beds of fine clay and shale on the Illinois Central railroad, at Grenada, Miss., where there is an unlimited demand for brick and tile. He also has a very good brick and tile plant equipped with modern machinery, but he wants a man with capital and experience to join forces with him in order to operate the plant more extensively than he is able to do with the capital at his demand. It is a good opening for a young man.

In a recent communication, in which he incloses subscription to The Clay-Worker, Fred Groner, of Kinton, Ore., says he has but recently returned from an extended tour among the brick and tile plants and clayworking machinery factories of the country, and at present is very busy with a new brick and tile plant he is erecting, the machinery for which is being furnished by the J. D. Fate Co., at Plymouth, O., and E. M. Freese & Co., at Galion, O. When through he expects to have one of the best brick and tile plants in that section.

The Laclede Fire Brick Manufacturing Co., St. Louis, Mo., has completed a new vitrified brick plant and will shortly be in a position to furnish street paving brick in any quantity. The company has also contracted for an addition to its sewer pipe factory and has in course of erection a new building 139 feet long, 42 feet wide and three stories high. These enlargements will increase its output of sewer pipe about 50 per cent. Among the large contracts upon which the company is now engaged is one with the city of St. Louis for 80,000 feet of sewer pipe and one for the fireproofing of the new thirteen-story Pontiac Building under construction at Seventh and Market streets.

Charles M. Crook, secretary and treasurer of the Bessemer Lime Co., Youngstown, O., writes that for many years they have been quarrying limestone, from which they have had to strip immense quantities of shale. They have decided to make use of this shale and will accordingly establish a paving brick plant of from 60,000 to 75,000 daily capacity, for the utilization of what they have heretofore considered waste material. They will equip the plant with machinery from the shops of the Bonnot Co., of Canton, O., and expect to be ready for operation by spring. Mr. Crook says he expects to attend the National Convention at Cleveland and gain many valuable pointers from the men experienced in the business.

We are in receipt of a copy of a special industrial edition of the Northampton (Mass.) Daily Herald, which is a credit to the paper itself and to the town as well. It is handsomely illustrated with portraits of Northampton's representative citizens and photographs of manufacturing establishments, stores, etc., which tell the story of Northampton's progress and enterprise. Among same is a splendid half-tone portrait of W. A. Bailey, the well-known brick manufacturer and a view of his brickyard. Mr. Bailey has been identified with the brick and building interest of Northampton for more than thirty years, and last season turned out 3,000,000 brick, for all of which he found a good demand at equally good prices.

THE CHICAGO, MILWAUKEE & ST. PAUL RAILWAY.

Many people unacquainted with the geography of the West imagine that because the names "Chicago, Milwaukee and St. Paul" are used in the corporate title of the railway owning the Short Line between Chicago and Omaha, they must go via the cities of Milwaukee and St. Paul to reach their destination —and if it be Omaha or west thereof. This is a mistaken idea. On a map the line running directly east and west would look like this:

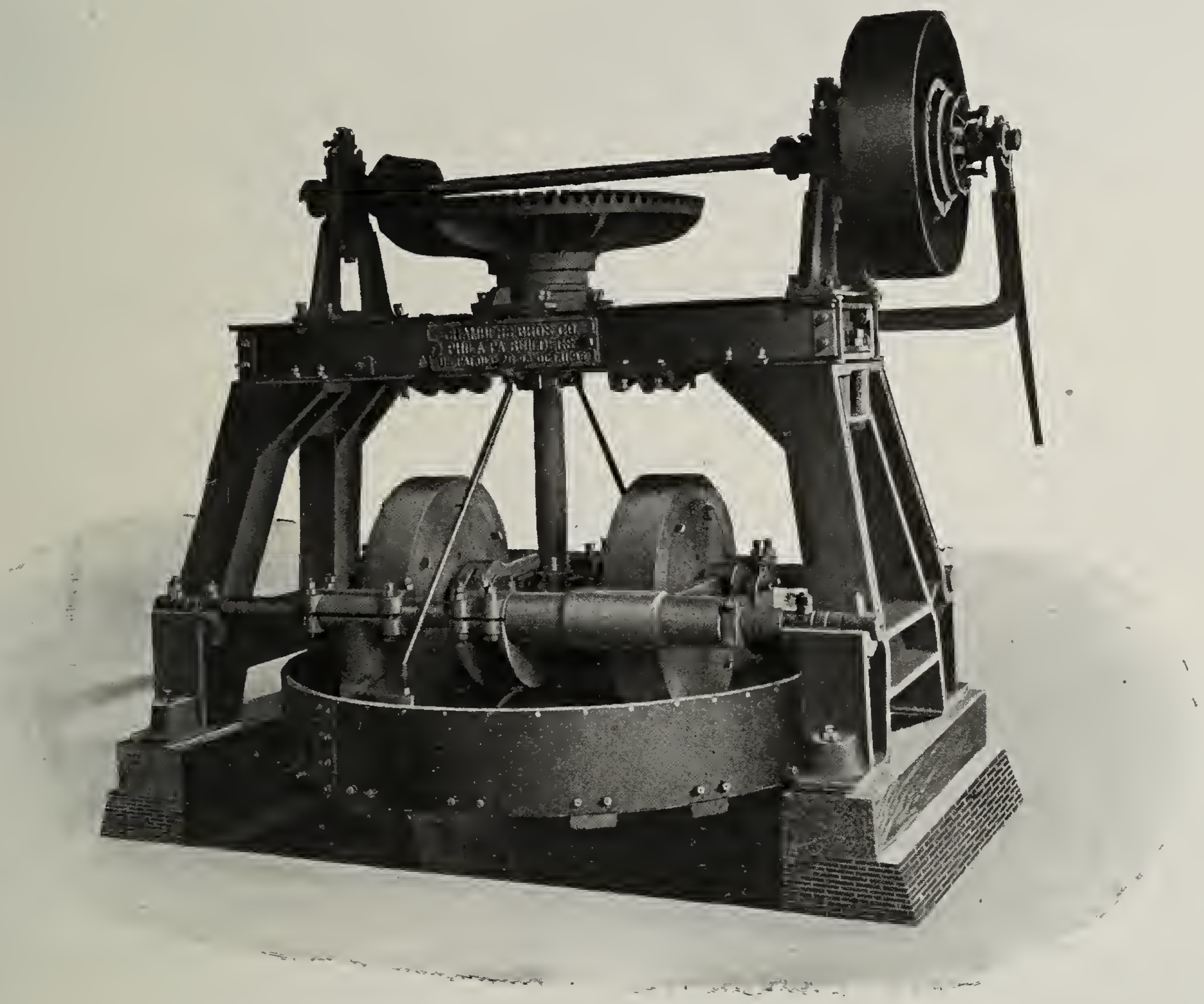
Omaha——————————Chicago.

There is nothing more simple than that, and it is less than 500 miles between Chicago and Omaha. Two through trains daily in each direction with the best Sleeping Car and Dining Car Service, and all regular travelers know and appreciate the merits of the Chicago, Milwaukee & St. Paul Railway's Short Line between the East and the West.

Time tables, maps and information furnished on application to C. C. Mordough, Traveling Passenger Agent, 12 Carew Building, Cincinnati.

The Chambers Brick Machinery.

At no time have we given more attention to improving the quality of brick obtainable from our machines, nor to the improvement of our line of clay preparing machinery. Conspicuous among these are our Dry Pans. Having satisfied ourselves by long use that the principles involved in our SUSPENDED PAN were correct, we have during the past year made an entirely new set of patterns for our nine feet diameter pan, correcting many details of construction and placing upon the market a machine that has never failed to receive the most favorable commendation from any experienced user of such machinery who took the time to examine the merits of our design and workmanship.



THE CHAMBERS SUSPENDED 9-FT. DIAMETER PAN, NO. 2.

This machine necessarily costs more money than some others, but a trip through our works and examination of the various parts during construction soon shows the reason for this, and easily justifies the increased expenditure. Of two men recently visiting our shop, one was a mechanic familiar with so-called cheap pan construction. He readily pointed out how we might save a considerable portion of our cost by making certain pieces lighter, by decreasing the diameter and lengths of bearing on certain shafts, by omitting to machine face certain parts where bolted together, by omitting to make detachable certain parts necessarily subject to wear and which under our construction can easily be renewed without tearing the whole machine to pieces to get at these parts.

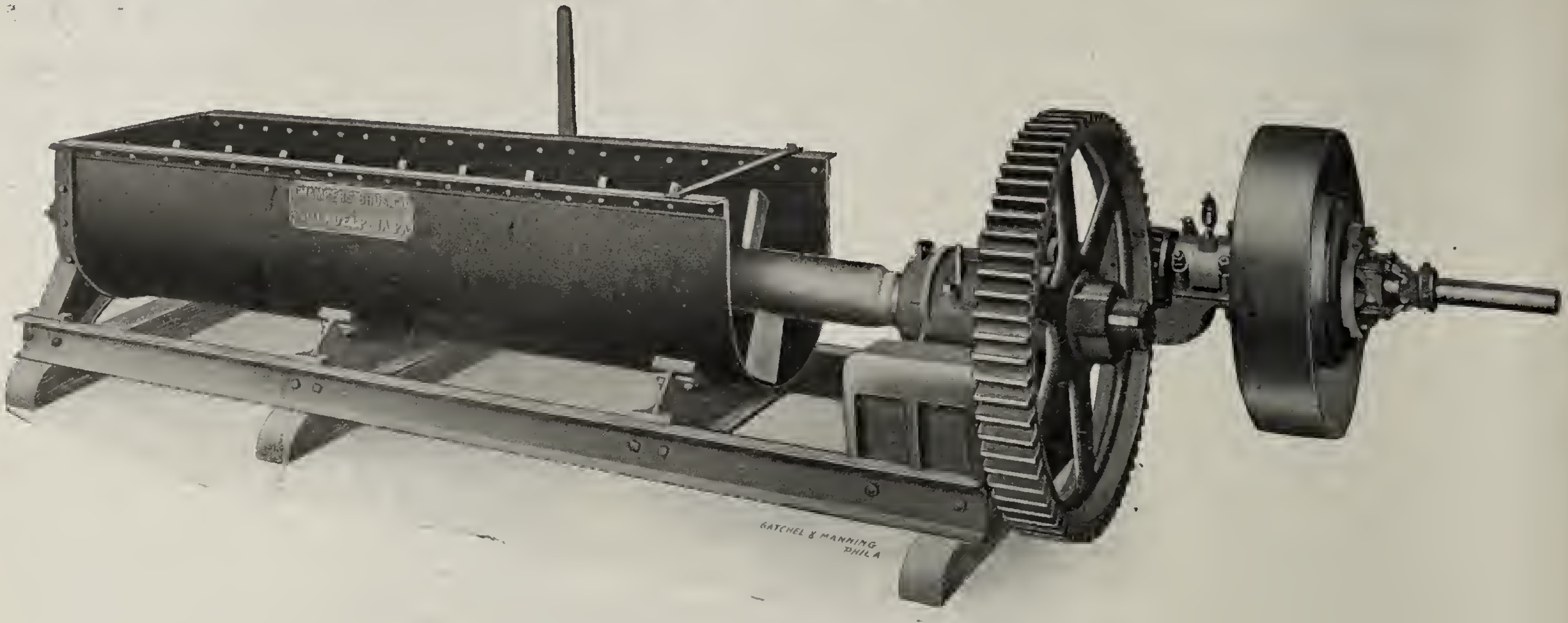
The other was an experienced mechanical engineer, then engaged in making the plans for a large clay-working establishment. A man whose professional training made it easy for him to understand the reason and the resulting advantages to his clients for the items that add to first cost.

He saw cause and effect in mechanics as readily as Professor Orton can trace their inevitable results in the chemistry of clay-working.

This engineer had spent a large part of several months visiting large clay-working establishments, examining methods and machines and making a careful study and comparison. He expressed the conclusion that he could not do other than advise the purchase of our machinery. We invite similar critical examination on the part of purchasers of machinery in our line.

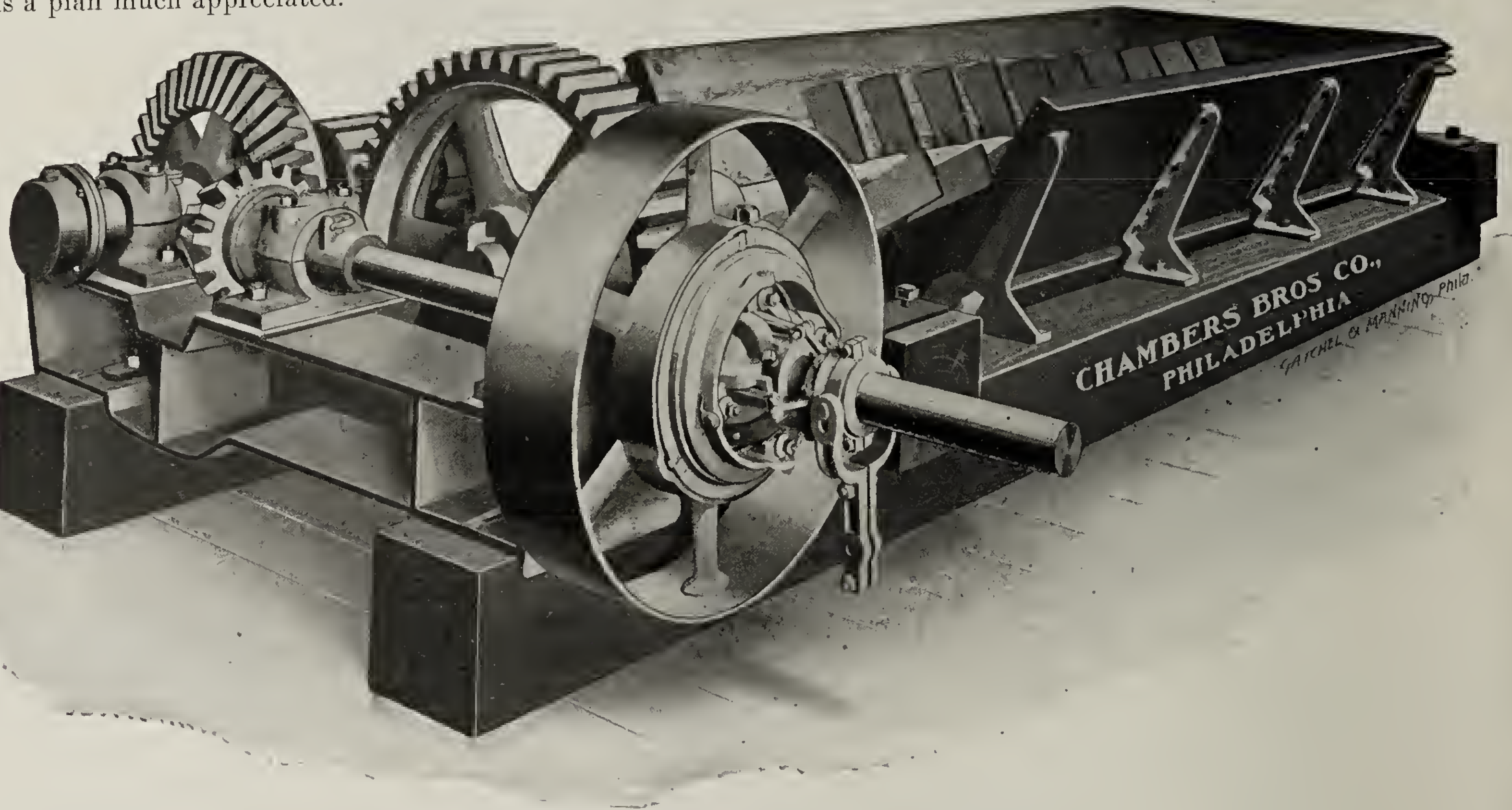
CHAMBERS BROS. CO., = Philadelphia, Pa.

THE Chambers Brick Machinery



The Chambers No. 8 Spur Gear Pug Mill.

This mill is made with tub 10 feet long or less. It is strong and substantial, but presents great simplicity of construction. Placing the gears where shown removes them from the point at which clay is fed into the mill. All journal bearings are entirely outside the clay tub. The ten-foot length carries forty forged steel knives so secured that they can be set at any desired angle with the shaft. This feature regulates the feed, secures a uniform output and with those who know is a plan much appreciated.

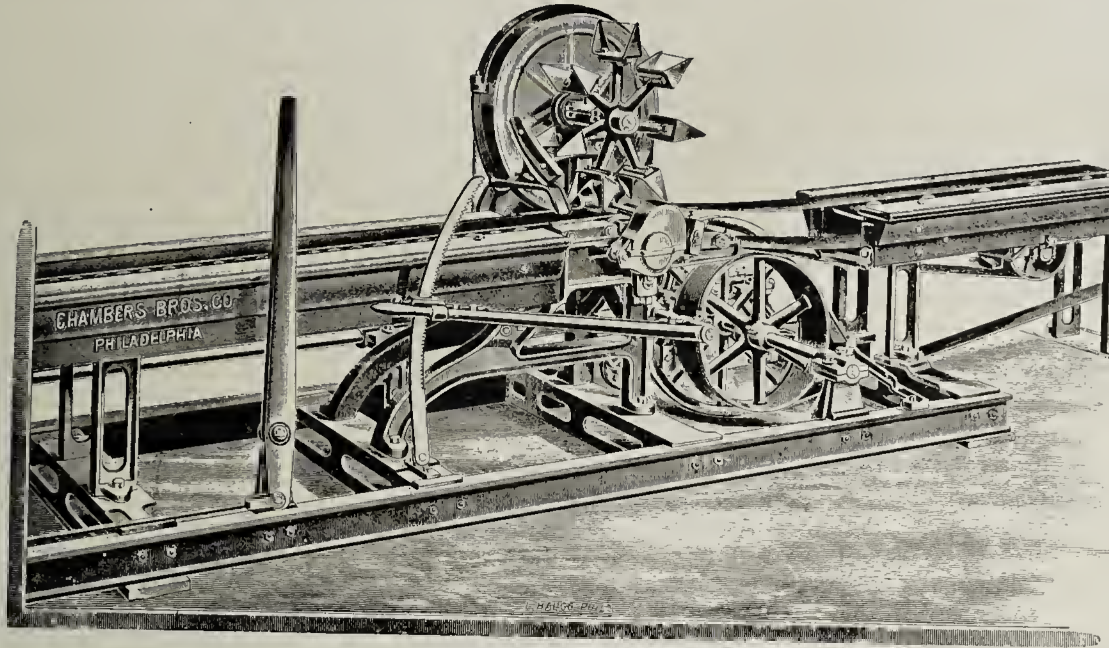


The Chambers Bevel Gear Granulator and Feeder.

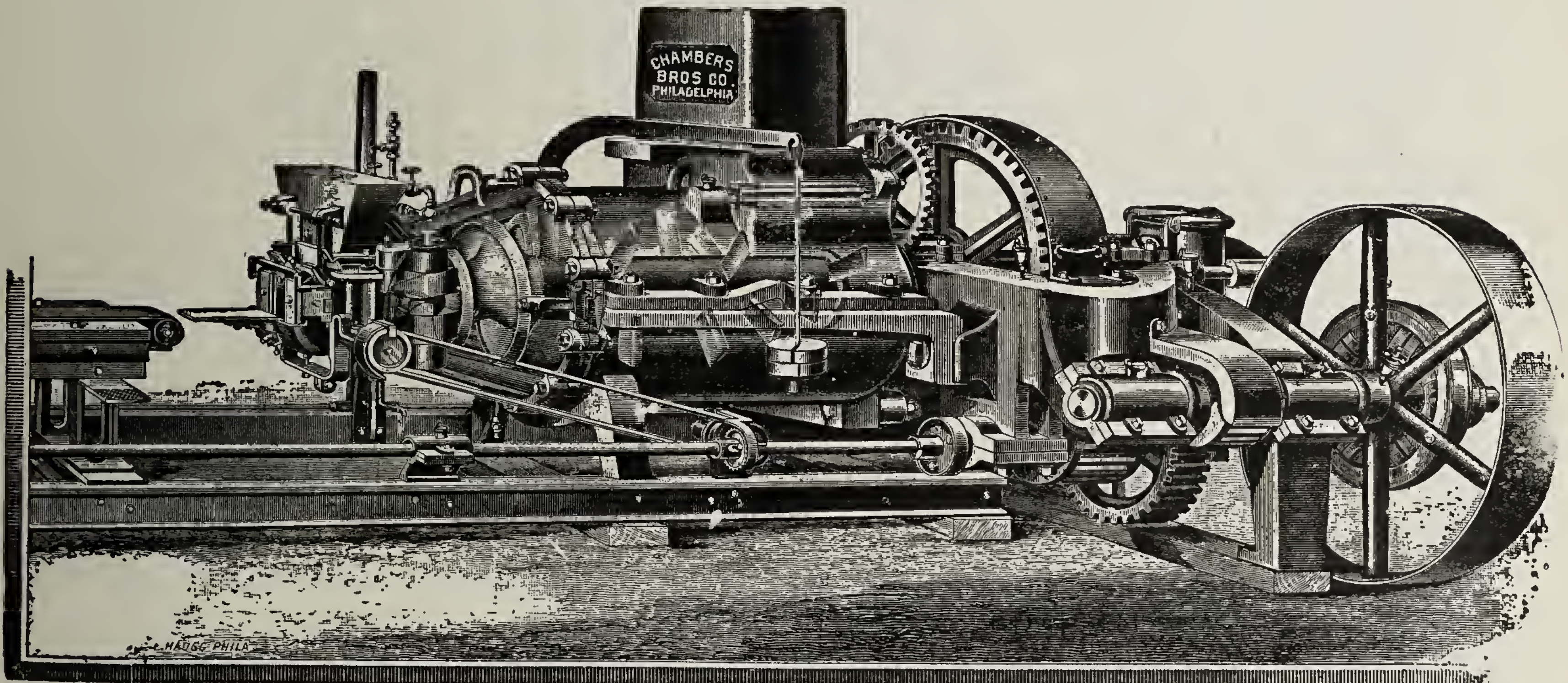
Some of our customers handle clay in wheelbarrows; some in carts, and others in cars drawn by locomotives. All large clay-working plants, and especially those digging clay with steam shovels, find great advantage in having a large, strong machine into which can be dumped a cartload or carload of clay at one time. This machine cuts up the lumps and feeds into the clay grinder a uniform supply of material. It serves as a reservoir between the irregularity of feeding from the clay pit and the continuous consumption of manufacture. It has 9-inch diameter shaft, forged steel knives, adjustable so as to regulate feed.

CHAMBERS BROTHERS COMPANY, - Philadelphia, Pa.

THE Chambers Brick Machinery



THE CHAMBERS AUTOMATIC WIRE CUTTER FOR END CUT BRICKS.
Will cut and separate from the continuously moving clay-bar over two hundred bricks per minute.



THE CHAMBERS AUTOMATIC END CUT BRICK MACHINE.
Built in five sizes, having capacity from 10,000 to over 100,000 bricks daily, under favorable conditions.

Aside from the inventions and automatic features embodied in this machine and which enable its product to be obtained with a minimum of labor there are many excellent points in mechanical construction. We shall be pleased to explain these in detail to purchasers.

Chambers Brothers Company,

PHILADELPHIA, PA.

WRITTEN FOR THE CLAY-WORKER.

ST. LOUIS BRICK AND BUILDING NOTES.

BUSINESS HAS BEEN fairly good the past month with terra cotta, brick and fire clay industries. Quite a number of good contracts have been let for future delivery of bricks, and a great many more are in sight.

Most of the brickyards contemplate shutting down within the next few days, according to their custom, in order that their plants may be overlooked for repairs. Some of them have already ceased working for the same reason.

Prices remain the same as they have been, but the general opinion prevails that there will be a slight advance before a great while. The cause will be the general demand. Prices are as follows: Merchantable brick, $7.25; ordinary brick, $7.75; strictly hard, $8.25; red pressed, $17.50, and sidewalk and paving brick, $8.50. All these prices are delivered.

Large increases are shown in the year's building permits, viz.:

Months.	No. Brick.	No. Frame.	Value.
January	75	92	1,295,213
February	67	96	686,644
March	120	126	911,988
April	119	125	727,522
May	122	136	1,296,354
June	117	146	1,342,104
July	104	139	1,498,283
August	106	132	785,171
September	88	126	542,291
October	147	159	1,012,819
November	99	143	759,301
December	92	88	2,350,301
Totals	1,256	1,508	$13,207,991

The valuations of new buildings for which construction permits were issued in 1901 exceed the valuations of the preceding year to the amount of $7,291,007. The aggregate valuations of 1901 were, as shown, $13,207,991, as compared with $5,916,984 for 1900.

The advance is unprecedented in recent years. Taking the monthly totals for 1901, the top notch was reached in December when they attained the $2,000,000 mark. In 1892, the banner year for building, the total was $16,000,000. That year the grand total was swelled, owing to the era of new office buildings which developed at that time and which apparently has been reinaugurated on a greater scale now. During the year the splendid commercial structures of the Shapleigh-Nowell, Kennard, Nugent, Lindell, Norton, Catlin, Brown, Dunn, Sickles, Ferguson, McKinney and Reyburn interests have been finished or are under construction, on Washington avenue; the Mercantile Trust, Quage & Dolph, Turner, Smith-Davis and Lambert-Deacon-Hull buildings, on Locust street; the Neely, Burns, Reyburn, Scannell, Eilers and Tobin buildings, on Pine street; the Bank of Commerce, Tenth street, and others on Olivoe, and the Pontiac, on Market street. Such important streets as Broadway in one direction and Seventh and Twelfth streets in another direction are being graced with structures worthy the name of the new St. Louis, and these instances in the central district alone are types of the revival which employs millions of capital and thousands of artisans and mechanics.

Prices for materials are higher than for the past few years, but no higher than those which prevailed in 1902, when building records were broken, and conservative men predict that they will not be prohibitive even during the unprecedented activity which the Fair of 1903 will bring about.

About ten miles of district sewers were built in 1901. The largest of these was the Dakota street sewer No. 1, which is practically completed. Rocky Branch district sewers Nos. 7, 8 and 9, and two or three smaller sewers make up the total of work accomplished in the last year. No public sewers have been built and no repairs have been made, not even on the Mill Creek sewer, on account of the scarcity of money in the sewer department.

Since the passage of the charter amendments plans have been prepared by the sewer commissioner for new district sewers, which will probably be sent to the Municipal Assembly as soon as the necessary ordinances are passed relating to the form of letting contracts and other changes made necessary by the charter amendments. These plans include the construction of the Cabanne, Tower Grove, Arsenal street relief, Rocky Branch relief, Harlem Creek, Gingrass Creek and Glaise Creek district sewers, and the completion of the Tower Grove storm sewer. The Poplar street sewer, to assist Mill Creek sewer, will have to be secured before an ordinance can be prepared for its construction. The building of this sewer, when it is reached, will be entirely underground by the shield method adopted in digging tunnels for underground railways.

Other changes in the sewers of the main business part of the city will become necessary soon, partly on account of the World's Fair and partly on account of the need for deeper drainage than now afforded.

All this sewerage will require an immense number of brick, so the chances for a good brick season look very bright.

The passage of the charter amendments also necessitated some changes in the street commissioner's plans and kept down the showing of actual work accomplished in the last year. As it is, about twenty-five miles of street construction and reconstruction was completed, a great many of these miles being of vitrified brick.

Several ordinances which had been passed by the Municipal Assembly were made null by the charter amendments. They were passed in order that the city, if the amendments should fail, would still be able to go ahead with a limited amount of work.

These all had to go through the legislative mill again, and the first hearing for work under the amended charter will be had January 14.

Several miles of streets, mostly between Laclede and Eastern avenues, will be considered at that hearing. Many of these will be of brick. After that hearings will be held, possibly, every two weeks until the work most urgently necessary on account of the World's Fair shall have begun.

As a necessary preliminary to advertising for hearings on street constructions, the specifications for three kinds of street paving, asphalt, vitrified brick and creosoted wood, were approved a short time ago by the Board of Public Improvements.

In the specifications for vitrified brick the former requirements for a mechanical test of the brick by shaking in a machine are removed, and it is prescribed that the street department shall make such tests as the street commissioner shall deem necessary to insure the durability of the brick.

H. L. Mathews has retired as chief draftsman of the sewer department to accept the position of assistant general manager for the St. Louis Terra Cotta Co.

The Choctaw Pressed Brick Co. was incorporated a short time ago at South McAlister, I. T., with a capital stock of $50,000. Half of the stock is held by St. Louis capitalists. Mr. H. H. Keller, of this city, manager of the Ross-Keller Brick Machine Co., holds 600 of the 2,000 shares. The clay which will be utilized, after a thorough test, has been pronounced equal to any in the United States.

The Fernholtz Brick Machinery Co. have been having a fine trade recently. Quite a number of good orders were obtained through their vice president, Mr. Scott, during several trips to Texas.

The Illinois Supply and Construction Co. is also having its quota of business, several very good orders having been received during the last couple of weeks.

The Williams Patent Crusher and Pulverizer Co. has shipped a number of good orders this month and will turn out some more during the next few days.

The St. Louis Vitrified and Fire Brick Co. filed a certificate this week of increase of capital stock from $75,000 to $100,000. The assets are stated at $106,612.92 and the liabilities as $30,028.75.

AT HOTEL—A CHICAGO SOOT.

Clerk—"How does your room suit you?
Guest (put on top floor)—"Tip top. The chimney ends near my window—couldn't suit me any more. [Judge.

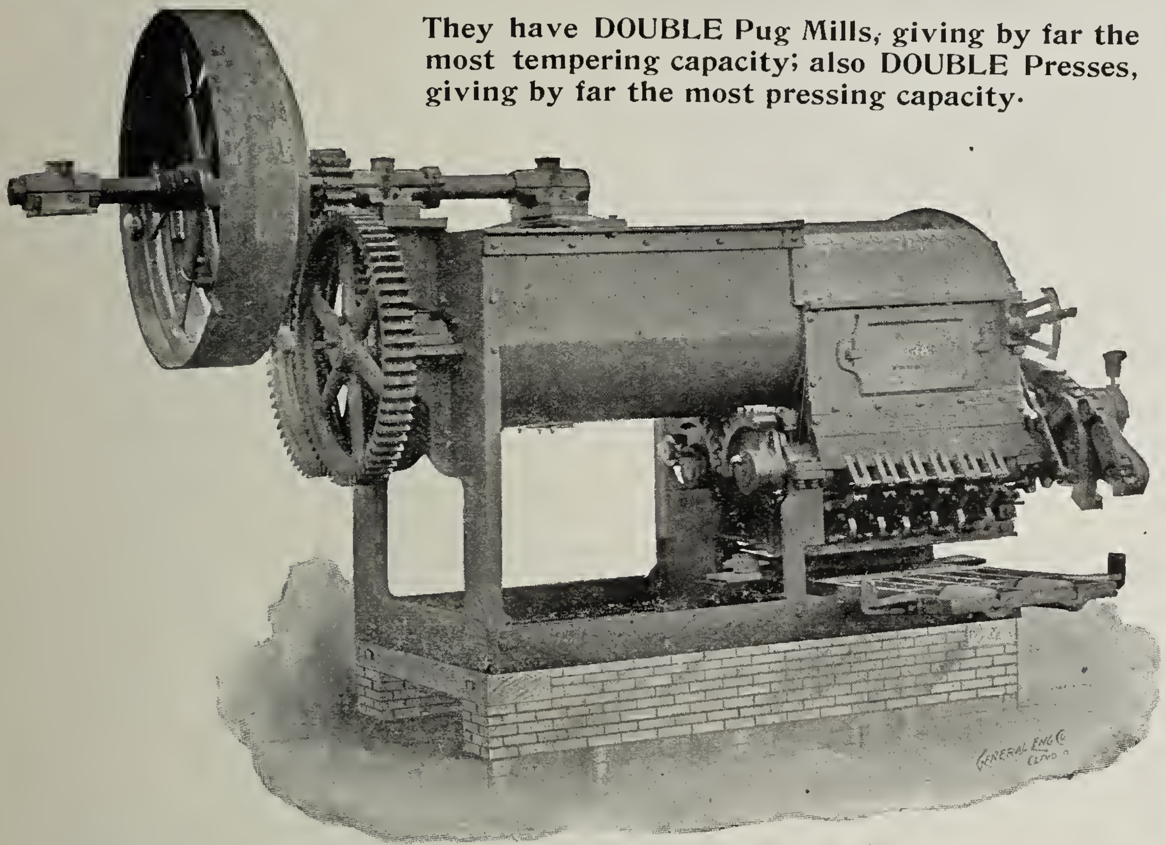
LIGHT HOUSES

Do not have to hire bands or fire cannon to call attention to their shining—**THEY JUST SHINE.**

Thus it is with the two "soft-mud" machines we manufacture (one horizontal and one upright). **Each** is at the head of its respective class, and the number of each in use, (note the figures) **tells the whole story.**

Over 100 "MONARCH" BRICK MACHINES in use.

They have DOUBLE Pug Mills, giving by far the most tempering capacity; also DOUBLE Presses, giving by far the most pressing capacity.



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READ THIS.

A Fresh one Every Month.

◆◆◆

ATTENTION! FIRE BRICK MANUFACTURERS.

251 The Arcade.
Cleveland, O., Sept 30, 1901.

The Wellington Machine Co.,
Wellington, Ohio.

Gentlemen:—We are using two of your "Monarch" Machines, one at our Strasburg factory and one at the Minor works These machines have met our requirements very satisfactorily, doing good work and have proven to be all you claim for them.

Yours very truly,
The National Fire Brick Co.,
By. Thos. Kemp. Mgr.

◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆

OVER 500 "QUAKERS" in use, both Horse and Steam Power, now made entirely of Iron and Steel.

═

OUR MOULD-SANDER is the BEST, SIMPLEST AND CHEAPEST.

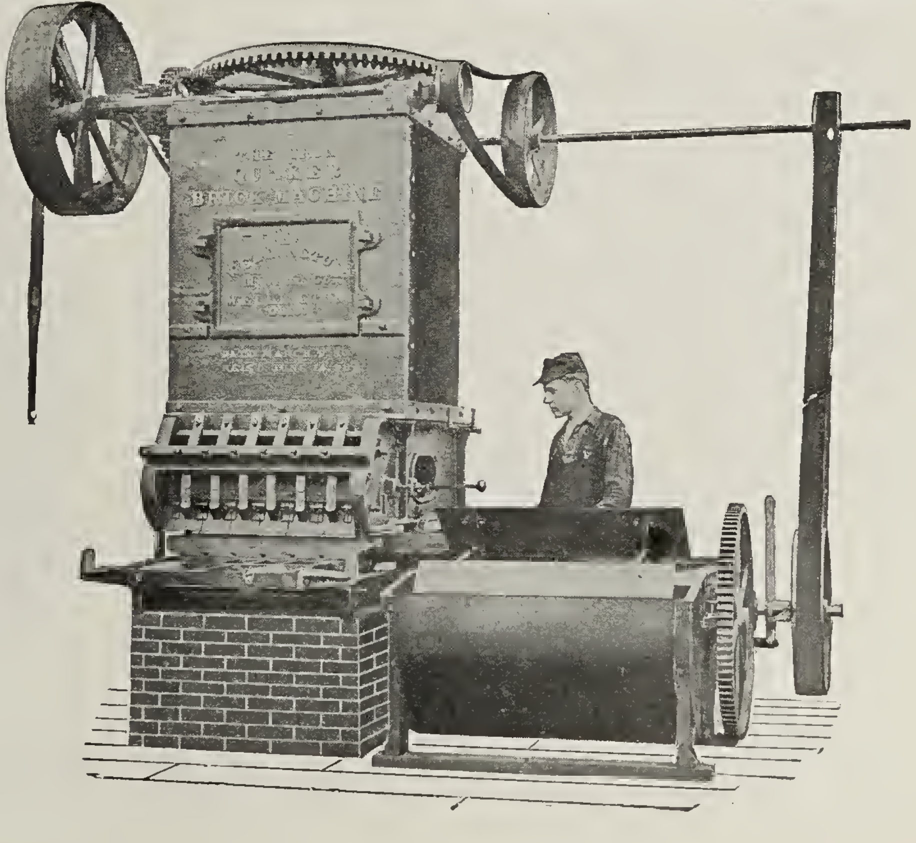
═

WITH our ROLLER-BEARING BRICK BARROWS you can wheel 20 per cent. more load and do it as easily. Order one subject to approval.

═

ALL OTHER SUPPLIES. Send for Catalogue.

The Wellington Machine Co.,
WELLINGTON, OHIO.



Written for The Clay-Worker.

WESTERN PENNSYLVANIA CLAY INDUSTRIES.

WORK IS BEING pushed as rapidly as possible on the new buildings of the Pittsburg Clay Pot Co., which are to take the place of the ones destroyed by the disastrous fire several months ago. This company, being the only manufacturer of clay pots for glass houses in the city, has a large number of orders on hand, and is occupying temporary quarters in Allegheny, while the new buildings are being erected.

A large local brick, pottery, earthenware and porcelain manufacturing concern is seeking a location in western Pennsylvania. Representatives of the company have been recently investigating the clay resources of the Conemaugh valley, and it is quite possible that the new industry will be located near Blairsville, Pa., where good clay veins, coal supplies and other necessities are offered. No bonus will be required by the company, which is in a position to purchase everything needed. We are not yet at liberty to make known the name of this new concern, as its movements are being made secretly.

Negotiations were concluded on Jan. 11 whereby the Pittsburg firm of E. D. Gartner & Co. purchased the plants of three important Ohio clayworking concerns. The properties included in the deal are the Keystone Fire Clay Co., of Lisbon, O.; the Union Fire Clay Co., of Coleman, O., and the Furnace Fire Clay Co., of Salineville, O. This Pittsburg firm is acting simply as broker in the transaction, and the three plants are to be operated under one management, in which Pittsburg capital predominates. Several of the plants have been idle for some time, but operations have been resumed in all the plants, and important additions are now being planned by the new owners.

The Myers Clay Manufacturing Co. has purchased a tract of 2:16 acres of clay land near Toronto, O., and will engage in the manufacture of sewer pipe and fire brick. The company will sink a shaft in order to mine the clay, and will erect a large plant on the land purchased.

The McFeely-Wheeler Fire Brick Co., which has been erecting a large plant near Latrobe, has completed the plant and is now ready for operations. The present capacity of the plant is about 10,000 fire brick daily, and the company has orders ahead for over 150,000 brick. The plant will be increased in the near future. The selling offices of the company are located in Pittsburg.

Reed F. Blair & Co., whose headquarters are located in the Lewis Block, in this city, have been filling some big orders for fire brick and silica brick during the past few months. During the year just closed this company has greatly increased its business and many new orders are now standing on its books.

The merging of the coal interests of the Pittsburg and Buffalo Co., of this city, with other important coal companies, in order to form an opponent to the Pittsburg Coal Co., will have an important bearing upon the brick industry which is being exploited by the company at the new town of Johnetta, in the Allegheny valley. Already a mammoth building brick and fire brick plant is in operation at that place, and important additions are now under way and being planned.

In addition to the some six or eight big sky-scrapers now completed in this city, several others are to be built during the coming summer, and these contracts will require an enormous quantity of brick. The People's Saving Bank has recently awarded a contract for a fifteen-story building to the George A. Fuller Co., of New York. It will be built of red brick and terra cotta.

A. F. Smith & Co., who operate a large fire brick plant at New Brighton, have made a number of improvements, in order to handle the large amount of business which has been coming to the company for some time.

The plans for the development of a great fire clay and building brick works near Blairsville, in Indiana county, Pa., are fast maturing, local and Pittsburg capitalists being at the head of the movement. The valuable fire clay deposits and shales present at the point where the new plant is to be erected are similar to those at Bolivar, Pa., the important brick town on the Conemaugh, a few miles above Blairsville, and a rival to Bolivar is to be developed at Blairsville. The plant to be erected at once will have a daily capacity of 25,000 fire brick per day, which means employment to more than fifty men. The abundance of excellent coal at Blairsville is also another favorable point in favor of the development of the latent clay resources of the neighborhood.

Application for a charter under the laws of New Jersey has been made by the Fombell Clay Manufacturing Co., of Beaver county, Pa. The incorporators are A. G. C. Rhodes, of Pittsburg, formerly an official of the American Tin Plate Co., which concern is now owned by the United States Steel Corporation; M. I. Jacobs and Herbert Carlton, of Pittsburg, and W. G. Clark, of Beaver county, Pa. The company has purchased a tract of 250 acres of valuable clay property on the Pittsburg & Western road, near Fombell, in Beaver county, Pa., and will at once begin the erection of a brick plant with a daily capacity of 200,000 brick. The capital of the company has been fixed at $100,000. Contracts for the work of building the plant are now being let. The head offices of the new company will be located in Pittsburg.

The Kingston Silica Brick Co., which for the past two or three years has been operating a modern silica brick plant at Kingston Station, on the Ligonier Valley road, has just sold out to Joseph Soisson & Co., the well-known manufacturers of silica brick, coke oven brick and similar clay products, which company now operates six or seven large plants in the Pittsburg district. The Kingston Silica Brick Co. was organized several years ago by E. J. O'Brien, a well-known civil engineer of Latrobe, Pa., and, aside from the valuable plant which the company has been operating, it owns a large acreage of the well-known Ligonier valley ganister rock. It is the intention of the new owners to improve the plant at once. About $10,000 has already been set aside for this work, and there is a report that the same company will develop other important deposits of Ligonier valley ganister. The same company has been operating for many years near Connellsville, and the location of its large plant in the center of the Connellsville coke region has resulted in the building up of a big trade in coke oven brick. Among the big orders recently filled by Joseph Soisson & Co. may be mentioned one for 1,000,000 brick for a coking concern at Nelson, British Columbia. Aside from its large trade in the Connellsville field and in the Pittsburg district, the company has for some time been sending large consignments of brick of various kinds to different parts of the country and to foreign countries. The newly acquired plant is a valuable one, and will place the company in a commanding position with reference to the manufacture of silica brick for the open-hearth steel furnaces, and for similar work in connection with the iron and steel industry.

GILBERT.

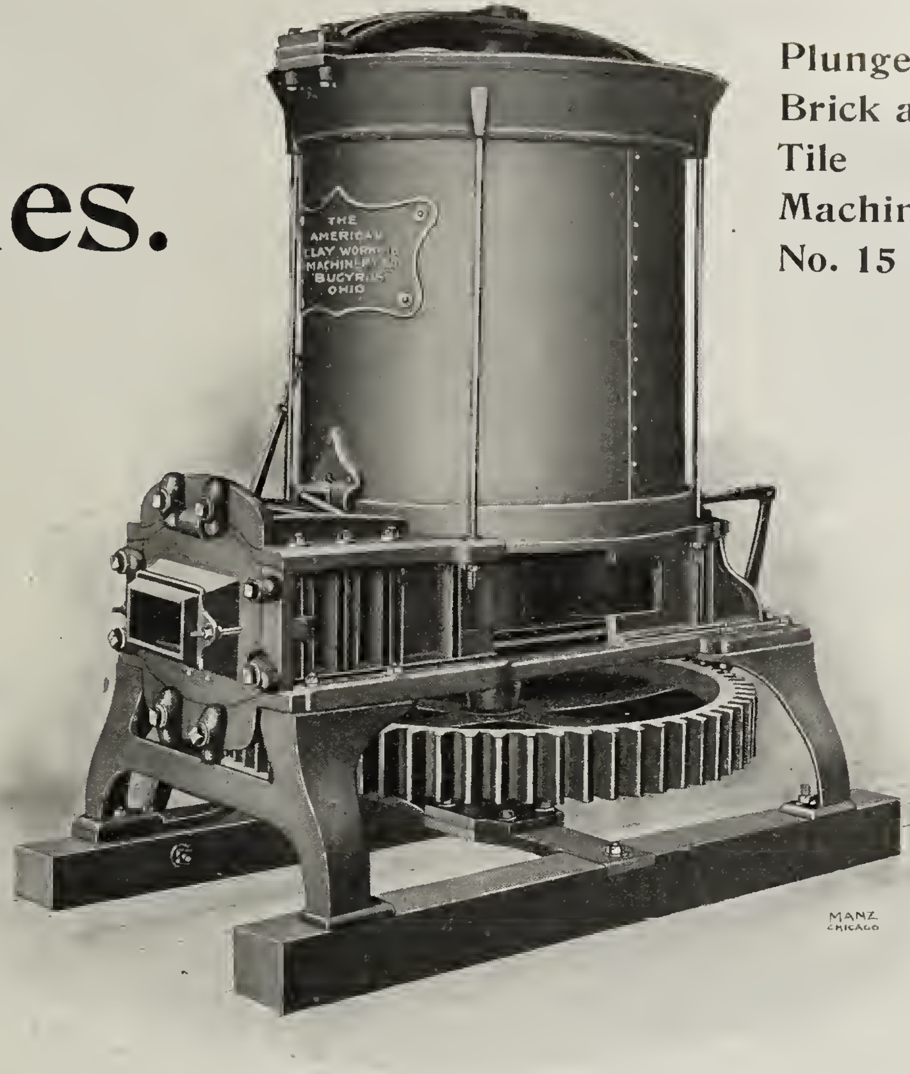
THE HANDSOMEST CALENDAR

of the season (in ten colors), six beautiful heads (on six sheets, 10x12 inches), reproductions of paintings by Moran, issued by General Passenger Department, Chicago, Milwaukee & St. Paul Railway, will be sent on receipt of twenty-five cents. Address F. A. Miller, General Passenger Agent, Chicago.

HIS DISCOURAGING VIEW.

He—A man should marry a woman of about his own age.
She.—You—a—really think so?
He.—Yes; but he ought to do it when he's young or not at all. [Puck.

Soft Mud Machines.



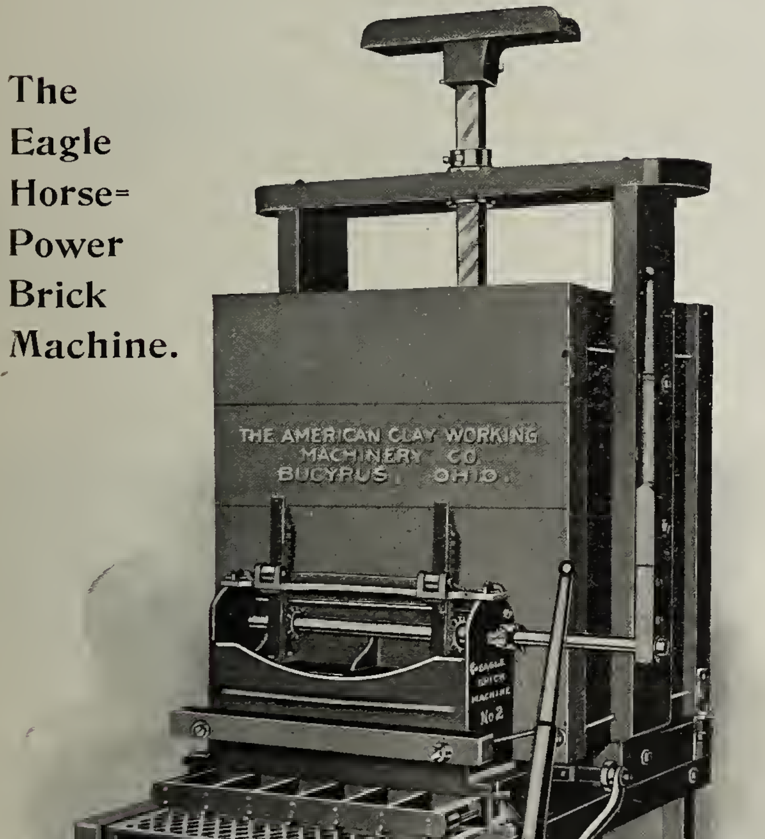
Plunger
Brick and
Tile
Machine
No. 15 "S"

In Soft Mud Machines we make various sizes and styles, all of the well known American standard of quality and performance.

Every machine is of the highest efficiency. Write for prices and description of Plunger Machines.

Our new Catalogue is ready for delivery; if you want one send for it. It's a beauty.

**The
Eagle
Horse-
Power
Brick
Machine.**



Eagle Soft Mud Brick Machine.

For small capacity yards these machines are most excellent. We make them in both Horse and Steam power. Easily moved, easily operated, but hard to beat.

Send for booklet on our Soft Mud Machinery.

**The American Clay-
Working Machinery Co.,**
BUCYRUS, OHIO, U. S. A.

NEW YORK OFFICE—Rooms 101 to 107, 39 and 41 Cortlandt St.

See Ads. on Pages 12 and 148.

Mention The Clay-Worker.

WRITTEN FOR THE CLAY-WORKER.

PACIFIC COAST NEWS.

MATTERS IN SAN FRANCISCO could hardly look better for the brick and terra cotta trades. Building seems to have taken on new life with the closing months of 1901. All through the business section of the city preparations are being made for the erection of new business blocks of a substantial nature. Excavations are being made on Market, Sutter, Mission, California, Geary and various other business streets. The buildings to be put up are, as a rule, six or seven-story fireproof structures.

The much-discussed brickyard ordinance, which has been a subject of contention and opposition between the brick men and property owners in Los Angeles, Cal., has at last been passed by the Council. When the consideration of the measure was before the Council attorneys were present representing the fourteen brickmakers, and about fifty property owners were also on hand to state their side of the case. The bill as passed declares that the unrestricted maintenance of brickyards within the city limits to be a nuisance, and provides that a permit to establish or maintain yards must be secured from the Council. Those now owning brickyards in the city are given until the first Monday in February to secure a permit for continuing them. When application is made for a permit the applicant must give a description of the premises on which he desires to operate a plant. A date will be fixed for hearing the application, and the Council can refuse or grant the desired permission as it deems best. It is made a misdemeanor to operate a plant without a permit from the Council. A fine not to exceed $200 is provided and imprisonment for a period of 200 days, or both fine and imprisonment. If the Mayor signs the ordinance, it is expected that the fourteen brickmakers of the city will resist its enforcement. They say that if they are compelled to move it will cause them a loss of many thousands of dollars. The property owners claim that the smoke and dust from the kilns are great annoyances. The first application for a permit to operate a brickyard within the city limits has already been filed. C. J. Berg is the applicant. He recently established a yard on lot 3 of the Orange Slope tract, near the County Hospital. He states that he purchased the lot at great expense and invested in machinery with which to engage in the manufacture of brick. His plant is located within a short distance of the yards of the Los Angeles Brick Co. It is expected that before the ordinance goes into effect that every brickmaker in the city will file application.

Work on the new brickyard at Alger, Skagit county, Wash., is making rapid progress, and if all goes well, it will be in running order in a week or two. Five acres of ground are to be cleared, and the company expects to be able to have ten million pressed brick ready to put on the market by the beginning of next October. The clay to be used has been tested by an Ohio tile company and found to be the very best for pressed brick purposes. About twenty-five men will be employed in the yard.

J. H. McKnight, of Corona, Cal., is shipping daily fifteen tons of clay to the California Sewer Pipe Works, at Los Angeles.

The Bay Counties Power Co., one of California's big electric power companies, has removed the small glass insulators from its electric line and has put on large ones made of pottery. It has been found that the small insulators are not safe where such a high voltage is carried.

It is reported from San Bernardino, Cal., that the city is in need of a brick factory. From the present indications, large quantities of brick will be used during the coming year. The brick now being used there is brought in from Redlands, at a cost of $2.15 per thousand for freight, which is nearly one-third of the value of the brick at the factory.

The brick manufacturing establishment erected by the Arizona Clay Manufacturing Co., at Benson, Ariz., was started about two weeks ago for the purpose of giving the machinery, which, by the way, is all new, a trial. The plant is of the most modern and substantial build, and has a capacity of from 25,000 to 30,000 brick per day. The plant is now running at its full capacity and turning out brick of excellent quality. There is an abundance of clay of superior quality.

Barney Martin has fired a kiln of 100,000 brick at Deming, New Mexico.

B. F. Hoover recently shipped a carload of brick from Wasco, Ore., to Moro, Ore., for a large building being erected at the latter place.

The Monterey Brick Manufacturing Co., at Monterey, Mexico, has secured an additional order for 500,000 brick for the Penoles Mining Co., Mapimi. The company is also making heavy shipments to points south on the Central railway, as well as to Tampico.

B. A. Harbour and George W. Carter have moved to Imperial, Cal., from Los Angeles, with the complete equipment for making brick.

D. W. Mathias, who has charge of the electric power house at the Golconda mine, near Baker City, Ore., and J. C. Smith, of Bucyrus, O., owners of a clay plant at Seattle, Wash., are contemplating the installation of clay works at Baker City. They believe that clay suitable for sewer pipe, paving brick, etc., can be found in abundance near that city.

John V. Simons is making arrangements to establish a brickyard on Boyle avenue, at Los Angeles, Cal.

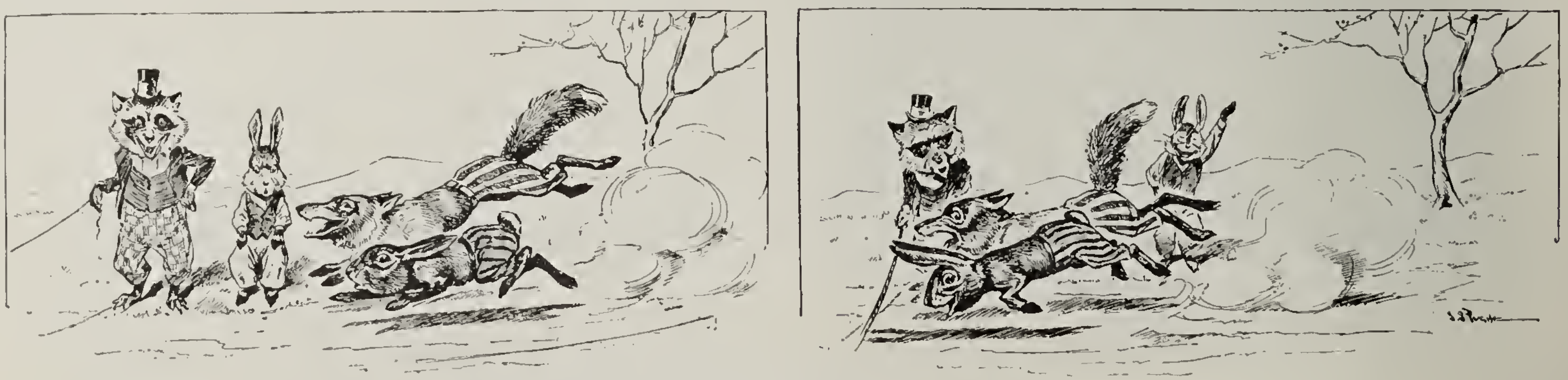
The acceptance by the Board of Public Works of Stockton, Cal., of the bid of the Stockton Brick and Pottery Co., the local pottery company, on certain pipe for the large sewer improvement at that city, bids fair to get that city into serious trouble in the courts. It appears that the firm of Clark & Sons, of Alameda, Cal., put in a bid which was lower by $1,200 than the bid of the Stockton firm. It is reported that Clark & Sons will take the case into court, in order to ascertain why, all other things being equal, the local firm should get the contract, when its bid was so much higher. The bids received were as follows: Gladding & McBean, $5,956; N. Clark & Sons, $5,530; Stockton Brick and Pottery Co., $6,807.

The Kern County Brick and Contract Co., at Kern City, shut down their plant about two weeks ago on account of the cold weather. The bricks do not dry fast enough, and the frost cracks them open. The company ships from one to two carloads every day and has half a dozen teams busy supplying the home demand. It will be about six weeks before the plant is ready to start up again.

Brick from the brickyard at Elma, Wash., is in demand. About two weeks ago an order was received from Hoquiam for 80,000 at one time. The demand had been so great for bricks that this order could not be filled. The yard has only been established a few months, and it is hoped that there will be orders enough to keep the works running both winter and summer after this year.

The Little Falls fire clay factory, at Little Falls, Wash., will soon shut down for a short time to undergo a general overhauling, after which they will start up again, working the factory to its fullest capacity, as they now have orders on hand for considerable pipe. SUNSET.

San Francisco, Cal., Jan. 4.



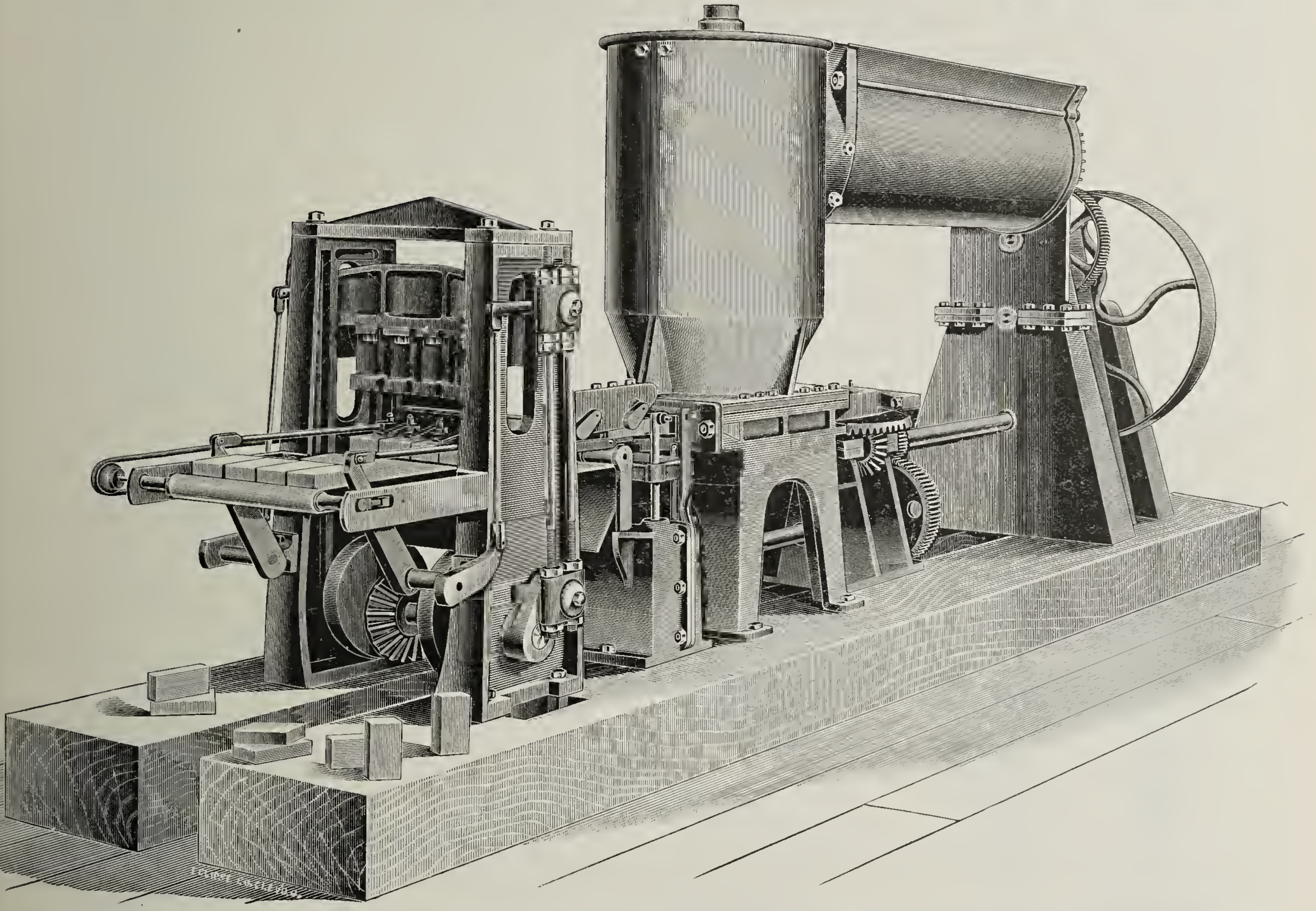
GENERALSHIP AT THE WILD ANIMAL RACE.

It looked on the homestretch as if Reynard would win by a nose—— But, as a matter of fact, clever Bunny won by two ears. [Puck.

"The Dictator"

The only Brick Machine which will Produce "Perfect Repressed Brick Without Lamination."

Strong, Powerful, Simple and Positive.



Capacity from 25,000 to 40,000 Repressed Brick per Day.

THIS MACHINE is guaranteed to automatically produce better repressed Brick both in construction and appearance, at less cost, than any other machine or combination of machinery now on the market. It is especially adapted for making Paving, Fire or Fine Front Brick.

The Battenfeld Mfg. Co.,

Write for Catalogue. *513 Williamson Bldg., CLEVELAND, OHIO.*

WRITTEN FOR THE CLAY-WORKER.

DETROIT DOINGS.

A GLANCE AT STATISTICS shows that the year just closed was remarkable for Detroit in many ways. Chief among them was her building activity. The demand for brick was enormous, all former records were eclipsed, and 1901 stands out clear and distinct as the banner year in the history of her building interests. The following condensed statement for the years 1900 and 1901 will best show her striking increase in building:

	—1900.—		—1901.—	
	Permits.	Cost.	Permits.	Cost.
January	95	$191,600	130	$170,500
February	73	93,900	88	154,800
March	111	172,800	279	595,800
April	174	307,500	297	488,500
May	217	423,000	342	586,000
June	151	356,700	243	836,400
July	192	318,300	202	377,800
August	179	594,100	225	634,400
September	184	449,000	236	458,700
October	242	403,200	272	484,400
November	150	250,200	211	431,600
December	196	574,000	239	742,700
Totals	1,964	$4,134,300	2,664	$5,961,600

It will be seen that 1901 shows the handsome increase over 1900 of $1,827,300.

A majority of the buildings erected were of brick, from the cozy dwelling to the colossal residence; from the modest store to the business giant. Churches, too, have been prosperous, and several of great dimensions have added to the general demand for good hard brick.

It is noticeable that nearly all the buildings were entirely of brick. Only in a few instances has stone been used for trimmings, the general taste being for pressed brick trimmings and facings. Many people voice the opinion that the latter are the handsomer.

This unusual call for brick has kept the manufacturers very busy in keeping up with orders, and who have had to contend with that serious obstacle, lack of labor, and, accordingly, the New Year ushers in a meager stock to supply the winter trade. It is very safe to predict that the price of brick will in the early future go up to a point not reached in many years, in fact, the price has already made a leap. It is current report, and comes from reliable source, that contractor George E. Currie, who is to erect a very large plant for the Rome Salt Co., in Ecorse, a suburb of Detroit, has placed an order with the R. H. Hall Brick Co. for 1,000,000 brick at $7.50 per thousand on the yard.

When ordinary building brick are selling in Detroit at $7.50 per thousand on the yard, it is a state of affairs that has not been known for a number of years, and it is a reminder to the pioneer manufacturers of the days when the brickmaking industry was hardly developed; when the output was not sufficient to supply the demand; when the contractors made a scramble for the stock and prices ran upward; when many of the plants now in successful operation were then unknown.

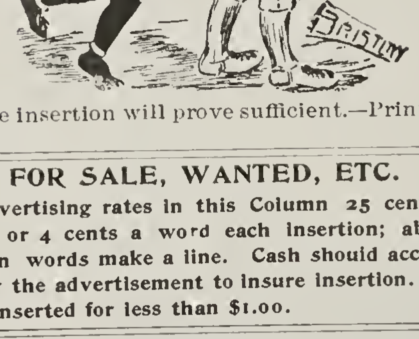
Along with the big demand for brick, scarcity of labor during the summer months, may also be counted as an important factor for the shortness of the fall and winter stocks. Never before was labor at such a premium. Plants that ordinarily with full working crew operated three and four machines daily had to be content if one was worked. In some instances manufacturers themselves "turned a hand." Sons were also pressed into service. One might fall to wondering why this condition existed when good wages were offered, and a large number of brick workingmen in the immediate vicinity of the plants. The only solution seems to be the great call for men issued from the American Car and Foundry Co. and Malleable Iron Works. These corporations offered good wages, with the promise of steady work both summer and winter. No doubt, large numbers of brickworkers accepted positions with either of the concerns, feeling that by so doing they were benefited. Indeed, such seems to be the case, as an old brickworker, known to the writer for years, said: "I can make more money in the car shops than I can on the brickyard. True, I don't get the wages in the shops I did on the yard, but, then, I have steady work the year round, with Saturday half-holiday, and the work is much lighter. On the yard I might get in six months at good wages, and the balance of the year chop wood, or pick up such odd jobs as I could find, and always at small wages, so that, figuring lost time during the winter, I ate up what I made in the summer. No, I can't go back to the brickyard."

This same man has worked for years at the different plants in the city as a dumper, and always commanded good wages, being an expert hand. Unless there is a change in the sentiment of tried and reliable brickworkers, who at present seem to have abandoned the plants, the manufacturers will, indeed, have a dismal task to secure thorough brickworkers when the season opens.

That the Annual Convention of the National Brick Manufacturers' Association, to be held at Cleveland, in February, will receive a large delegation of Detroit manufacturers is an assured fact. Many have signified their intention to be present. Even the "stay-at-homes" are considering the matter, and "believe they'll go, too."

DOROTHY DALE.

AS A RULE IN SUCH CASES.



One insertion will prove sufficient.—Printers Ink.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than $1.00.

WANTED—For immediate delivery, a 44-inch steam cylinder pipe press. Address
1 1 e BOX 261, Metuchen, N. J.

WANTED—Sixty double deck second-hand dryer cars. J. B. McHOSE,
12 2 d Boone, Iowa.

WANTED—At once, a first-class pressed brick setter. Apply, stating experience and ability, to BOX 21, Clay-Worker.
1 1 d

WANTED—A kiln burner for front brick; one who is acquainted with New Jersey clays preferred. Address
1 1 c 261, Metuchen, N. J.

FOR SALE—Complete sewer pipe and brick works. Good demand for product at good prices. L. J. PENTECOST,
1 1 cm Tacoma, Wash.

WANTED—From 100 to 250 iron or steel cars for drying soft mud bricks. Address
ADAMS BROS.-PAYNES COMPANY,
1 2 d Lynchburg, Va.

FOR SALE—COAL AND SHALE LAND. fuel. Six and one-half foot vein of coal, at depth of 95 feet. Shale suitable for vitrified brick, tile, terra cotta, etc. Address
1 1 cm L. T., care Clay-Worker.

WANTED—First-class foreman, not over forty years of age, for brick works near Pittsburg, Pa.; must be sober, energetic and capable. Permanent position. Address
1 1 d E. H. W., care Clay-Worker.

VALUABLE CLAY PROPERTY FOR SALE.

—Also Small Fire Brick Works.—

Clay property, within 30 miles of New York and 60 miles of Philadelphia. On tide water. Good railroad facilities. Also in Pennsylvania, small fire brick works, with home market. Terms easy. Apply
9 tf d T. A. R., care Clay-Worker.

WANTED—Any one having any second-hand soft mud or stiff mud brick machinery, in good order, please write us.
BRANDT CLAY PRODUCT CO.,
1 2 dm Binghamton, N. Y.

FOR SALE—About seven thousand (7,000) steel pallets, second hand, for soft mud machine. Apply to
DELAWARE TERRA COTTA CO.,
1 1 d Wilmington, Del.

FOR SALE—Best located brick plant in Florida. Abundance of good clay. Never been able to supply the demand. Will sell cheap. Owner engaged in other business.
1 tf dm A. E. DAVIS, Ripley, Miss.

WANTED—Experienced brick men to act as traveling salesmen for our Open Air Drying System. Must have good references.
SCOTT PATENT BRICK CAR CO.,
1 1 d Knoxville, Tenn.

WANTED—The superintendency of a first-class up-to-date shale brick works, in the North Central States, by a thoroughly practical brickmaker, whose abilities are unquestionable. Correspondence with well rated firms solicited.
EARNEST WORKMAN,
1 1 d Care Clay-Worker.

WANTED—A competent and reliable man to organize and conduct a plant for the manufacture of paving brick and tile on Hudson river. A small capital only necessary. Market assured. Material of the best. Address
THEO. BRINCKERHOFF,
1 1 dm Matteawan, N. Y.

WANTED—One four-mold dry press; must be in good condition and cheap. Address
1 1 c "I.," care Clay-Worker.

WANTED—A second-hand pulverizer for reducing bones, cinders and breeze. Address
CARROLL SMITH,
1 2 cm Canton, Miss.

FOR SALE—One second-hand 40-inch Stedman disintegrator; good as new; cheap for cash. Address
THE JACKSON SAND MINING CO.,
1 3 cm Jackson, Ohio.

WANTED. SITUATION—Man of wide experience is open for engagement as manager or superintendent. Highest references. Address
PERMANENT,
1 1 d Care Clay-Worker.

WANTED—One or two good setters for dry press plant; also one foreman for assorting department. Answer by letter.
THE GARDEN CITY CO.,
1 1 d Farmingdale, L. I.

FOR SALE—SWIFT'S WONDER OF THE AGE, the grateless coking table furnace kilns, lately patented. Come on followers. Write for particulars.
F. E. SWIFT,
12 tf d Washington, Iowa, U. S. A.

WANTED—A good dry press brick setter; give references and state number of bricks you can set per day. Address
THE LAKE SUPERIOR POWER CO.,
Brick plant, Sault Ste. Marie, Ontario.
1 2 c

WANTED—Position as manager or superintendent of brick plant; twenty years' practical experience in the manufacture of fire brick, pavers, tile, etc. First-class testimonials. Address
1 2 d W. P. N., care Clay-Worker.

WANTED—A competent, energetic and experienced man to handle the sale of vitrified paving brick for an eastern company having a large and established business.
Address BOX 99,
1 2 d Care Clay-Worker.

FOR SALE—Brick and tile factory, eighty miles south of Chicago, on C. & E. I. R. R. Good locality, doing fine business. Good reason for selling. For particulars, address
J. W. GRAFFIUS,
1 1 cm Woodland, Ill.

WANTED—Superintendent for a dry press plant; also one for a stiff mud plant; must be first class. Address, stating salary expected, time can begin and give references.
HYDRAULIC BRICK CO.,
1 1 d Louisville, Ky.

WANTED—A foreman or manager; must be capable, reliable and able to manage men and look after the burning in a small brick and tile plant. State wages desired and give references. Address
1 1 p MOUNT, care Clay-Worker.

WANTED—Position as foreman or head burner of paving or dry press brick plant, by a man who thoroughly understands the business. Can also build kilns. Best of references. Address
HENRY,
1 2 d Care Clay-Worker.

FOR SALE OR RENT—Brick Plant—A snap for some one, at half price; within twenty miles of city of 350,000; capacity, 40,000 per day. Good reason for selling. Address
BURKE,
1 1 75m Care Clay-Worker.

FOR SALE—Cheap, two Henry Martin Letter A brick machines; have been used only a short time and are in good condition. Address
ROCHESTER GERMAN BRICK & TILE COMPANY,
279 South Ave.,
1 1 c Rochester, N. Y.

WANTED—Situation as manager on brick yard in Virginia or the South; long experience in soft or stiff mud; good burner; use either wood or coal. Good character, sober and reliable. Can handle colored labor satisfactorily. Am particularly good burner. References. Address
1 1 1p CLAY, care Clay-Worker.

FOR SALE OR LEASE—Tons or acres of porcelain clay. Shaft just dug in hardpan, 60 ft. to 18 ft. strata. One mile to siding, on Big Four R. R. Coal and gas nearby.
A. R. HEATH.,
12 2 c Covington, Ind.

WANTED—To interest capital in the development of mines of high-grade kaolin and fire clay; can supply these products in quantities to suit purchaser; for potteries or for wall paper. Address
C. L. MORRIS,
1 1 dm Box 226, Milledgeville, Ga.

FOR SALE—Madden & Co. No. 5 B tile and brick machine; tile dies from 3½ to 12-inch. Endless belt cut-off table, new. Side-cut brick die and board delivery table; only made 125,000 brick. Reason for selling, clay not suitable. For price address
1 1 cm M. W. M., care Clay-Worker.

FOR SALE—Brick drying apparatus; Sturtevant fan, 30x96 in., with Atlas engine 10x12 in. About 8 to 10 sections, approximating 13,000 ft., 1-in. pipe heating coils, complete, in running order for drying 50,000 to 60,000 brick per day. A bargain for quick sale.
THE ATLAS CAR & MFG. CO.,
1 1 d Cleveland, O.

FOR SALE—$100.00 will buy second-hand No. 40 Steadman disintegrator, used very little.

$100.00 will buy two Grand automatic soft mud brick machines; have seen considerable service. Address
JAMES F. GRAHAM,
1 3 cm 3 Madison St., Memphis, Tenn.

FOR SALE—One Quaker horse power soft mud brick machine, capacity 10 to 20 thousand per day. One Anderson 12-foot pug mill, soft mud. One Anderson upright brick machine, soft mud, capacity 20 to 30 thousand per day. One 35-horse power boiler. All machinery in first-class repair. Will sell cheap for cash. Address
1 1 dm J. D. W. H., care Clay-Worker.

WANTED—Party with about $20,000 to help the undersigned increase capacity of present plant. Same is situated in rapidly growing city, with the best climate in the world. Can manufacture practically the entire year. For two years have been unable to supply the demand. Address
C. PAYE, Box 196, Sta'n C,
1 2 c Los Angeles, Cal.

FOR SALE—Near town of 2,000, brick yard, boiler, engine, brick machine, pallets, racks, kilns and complete outfit, including about 225,000 brick; yard has been run for about twenty years and no other yard closer than ten miles; convenient for shipping by either rail or water. Will sell for $3,500. Clay enough to last for years. Address
C. H.,
1 1 cm Care Clay-Worker.

FOR SALE OR LEASE.

I have a clay bank, unlimited quantity of clay, that will make most excellent vitrified brick or pottery. This is within five miles of the city limits of Seattle, Wash., on tide water and track of the Great Northern railroad. Will make liberal lease of this on long time or sell at a bargain. Address
M. LARA,
513 Phoenix Block,
1 1 cm Minneapolis, Minn.

A GOOD PLACE FOR A GOOD MAN WITH OR WITHOUT CAPITAL, BUT HE MUST BE GOOD.

For good and sufficient reasons, the owners of a successful plant desire the services of a thoroughly experienced and reliable man to take the management of the plant, which consists of a well-equipped soft-mud yard, five-tunnel dryer, etc. The demand for brick justifies increasing the capacity of the plant. The right man, who will take hold of the business and push it intelligently and industriously, can have an interest in the plant if he desires it. If he does not, he will be given a permanent position with a good salary, but he must be thoroughly competent in every respect, and reliable. Address
1 d ? GOOD YEAR, care Clay-Worker.

WANTED—A No. 1 sewer pipe burner; one who can burn in Eudaly kilns; state wages and reference.
BOX 44,
1 1 d Care Clay-Worker.

FOR SALE—A good No. 2 Wallace clay crusher; in good condition and at a reasonable price. Address
WHEAT,
1 1 d Care Clay-Worker.

WANTED—Situation by a first-class engineer. Thoroughly understands the manufacture of brick, tile and sewer pipe. A great variety of experience. I am strictly sober. Can furnish good references.
Address E. B. B., care Clay-Worker.
1 1 d

FOR SALE AT A BARGAIN.

Thoroughly equipped brick works for the manufacturing of fire, front and enamel brick. For price and further information, write to
J. K., P. O. Box 76,
1 1 cm Milltown, N. J.

FOR SALE.

Twenty Iron Clad dryer cars; soft mud bricks.

Lot of 12-lb. rails.

Leviathan belting, 83-ft.x16-in., 6 ply.

All in good condition.
1 1 c W. H. H., care Clay-Worker.

FOR SALE.

—Paving or Building Brick Plant, at Bucyrus, Ohio.—

Consisting of twelve acres of land, with buildings and good railroad facilities, 1 100-h. p. engine, 2 80-h. p. boilers, 9-ft. dry pan, elevators, winding drum, 8-ft. pug mill, No. 2 Bucyrus Giant brick machine, 16-track Bucyrus steam tunnel dryer, with 170 single deck cars, 25,000 feet 1-in. and 1½-in. pipe, 15 tons T rails, transfer cars and turn-tables, 11 round down-draft kilns, with good bands, fire brick, floor brick, etc., etc.

Will be sold as a whole or in part. Inquire of
L. P. BATTEFELD,
Room No. 7, Fair Bldg.,
1 1 d Indianapolis, Ind.

BARGAINS IN MACHINERY.

One "Steele" single auger brick machine, with automatic cutting table; used only a short time and is in good order.

Two "Martin" 2-roll disintegrators, practically as good as new, complete with fly wheel and pulley.

One 8-foot over all, white oak horizontal pug mill, in good order.

One single geared granulator, used only a few weeks; ready for good service.

Two all iron upright stock brick machines, complete with pulley and clutch, guaranteed.

Two horizontal engines, 35 and 40-horse power, almost like new.

One soft mud clay screen, in good order and can be had at a low price.
Address "MARTIN,"
Box 87, Lancaster, Pa.

FOR SALE, OR CAPITAL WANTED.

One hundred and six acres of land, in fee simple, in Cecil Co., Maryland, about one-half mile from Leslie Station, on B. & O. R. R., and about three miles from Northeast Station, on Pennsylvania railroad. This property has been well prospected and shown to contain very extensive deposits of an excellent quality of kaolin, suitable for pottery, fire brick and, above all, for paper purposes. The deposits lie very near the surface. Abundant water supply available. Good roads. Ample opportunity will be given for examination and test. Full reports, figures and other information furnished on application. Will be sold outright if desired, or will be contributed in exchange for stock, if capital can be furnished to develop. Address
BARTON WILMER AMBLER & STEWART, Attorneys, 207 N. Calvert St.,
1 1 dm Baltimore, Md.

FOR SALE.

ONE NEW FOUR-MOLD DRY PRESS BRICK MACHINE; 20,000 CAPACITY PER DAY.

JOHN RAMMING MACHINE WORKS,
12 3 d 300 S. MAIN ST., ST. LOUIS, MO.

FOR SALE—One No. 8 Carlin wet pan, automatic discharge; has not been used seven days and is exactly as good as new. Price, $650. Three Carnell steam represses and four Crabtree hand represses. These presses are also new. Will sell the lot for $500. Address GRAY,
12 3 dm Care Clay-Worker.

WANTED—To buy second-hand soft-mud brick machine, to make 40,000 brick per day. Would not consider anything except machinery in first-class condition and practically as good as new. Write fully; present location, send cut, name price on each item. Answer promptly. Address
12 2 d FERN, care Clay-Worker.

SITUATION WANTED—As superintendent of brick or tile works by practical brickmaker. Twenty years' experience. Handle any modern plant, soft or stiff mud. If satisfactory, will invest some cash and accept stock for part of salary. Can give best of evidence as to ability and industry.
12 3 cm Address F., care Clay-Worker.

WANTED — Ten thousand second-hand 10x34 pallets, suitable for racks. Address
INDUSTRIAL BRICK COMPANY,
1 1 c Mt. Vernon, Ind.

FOR SALE.

One 3-mold Andrus Brick Press.
One 6-ft. Dry Pan.
Three Hoisting Engines, double drums, with boilers.
One Simpson 4-mold Press.
Address F. C. FROST,
701 Phoenix Building,
12 3 cm Minneapolis, Minn.

FOR SALE.

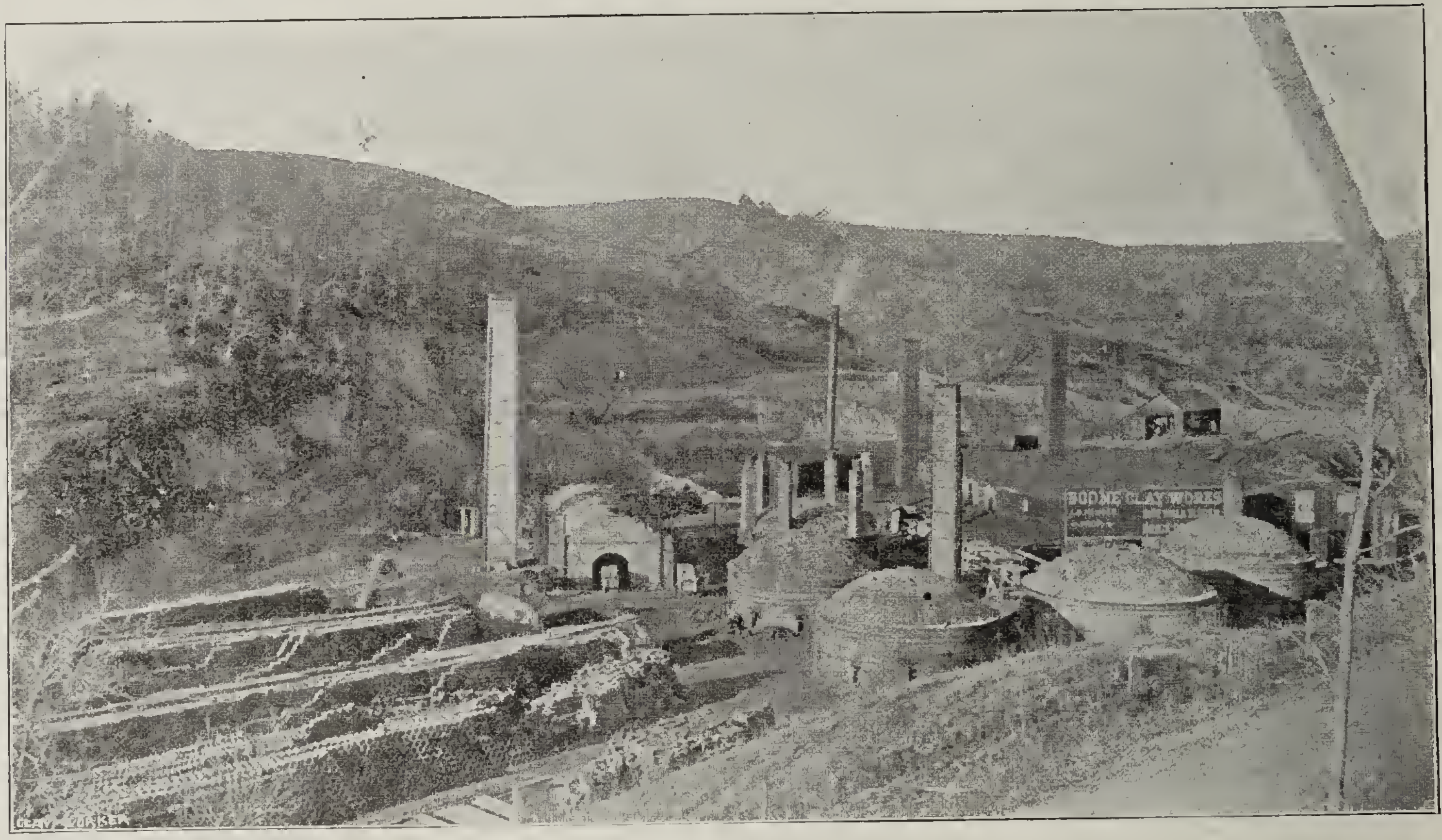
One 15-H. P. Nagle Engine; price, $75.
One No. 2 Kells Machine, tile dies, ⅝-inch end-cut brick die and Ohio revolving cut-off; price, $125.
One 10-H. P. Baxter Upright Engine and Boiler; price, $100.
One Raymond Tempering Wheel; price, $25. H. H. McHOSE,
12 1 2p Grinnell, Iowa.

FOR SALE.

At your own price, complete outfit for plastic clay, including granulator, rolls, clay elevator, pug-mill, stiff mud machine and cutting table. Also five bottom dump cars, shafting, pulleys and two boilers. Reason for selling, clay is exhausted, farm sold and must clear the land. Machinery is all in good repair and will be sold cheap if taken soon. Address
12 tf d W. D., care Clay-Worker.

FIRE CLAY LAND FOR SALE.

A large tract, 1950 acres, in Carter county, Ky., near Olive Hill. This land contains the finest quality of No. 1 fire clay, is directly on the line of the Chesapeake & Ohio railroad, immediately adjoining the plant of the Olive Hill Fire Brick Works. The clay is of the same quality and the supply is practically inexhaustible. Suitable for the operations of a large fire brick company. For particulars address
12 3 cm BOX 309, care Clay-Worker.



FOR SALE.

Having a notion of retiring, after 40 years of active service in the brick business, the owner offers for sale on easy terms the above fully equipped Brick and Tile Factory, consisting of 20 acres of the finest and most available beds of shale and fire clay in the county, just outside the thriving and prosperous City of Boone, with its 12,000 people. Has been in continuous and successful operation by the present owner for 13 years, paying a handsome profit each year, and will continue to do so, with the proper management, for many years to come, as its location cannot be duplicated.

It has a 12-inch by 36-inch Reynold's Corliss Engine; two 16-foot by 48-inch Boilers, one brand new; Freese Combined Mill; Des Moines Supply Co. Dry Pan, within 200 feet of the shale, clay bank, fifty feet thick. Has Raymond No. 2 Repress; Automatic Brick and Tile Cutting Tables; a 90 Car Steam Tunnel Dryer fully equipped with Cars, Tracks, Transfers, Etc. Coal mines within 100 rods that supply the fuel. Large Reservoir above which supplies the factory with water by gravity. Has seven down-draft kilns, which, like most of the machinery, are nearly new, mostly having been put in within two or three years. For this splendid business opportunity, on easy payments, the owner has named $15,000 as the lowest possible price he can entertain.

J. B. McHOSE, Boone, Iowa.

ORIGINAL

GANDY STITCHED Cotton Duck BELTING.

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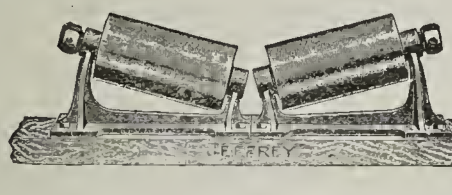

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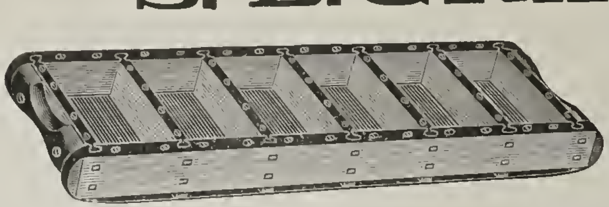

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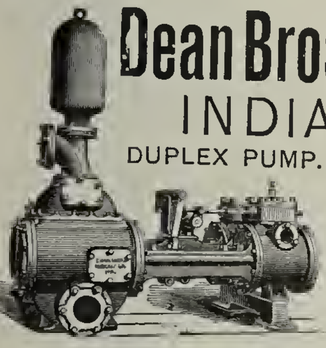
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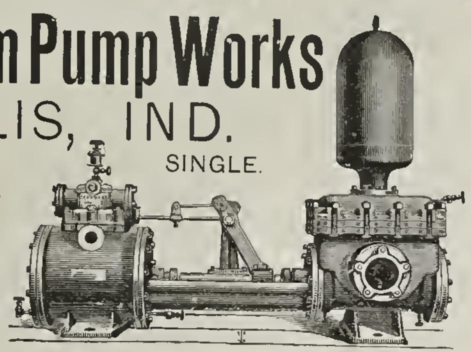
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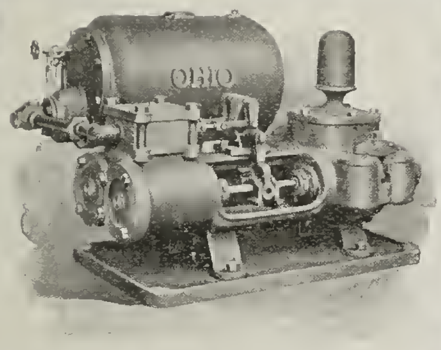

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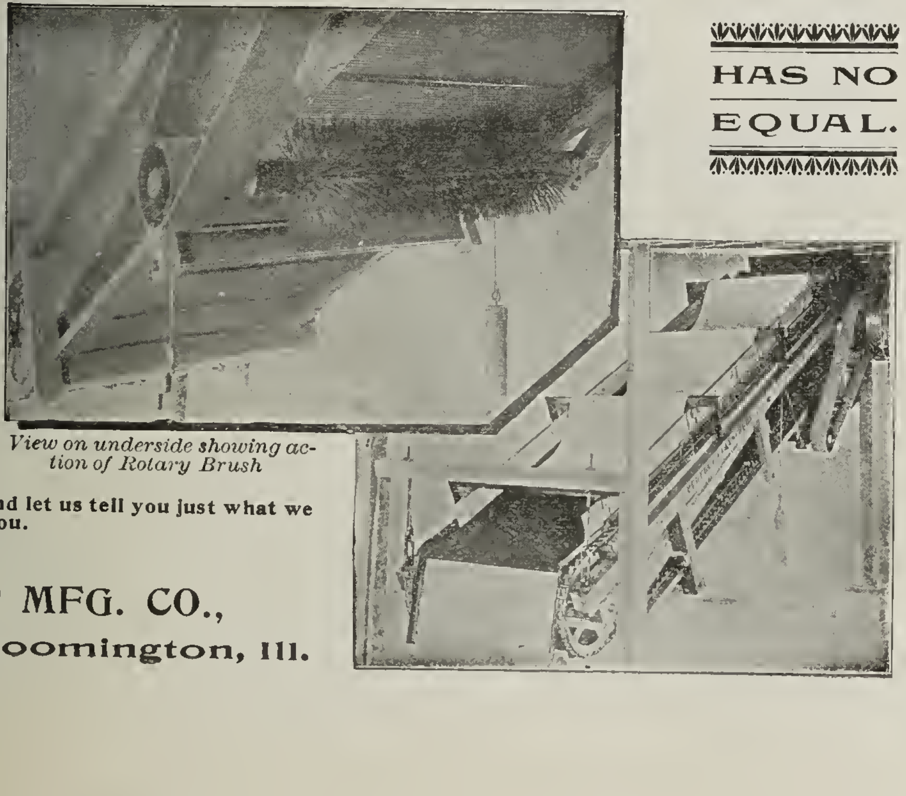
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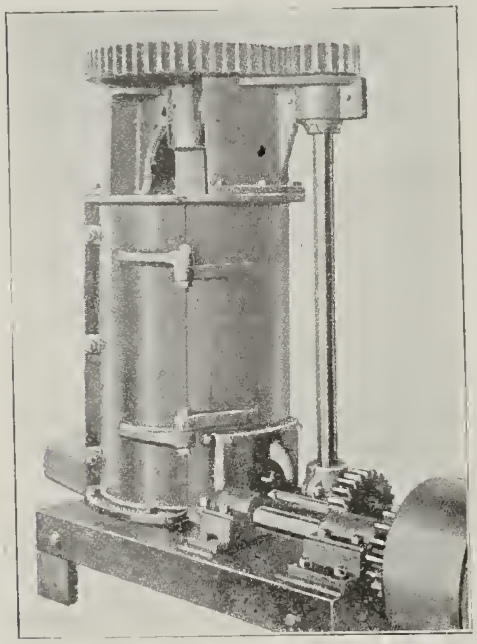

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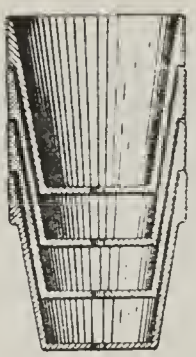

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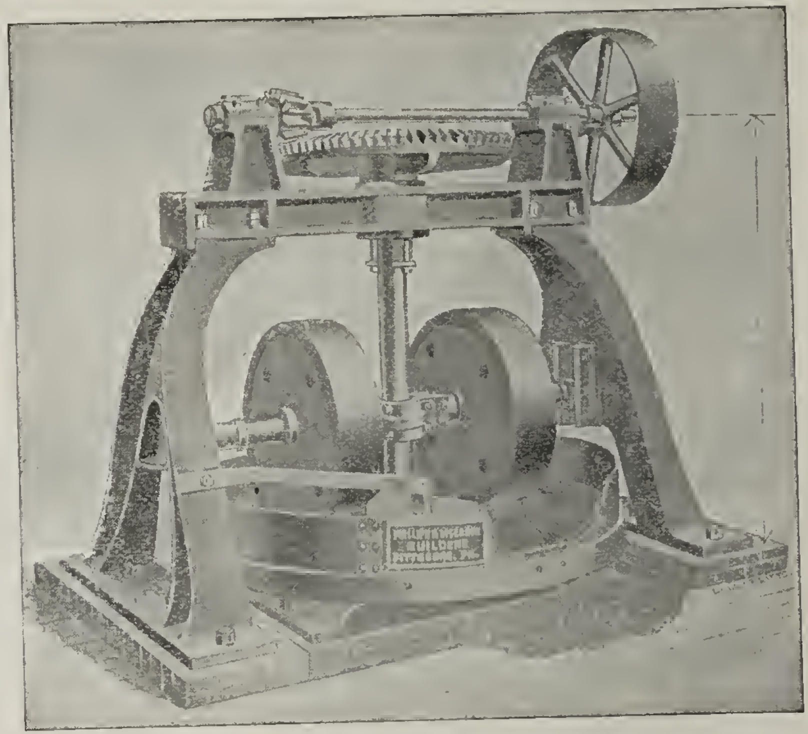

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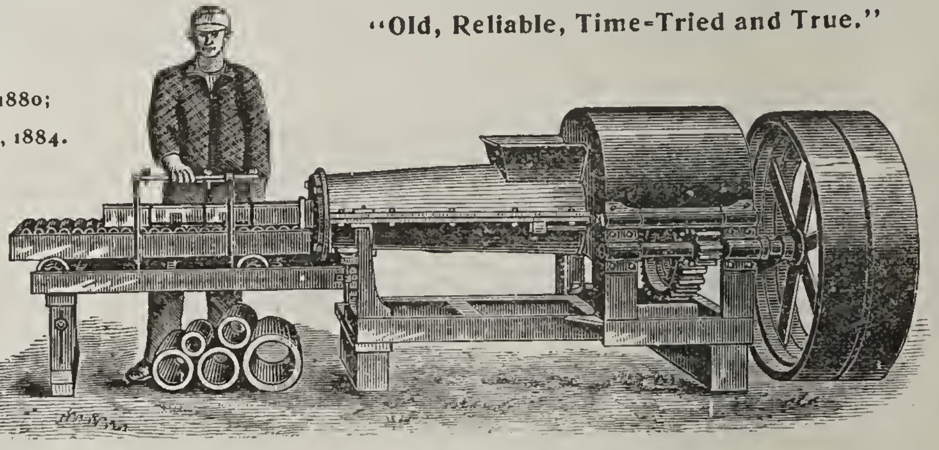

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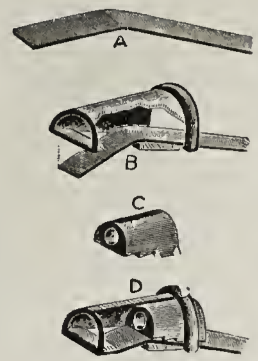

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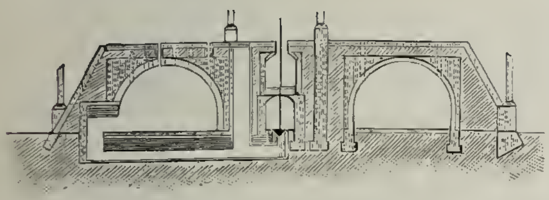

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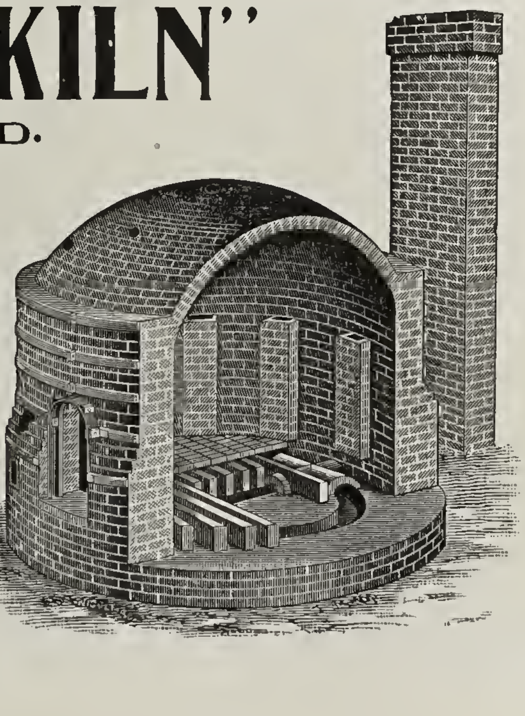

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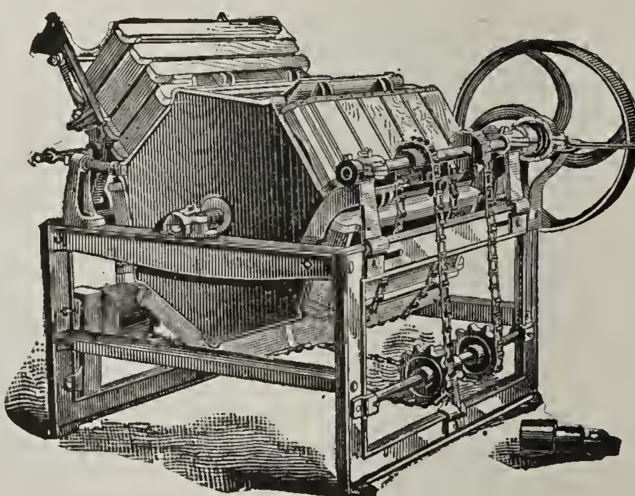

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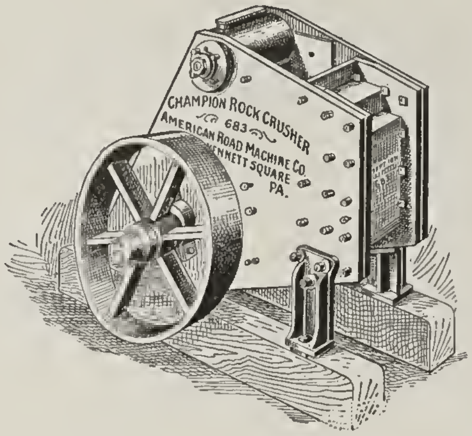

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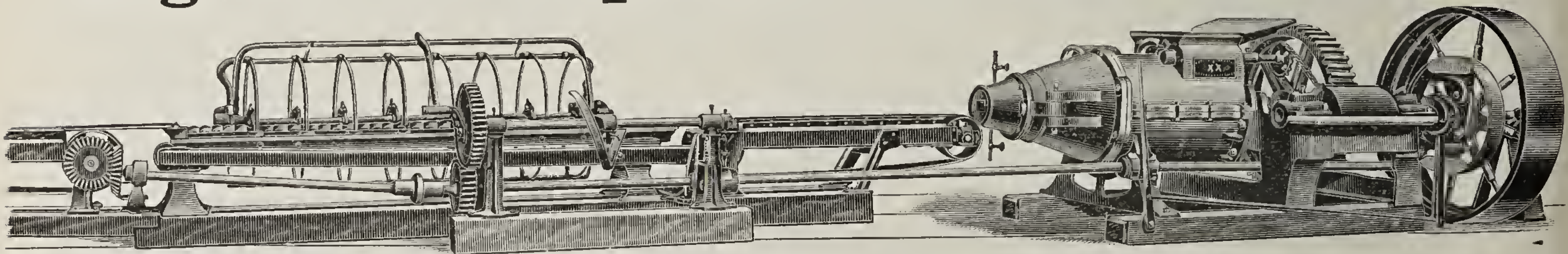

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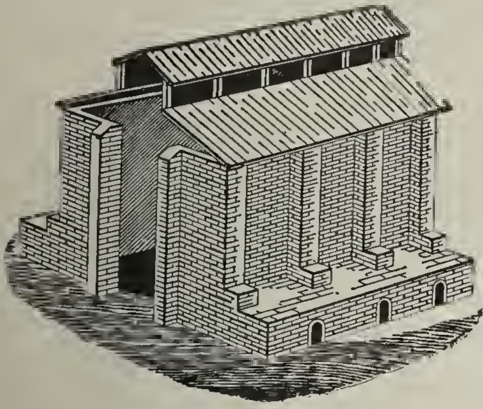
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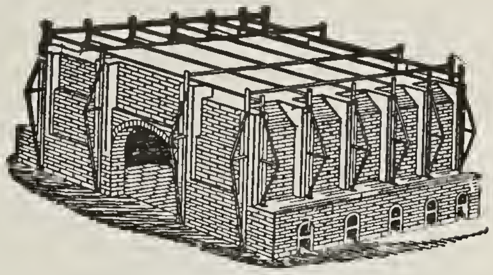
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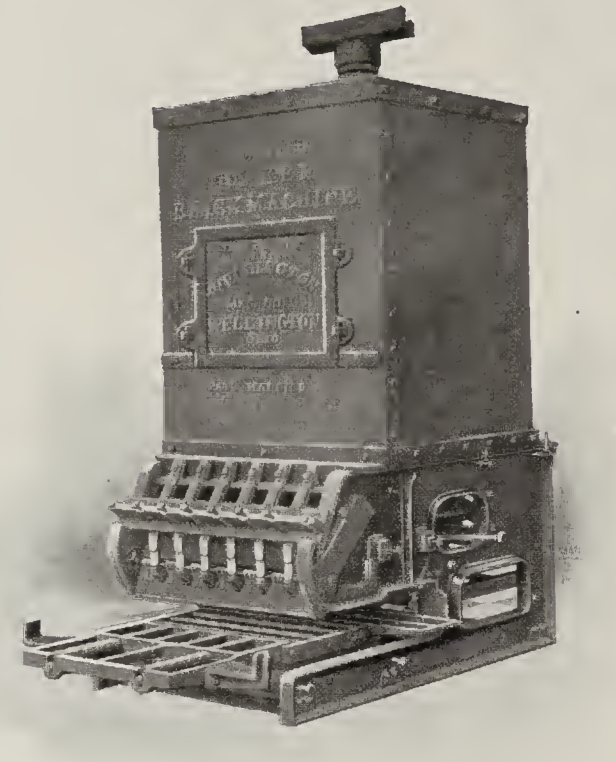

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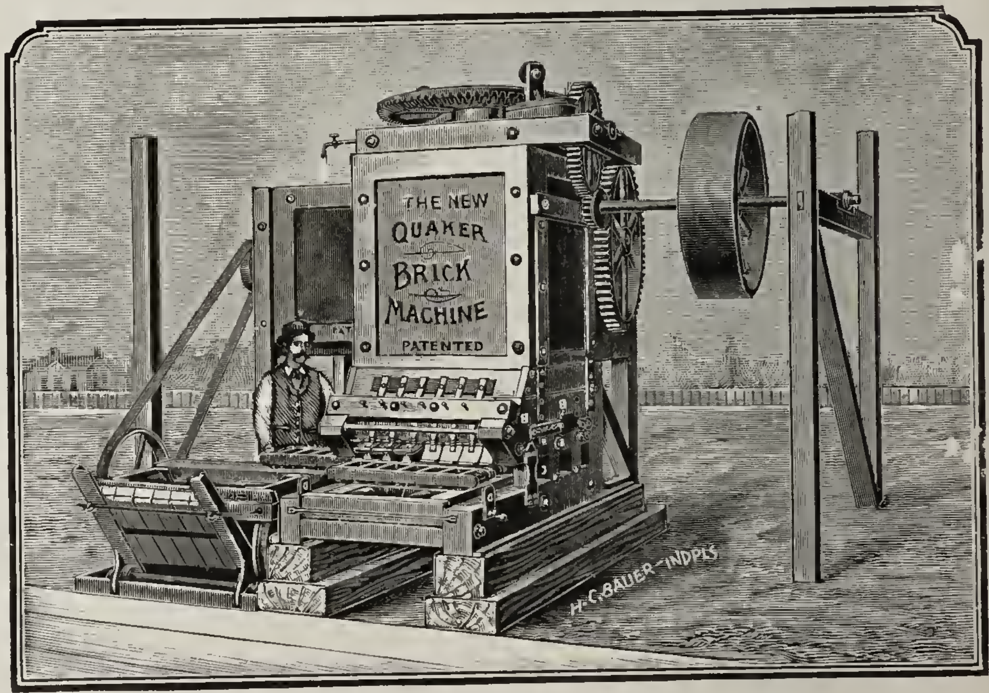

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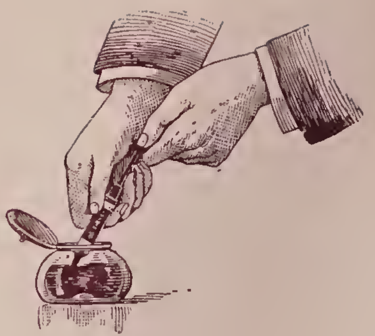

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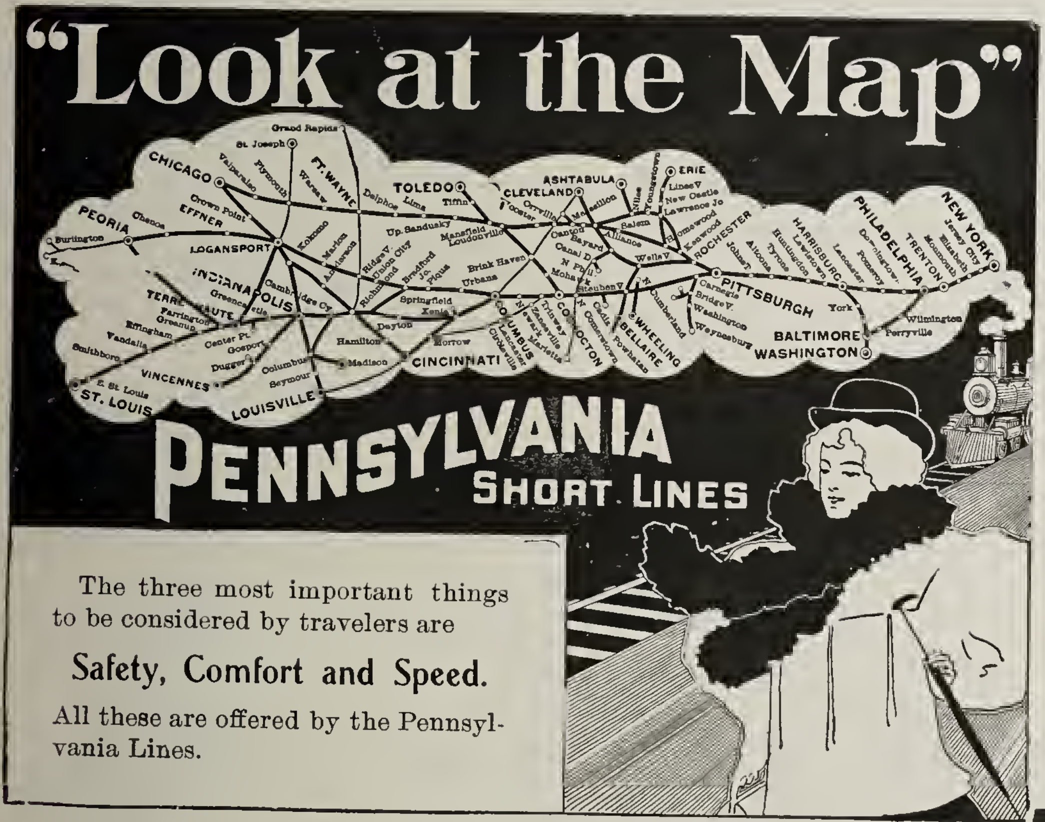

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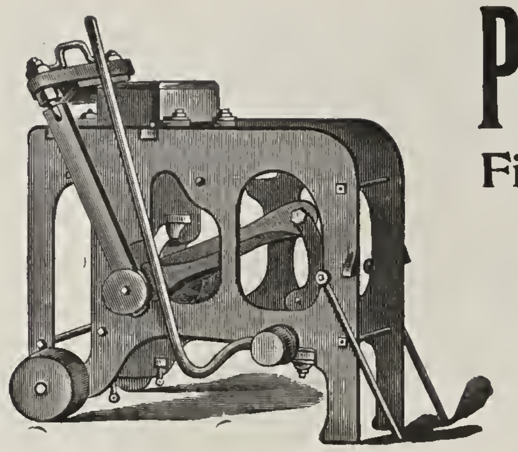

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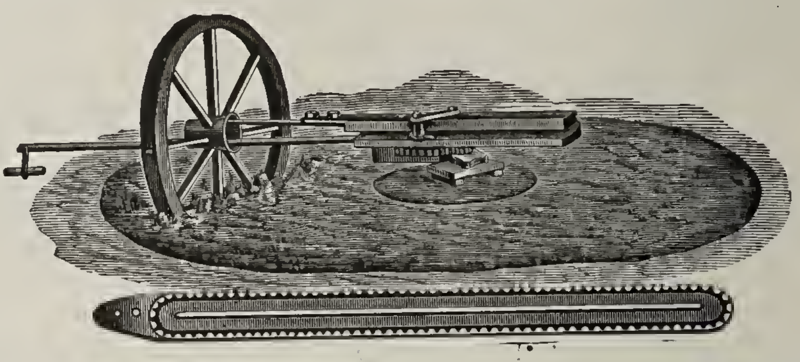

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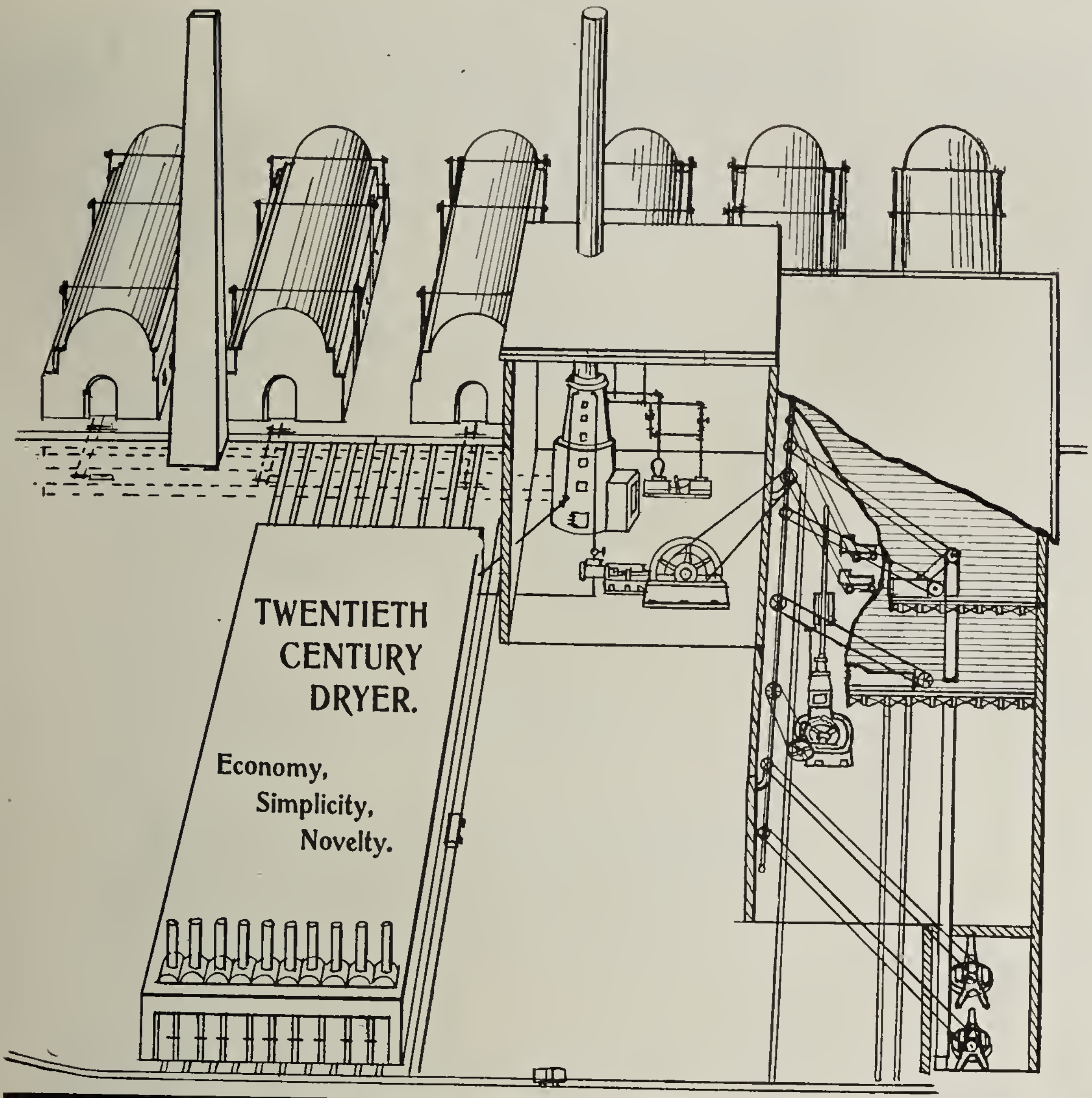

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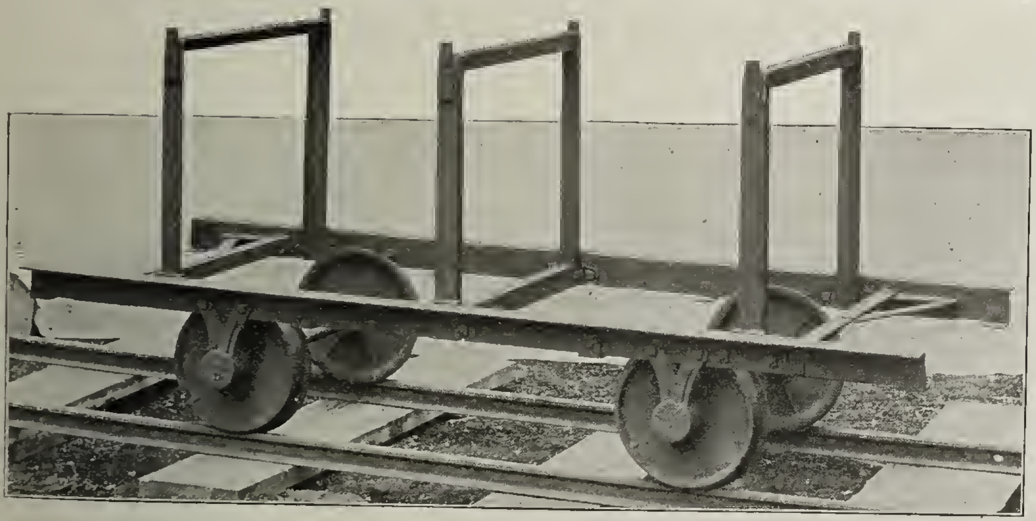

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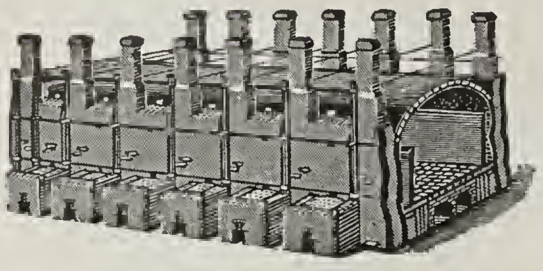

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Streator, Ill., October 3, 1900.
M. M. BUSHONG, Esq.,
Phoenixville, Pa.

Dear Sir:—Answering yours of September the 27th, we have been using one of the Bushong Down Draft Kilns the past fifteen months and are well pleased with it. We get a larger percentage of No. 1 pavers with a little less fuel than any other kiln on the yard.

Yours truly,
THE BARR CLAY CO.,
Per C. C. Barr, Treas.

BURNS any kind of fuel.
USES less fuel than any other Kiln.
RESULTS are uniform.
NO damaged wares.
SAVES time and labor.

USED by some of the largest plants.
NO experiment.
IT'S success has been proven.
FULL control of drafts.
ONLY Kiln built that has Double Draft.
REDUCES burning time 24 to 48 hours.
MOST economical in construction.

M. M. BUSHONG, - Phoenixville, Pa.

The EUDALY DOWN DRAFT KILNS.

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM.

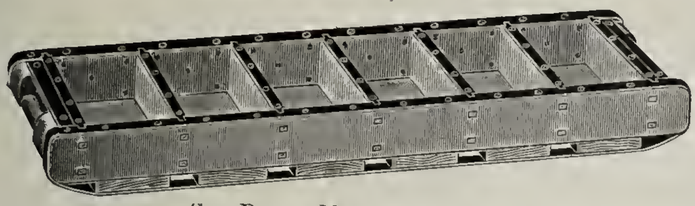
These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal or wood and coal combined.

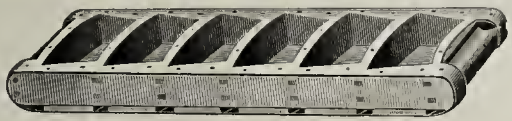
The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

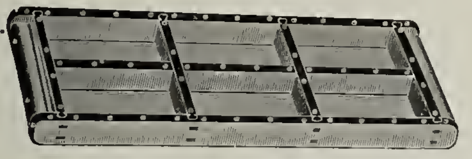
W. A. EUDALY, 509 Johnston Bldg. Cincinnati, Ohio.



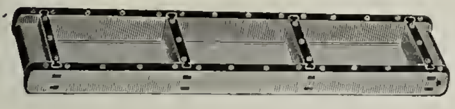
Six Brick Machine Mould.



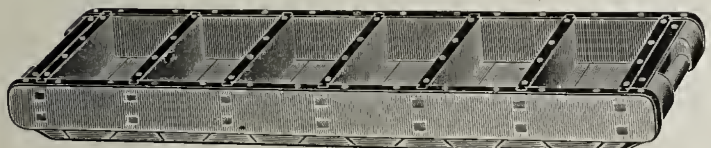
Circle Mould.



Hand Mould, Six Brick.



Hand Mould, Three Brick.



Roots Patent Bottoms.

DO IT NOW.

PLACE YOUR ORDER for 1902 brick moulds with Arnold. You can have them made and shipped any time between now and May 1st, 1902, and if you have the order placed *there* you know you will get the best there is made, and will get them promptly and when you want them. We make moulds to fit "any old machine" that uses moulds and guarantee satisfaction if you will give us the following particulars:

1st. Size of the brick.
2nd. Number of brick in a mould.
3rd. Thickness of partition or distance from center to center of bars in die.
4th. Length of mould over all allowing 1½ inches at each end for handles if possible.
5th. Style of handle by number, (see our catalog).

We also make hand moulds any number of brick and any size desired.

Machine moulds with Roots Patent Bottom. We have made quite a number of these moulds in 1901, they are designed for making a better quality of brick than ordinary molds, and cost but little more. In addition to moulds we make a full line of Trucks and Wheel Barrows, also make special Trucks and Wheel Barrows to order, and a full line of Furnace Fronts, Kiln Doors, Grate Bars, Ventilators, etc.

Let us know what you will need and get our price before you place your order elsewhere. Get our catalog. Address

D. J. C. ARNOLD, NEW LONDON, OHIO.

THE DUNN CONTINUOUS BRICK KILN.

H. C. DUNN,
Patentee.

It is constructed on correct principles.
Its drafts are strong and combustion perfect.
Its methods of operation are natural.
The firing is all done from the top.
It has no furnaces, inside or out.
All flues are in the walls, above ground.

Any intelligent burner can operate it and only one burner at a time is required.

It always burns all the brick hard.
It is in full operation daily.
It is guaranteed to burn 8,000 brick with one ton of good coal slack.

Its cost of construction is not more than for any other kind of well built kilns of the same daily capacity.

It is the most economical and successful kiln of its class ever offered American Brickmakers.

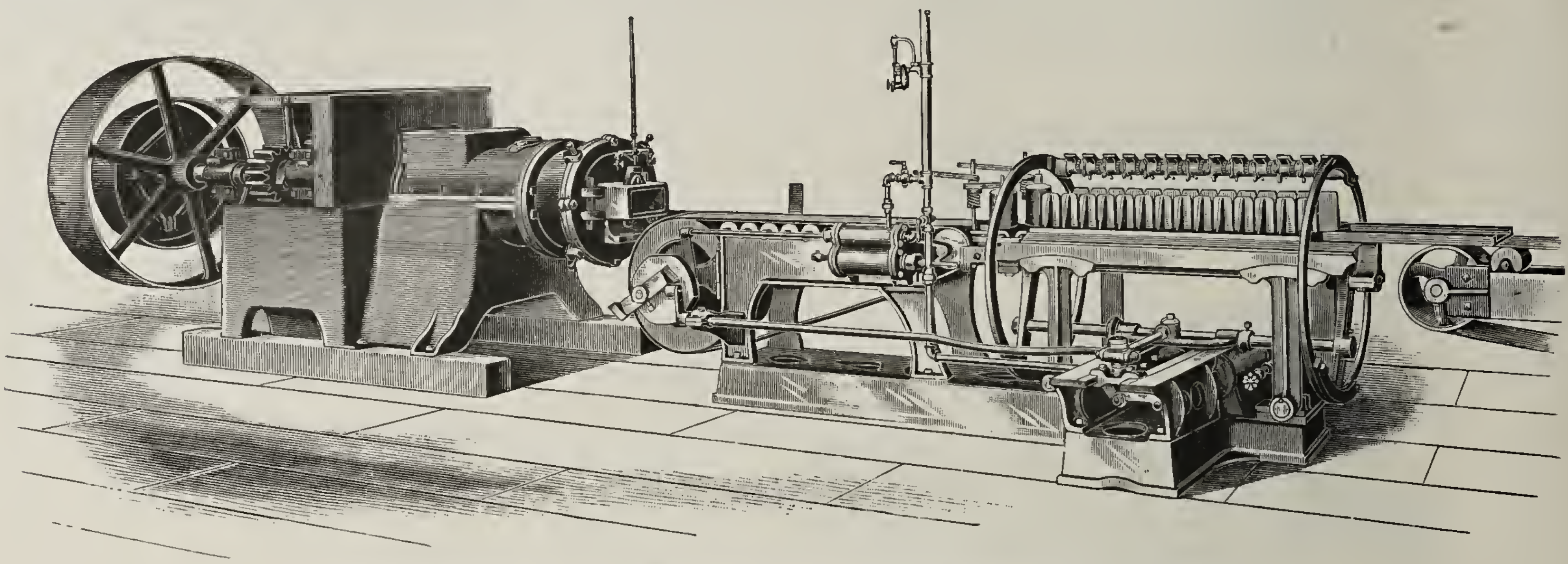
Write for circulars and full information.

I. M. JUSTICE, Sole Agent, 250 W. 19th St., Erie, Penn.

NOT BETTER THAN THE BEST!

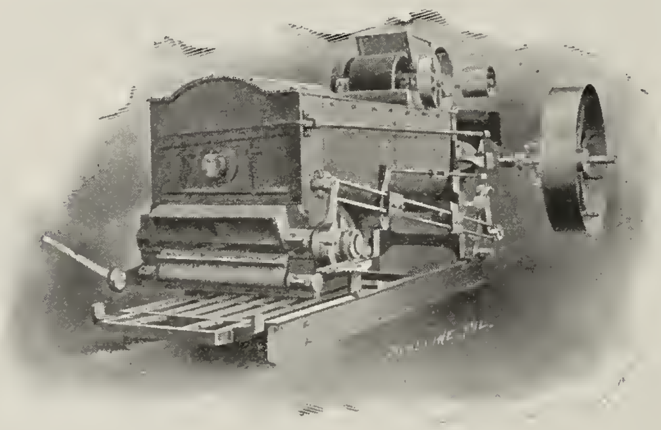
But Better Than the Rest!

AND THE PRICE IS RIGHT!



LEADER No. 25, With Side Cut Die and Automatic Cutter.

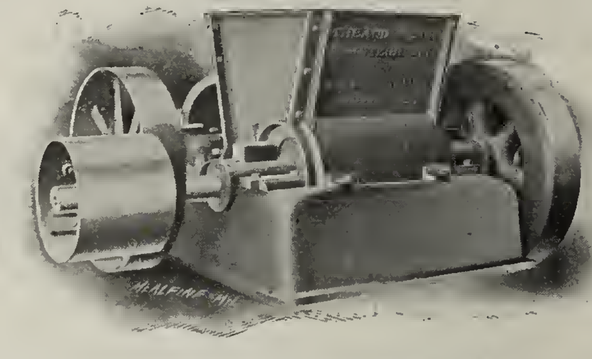
LEADER MANUFACTURING COMPANY, = Decatur, Ill.



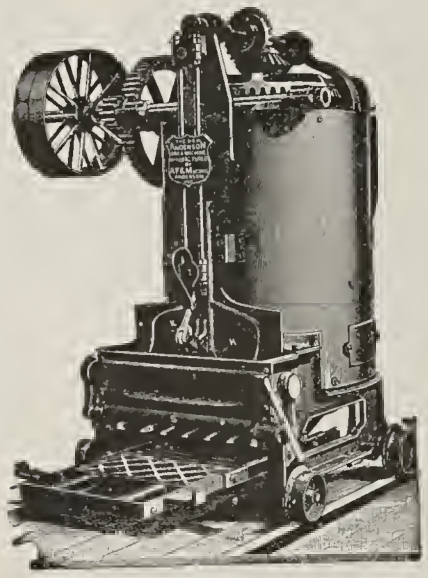
Horizontal Anderson Brick Machine.

DON'T PURCHASE UNTIL YOU WRITE US.

We can save you money.



Best Disintegrator on the Market.



Steel and Iron Upright Stock Brick Machine.

MANUFACTURERS OF . . .

New Departure Tile Machine,

The only machine for making Tile from 3 to 24-inch Diameter.

Pug Mills, Molds, Trucks and Barrows,
And all Brickyard Supplies.

1899 Horse Power Machine.

The Anderson Foundry and Machine Works,
Anderson, Ind.

THE BALTIMORE AND OHIO RAILWAY.

The Favorite Convention Route.

Members of the N. B. M. A. who have taken the B. & O. Line to previous Conventions will need no urging to go via the B. & O. to Cleveland February 10th to 15th, 1902 for they know from experience that that line affords every possible convenience and comfort. Every courtesy possible is extended to delegates by B. & O. Agents, and the fast through trains represent the finest Railroad equipment in the World.

Map of The Baltimore & Ohio R.R. and connections on which through cars are run.

* * *

Through Sleepers.
Fast Trains.
Magnificent Pullman Equipment.
Observation Cars.
Dining Cars.

Special Rates on Certificate Plan
On all B. & O. Lines.

* * *

D. B. MARTIN,
M. P. T., Baltimore.

B. N. AUSTIN,
G. P. A., Chicago.

Clayworkers Who are Going South

Can obtain interesting and helpful information about the most attractive and comfortable Winter resorts of the **South Atlantic States and Florida** by writing to the passenger agents of the

Seaboard Air Line.

A glance at the map will show the advantages offered winter tourists by this famous route—which affords every modern convenience and comfort. Low Tourists Rate, Fast Vestibuled Trains and unexcelled Sleeping and Dining Car Service. Handsomely illustrated pamphlets will be sent free on application.

MILEAGE TICKETS

The SEABOARD AIR LINE RAILWAY has on Sale at its principal offices, Mileage Tickets at the following rates:

1,000 Mile Tickets, $25.00 Are good over all lines of the Seaboard Air Line Railway, including the Baltimore Steam Packet Co., between Baltimore, Md., and Norfolk, Va.; also over the Pennsylvania Railroad from Washington, D. C., to Quantico, Va., and R. F. & P. R. R., Quantico to Richmond, Va., the C. N. & L. between Columbia and Clinton, S. C., and the Brunswick & Birmingham R. R. between Thalmann, Ga., and Brunswick, Ga.

2,000 Mile Tickets, $40,00 Are good between Richmond Portsmouth, Wilmington, Columbia, Rutherfordton, Atlauta, and intermediate stations, including branches. Mileage tickets are issued in the name of one person only, good for use of that person only, for one year from date of sale. These tickets will be found very advantageous to those desiring to stop at several points in the South, as they permit of stop-overs at all regular stations on the lines over which they read, and offer many other inducements. Also good on Bay Line Steamers between Norfolk to Baltimore

Special Rates to the N. B. M A. Convention. Brickmakers going to Cleveland from points in the South are requested to write for time cards and folders. Every possible courtesy will be shown those who go via the SEABOARD AIR LINE. For full particulars relative to any feature of a journey South write to

W. B. CLEMENTS, T. P. A.
W. H. FULTON, T. P. A.
H. E. KROUSE, C. T. A.
J. H. TIGNER Asst. C. T. A.
} Atlanta, Ga.

W. E. CHRISTIAN, Asst. Gen. Pass. Agt., ATLANTA, GA.

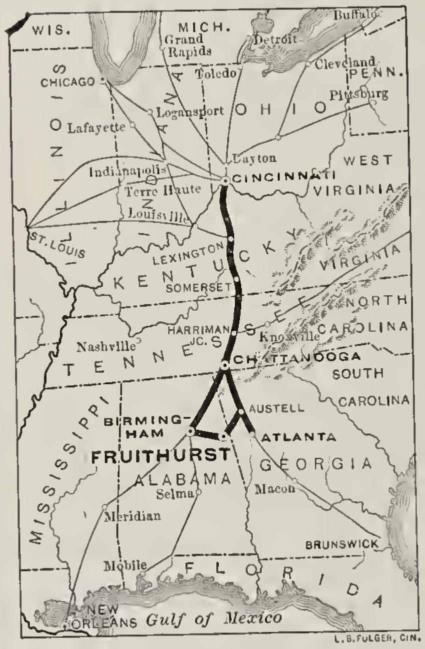
R. E. L. BUNCH, Gen. Pass. Agt., Portsmouth, Va.

MEMBERS OF THE

N. B. M. A. From the

SOUTH

To the meeting at CLEVELAND, February 10th to 15th, should travel North via the



Q. & C.

ROUTE.

Magnificent service of through trains from all important Southern Cities to Cincinnati. Close connection at Cincinnati with Big Four Route and Pennsylvania Lines to Cleveland.

Through Pullman Sleepers on the Florida Special run through to Cleveland without Change from St. Augustine, Jacksonville, Macon, Atlanta, Chattanooga, Etc.

For full information as to rates, etc., write or call upon

O. L. MITCHELL, D. P. A., Chattanooga.
C. W. ZELL, D. P. A., Cincinnati.
W. C. RINEARSON, Gen. Pass. Agt., Cincinnati.

To the Members of the N. B. M. A. and all
Other Clayworkers,

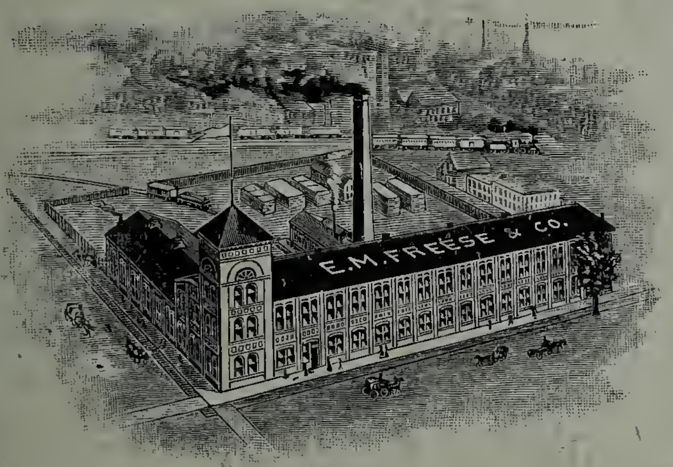
You are Cordially Invited

TO

VISIT OUR WORKS

AT

Galion, Ohio.


E. M. FREESE & CO.

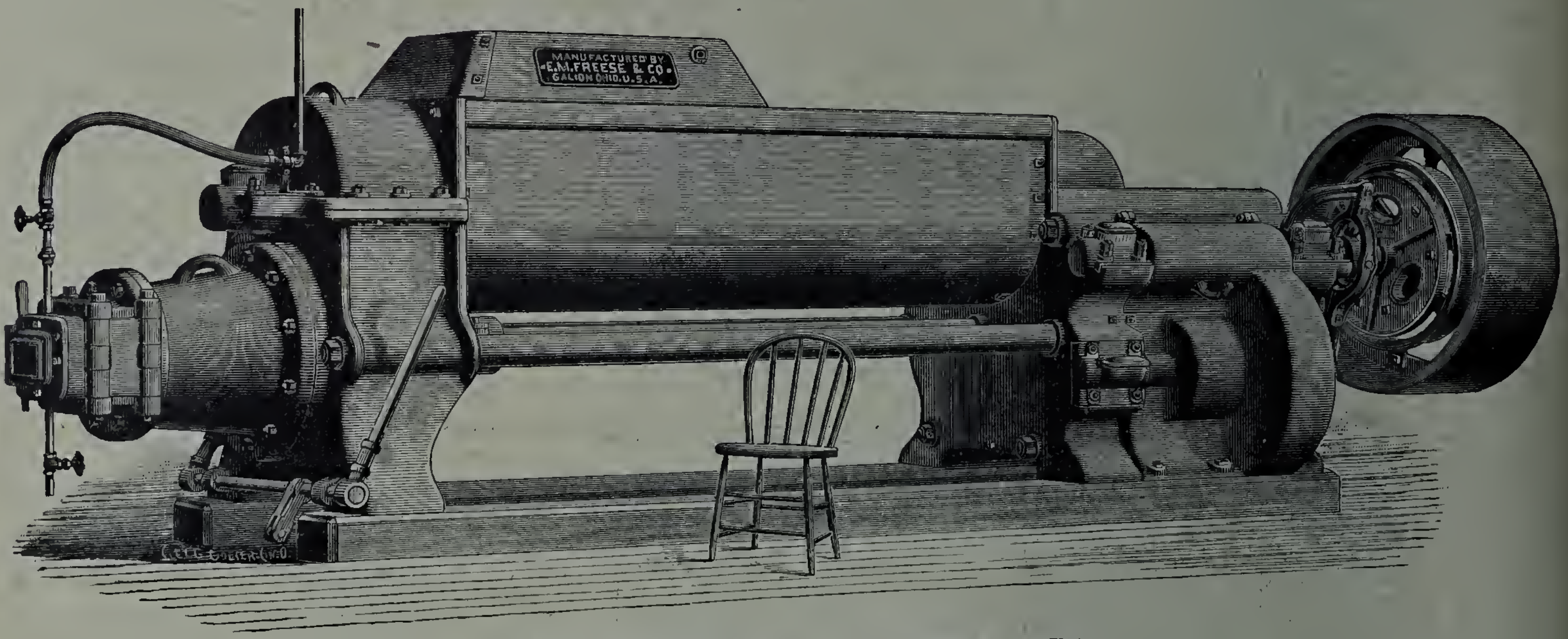
WE ARE ON THE MAIN LINE OF THE BIG FOUR RAILWAY--EIGHTY (80) MILES FROM CLEVELAND. ALL TRAINS STOP HERE. ◆ ◆

E. M. Freese & Company,

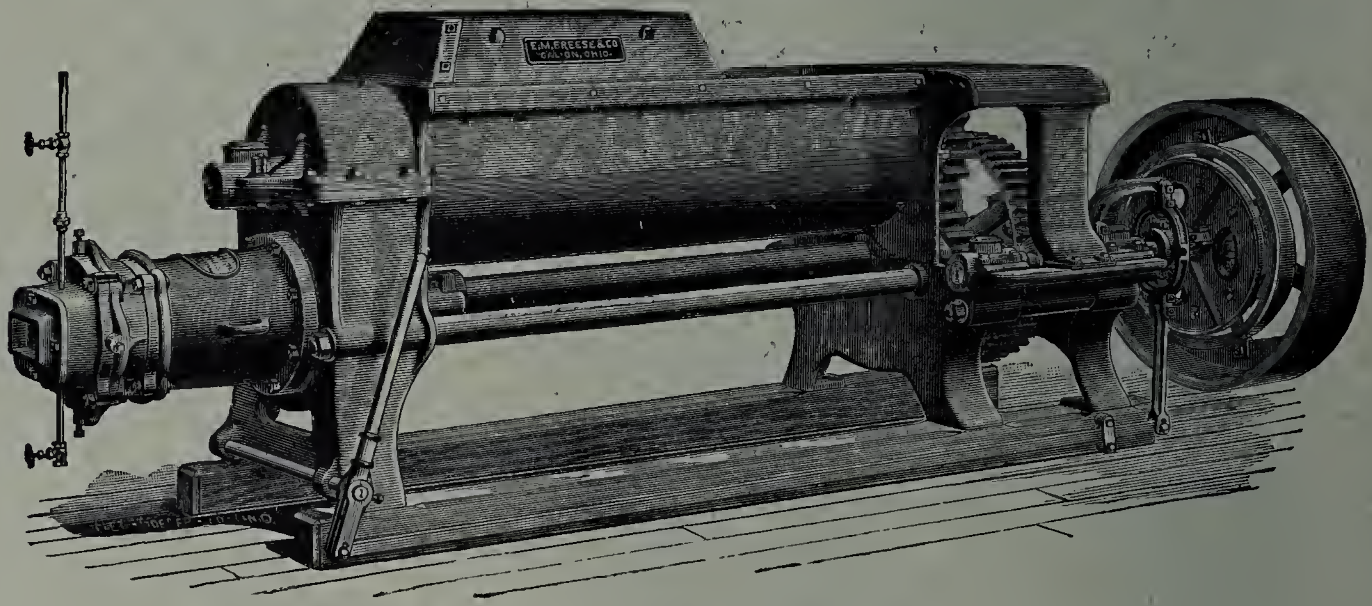
GALION, OHIO.

Union Brick Machines

With Pug Mill Combined.


MANUFACTURED BY
E.M.FREESE & CO.
GALION OHIO U.S.A.

UNION BRICK MACHINE. (SPECIAL SIZE.)



UNION BRICK MACHINE. (No. 1 SIZE.)

We build these Machines in five (5) sizes.

Their reputation for convenience, enconomy and satisfactory service generally is established by their use in scores of the best Brick Plants

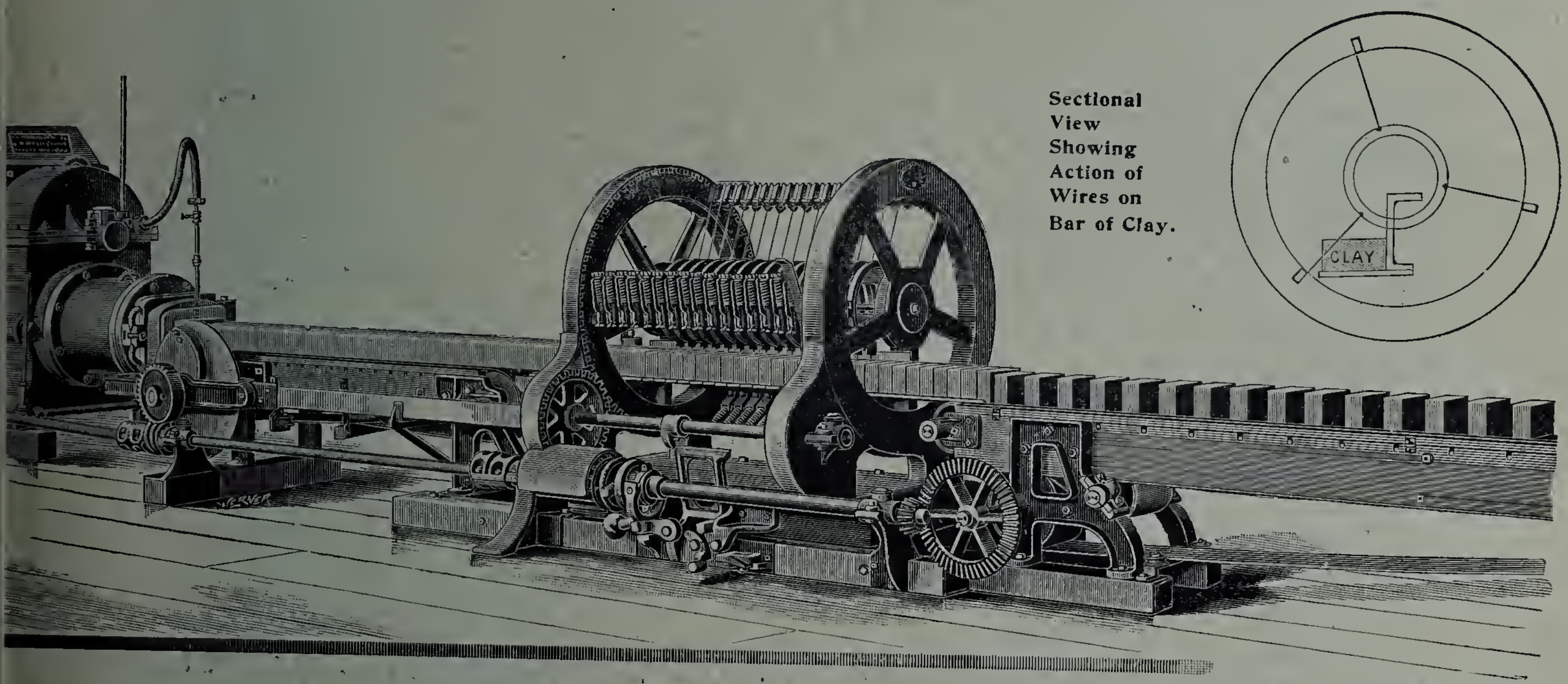
E. M. FREESE & CO.,

Galion, Ohio.

NO OTHER

AUTOMATIC CUTTER

Is "Just as Good" as This.



Sectional View Showing Action of Wires on Bar of Clay.

ROTATING AUTOMATIC CUTTER. Patented.

Why waste time and money using Cutters which are frequently out of order and cannot be depended upon to do good work?

Why not produce brick of **finest quality** when it can be done with less expense?

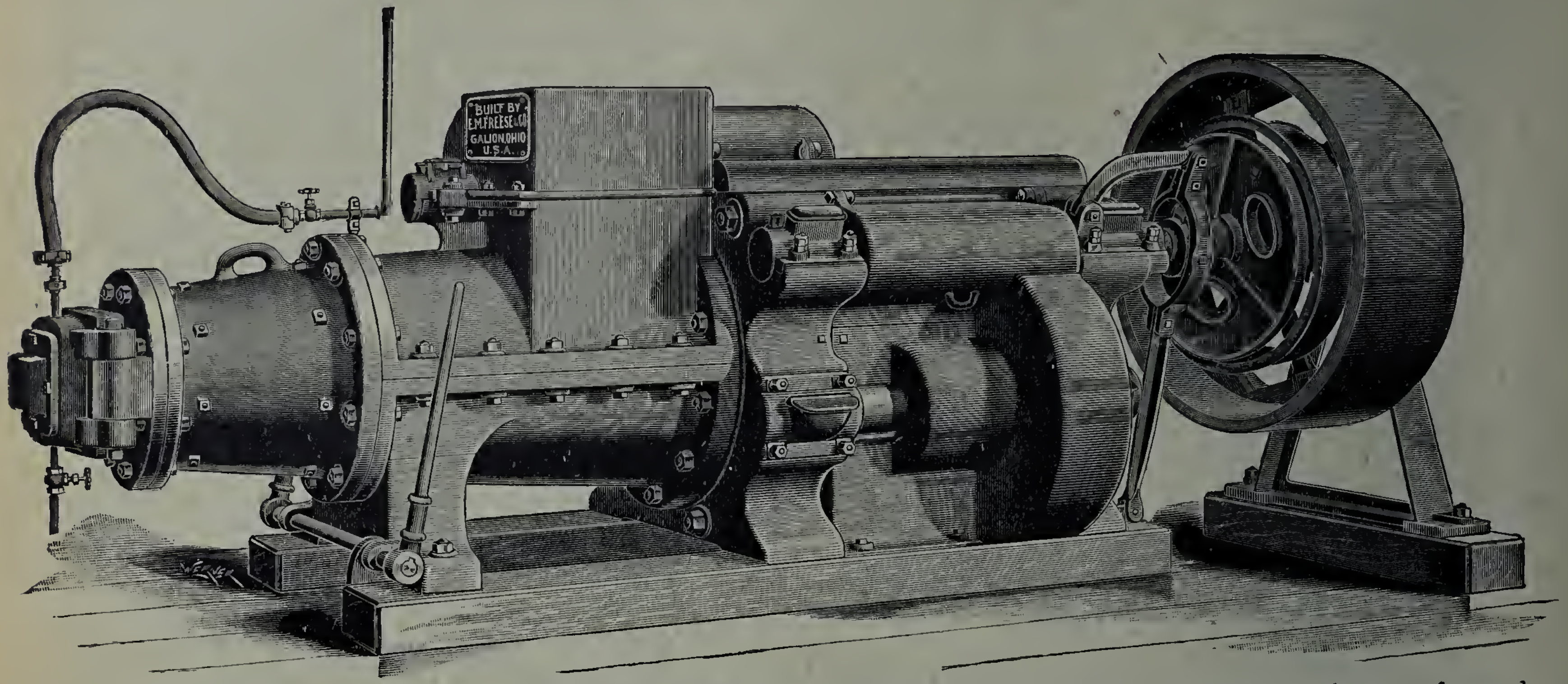
A multitude of others have found it profitable to use this Apparatus.
Why should you not use it also?

You will be satisfied with it.

We will prove this statement if you will give us opportunity.

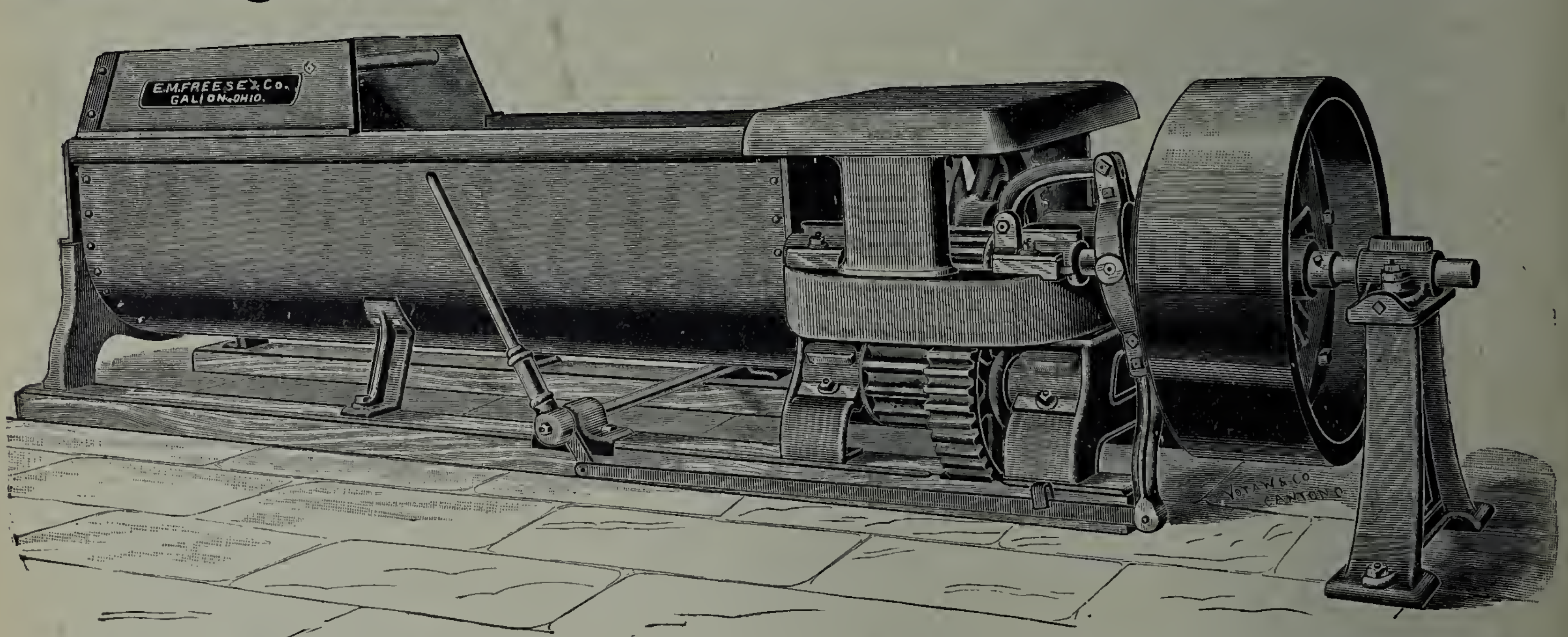
E. M. FREESE & CO.,
Galion, Ohio.

Our Mammoth Brick Machine



THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug=Mills Have Features of Great Merit.



THESE PUG=MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitted for making a fine quality of brick.

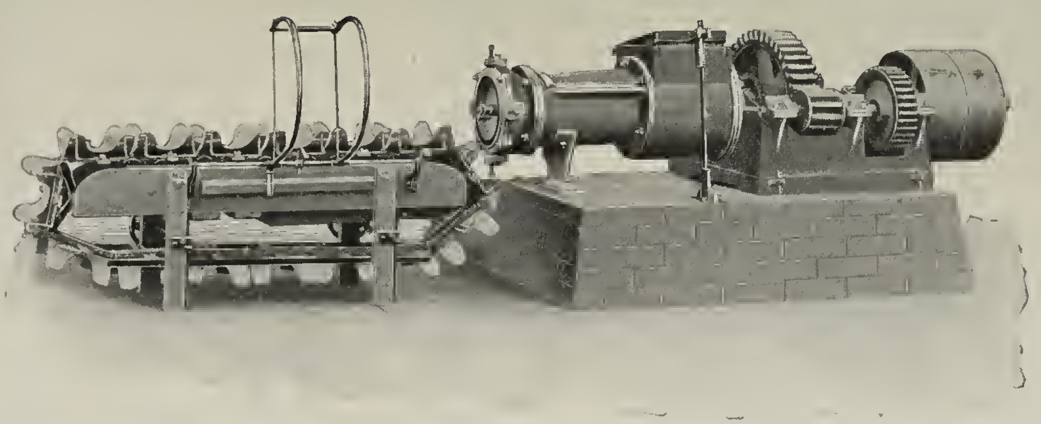
E. M. FREESE & CO., = = Galion, Ohio.

"GET THE BEST"

MEN
WHO
HAVE
USED
OUR

Brick and Tile Machines

For 20 years say they are the best on the Market.



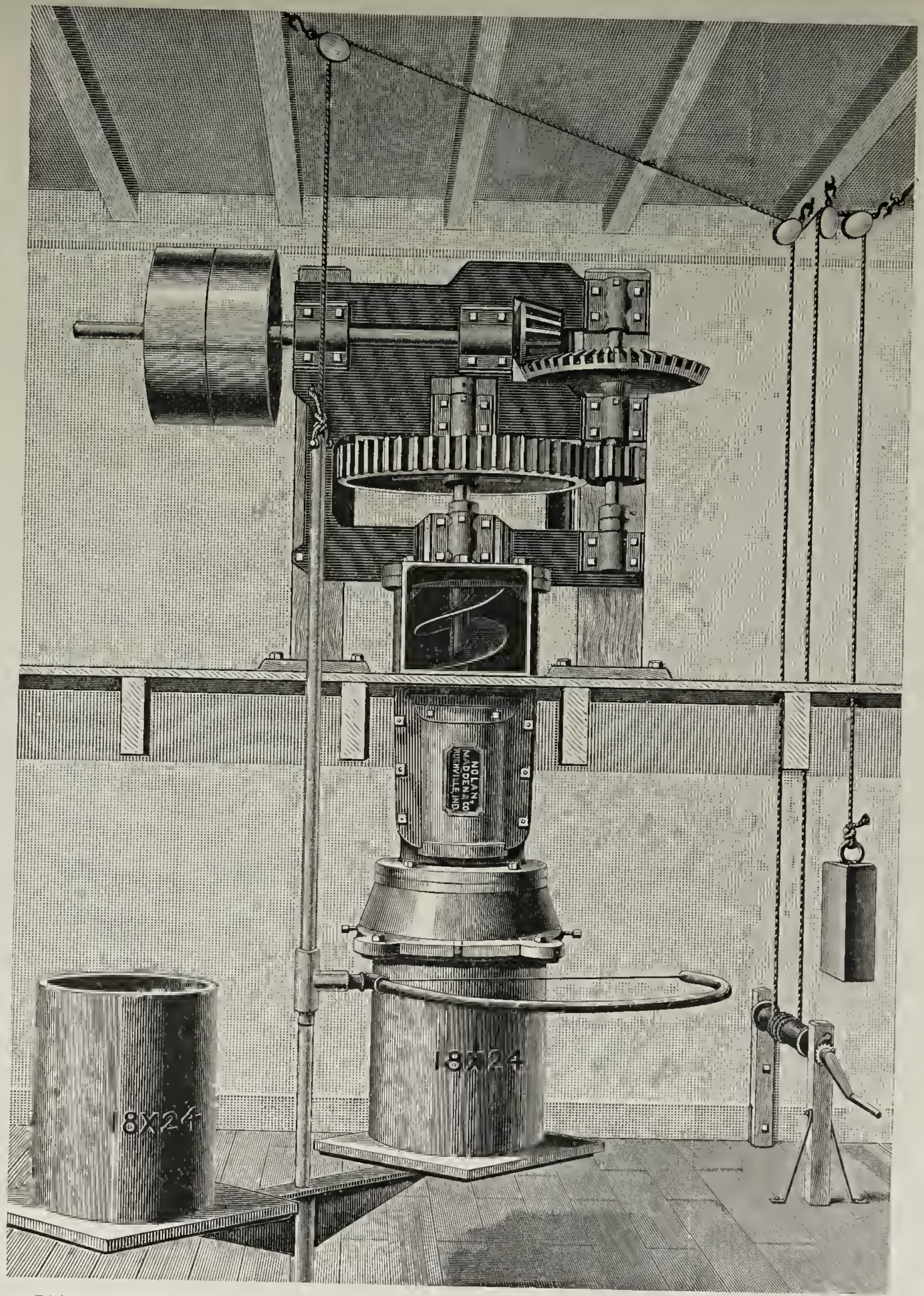
Our **No. 5B Auger Tile and Brick Machine** gives entire satisfaction.

Our **Endless Belt Cut-off Table** has no equal for handling 3-inch to 12-inch Tile. It has carriers which move with the tile, and can be readily and perfectly adjusted to tile of any size.

Our **Upright Tile Machines** for large tile 8-inch to 30-inch are better than the steam press. Sold on their merits and warranted.

We manufacture SOFT and STIFF MUD BRICK MACHINES, and can furnish Tile and Brickyard Supplies. Send for our Catalogue which contains testimonials from users of our Machinery in 14 different States.

☞ WRITE FOR CATALOGUE AND PRICES ☞


NOLAN, MADDEN & CO RUSHVILLE, IND.
18X24
18X24

UPRIGHT TILE MACHINE No. 10. For 8 to 30-inch Tile.

MADDEN & COMPANY. · · Rushville, Ind.

IF IT IS

Brick Yard Supplies

You are looking for, Arnold's is the place where they have them, and when you get them there you will find they are all right.

Brick Moulds all **kinds, sizes** and **shapes** desired, including "Roots Patent Bottoms" for making a better class of brick than the ordinary without extra expense. Several sizes of moulds carried in stock, all standard grade; special grade and odd sizes made to order, also a great variety of **Trucks** and **Barrows** carried in stock. **Special Trucks** and **Barrows** made to order from designs furnished by customers when desired. All kinds of iron work for kilns, such as bands, band tighteners, ventilators, grate doors, etc.

And do not forget to inquire about the new **Spring Brick Wagons** made of steel and iron which is all right and will carry 1,000 ordinary brick at a load.

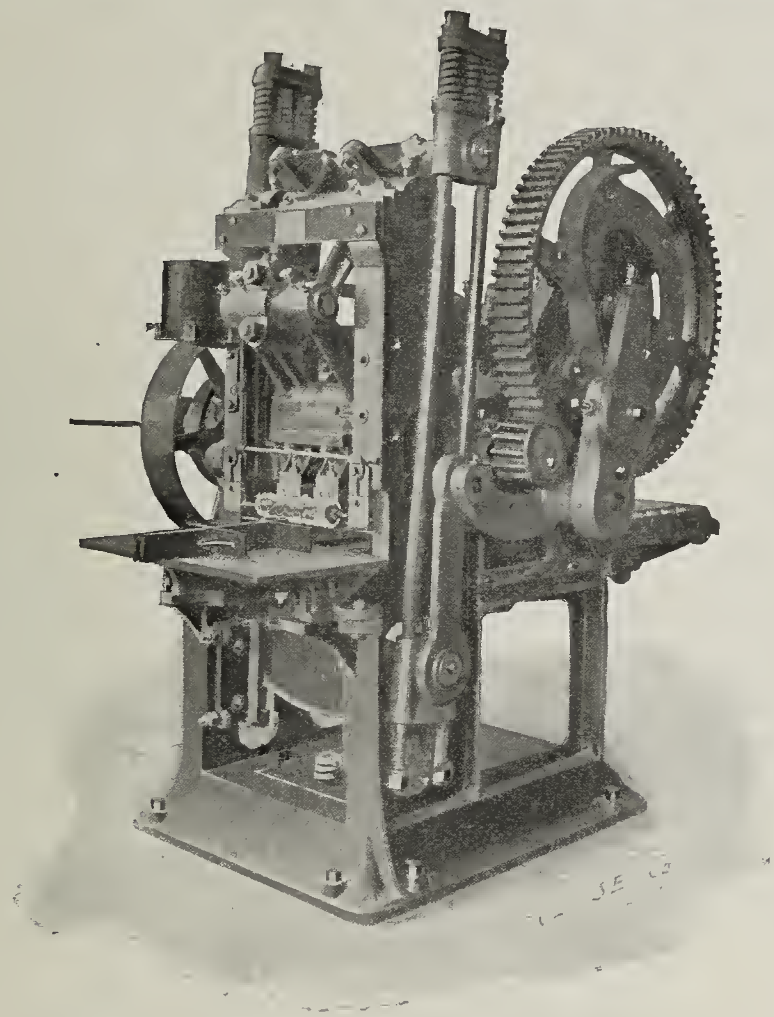
ADDRESS

D. J. C. ARNOLD,

New London, Ohio.

Mention The Clay-Worker.

ALL VISITING CLAYWORKERS to N. B. M. A. Convention in Cleveland in February are cordially invited to visit our plant and inspect our line of Presses and Dryer Cars. We are located within 15 minutes walk of Convention Hall. After you have seen our Presses and Cars a personal commendation will be unnecessary, for they "silently" but effectually recommend themselves.

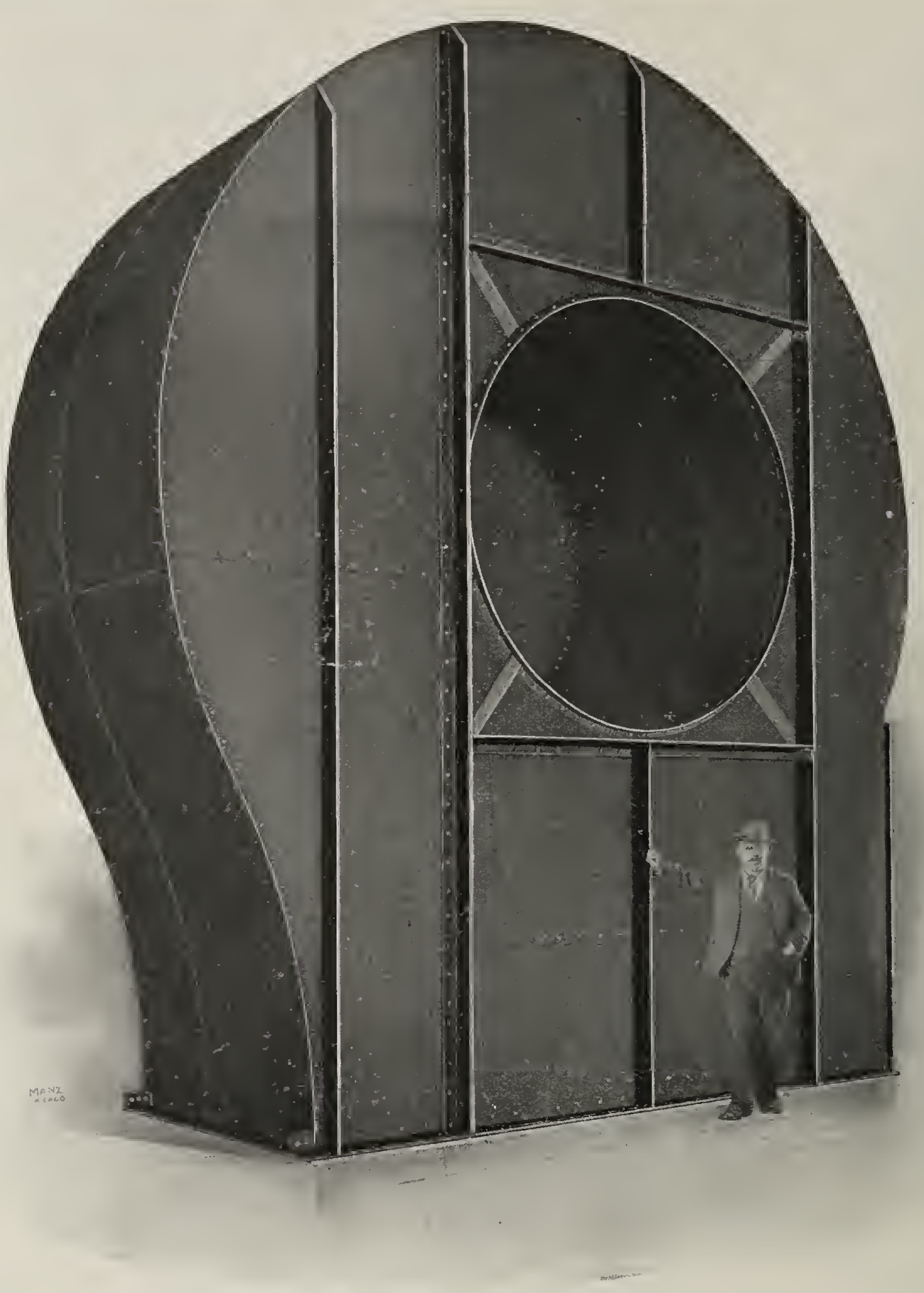


The Richardson Double Die Repress.

The Ohio Ceramic Engineering Co.,

50-56 Fall St., CLEVELAND, OHIO.

N. B.--SEE CUT OF CARS ON BACK COVER.



Waste Heat Drier.

This Dryer coins waste into money.
Saves expense on first cost.
Dries brick better and quicker than other dryers.

It's the saving that we are all striving for. The turning of the waste heat from your cooling kilns into money means a big dividend at the end of the year. We have installed many of this class of dryers, all are more than satisfactory. The accompanying cut shows a 240-inch full housed fan which we have just installed in the largest waste heat dryers in the country. This fan is 20 feet high and is the largest ever built. We guarantee satisfactory operation and a big saving. Write us.

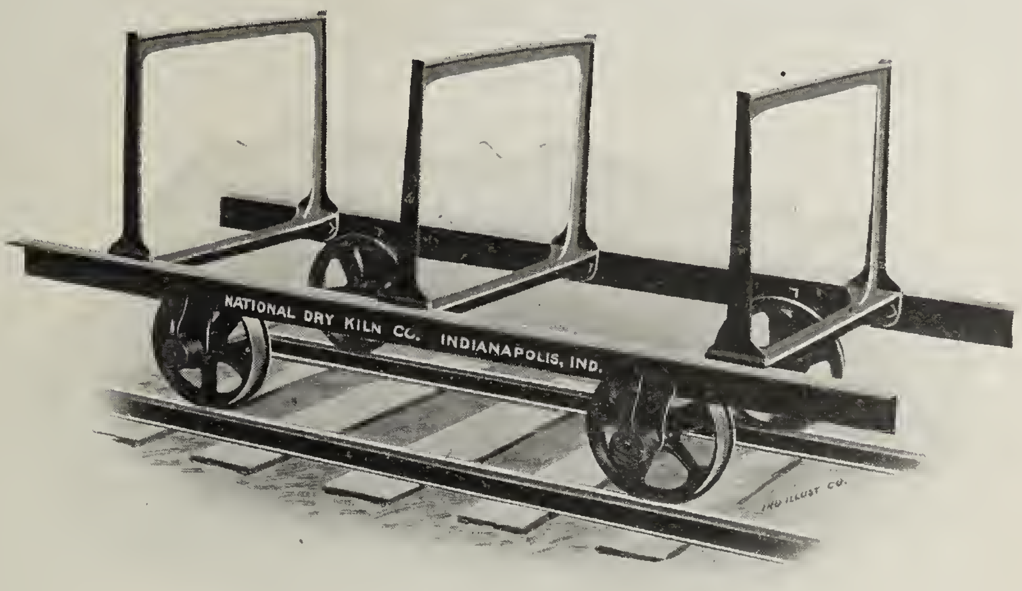
We build Dryers, Blowers, Exhausters, Engines, Fans and Heating and Ventillating Apparatus.

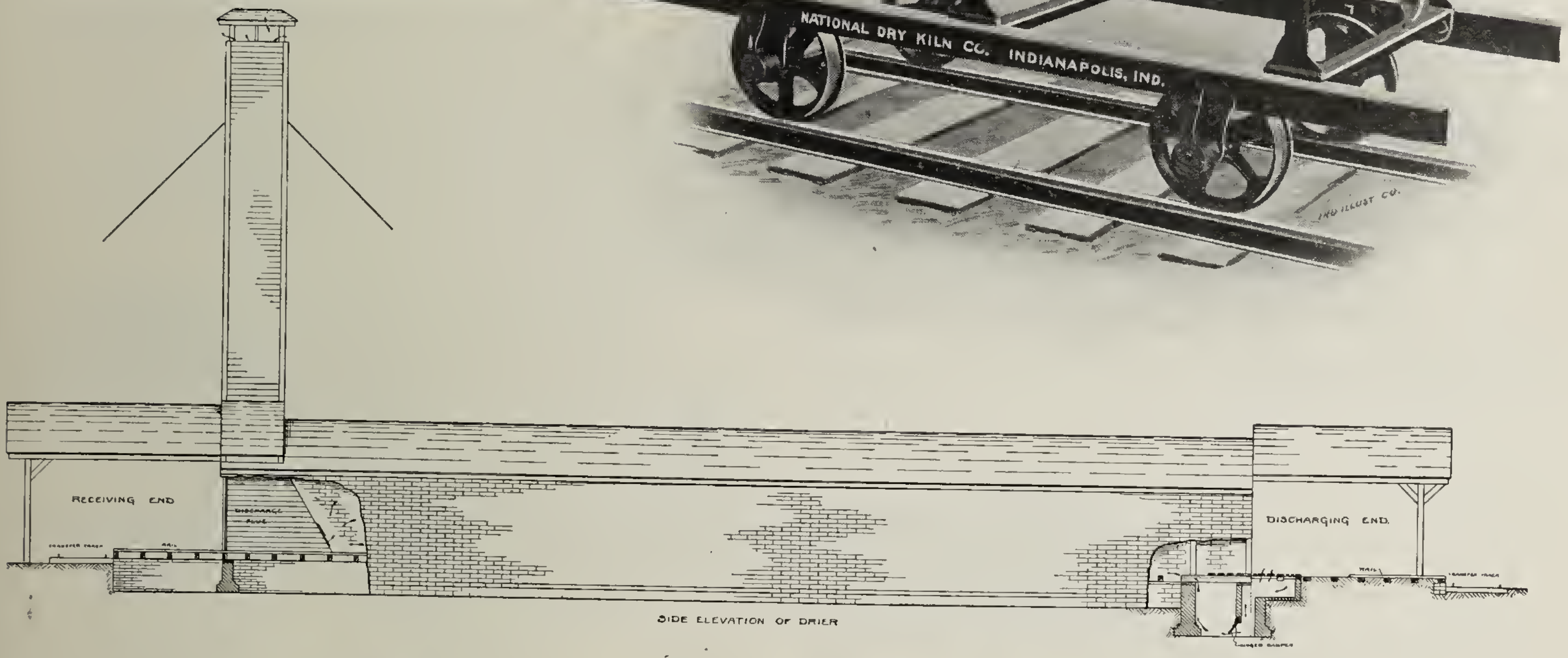
The New York Blower Co., BUCYRUS, OHIO.

The NATIONAL BRICK DRIER.

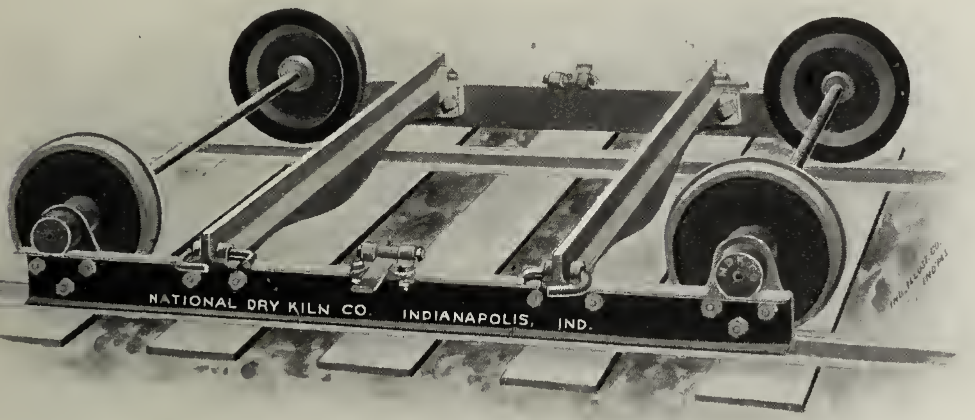
Designed on Correct Scientific Principles.
Built on Honor.
Sold on an Absolute 100 cent on the Dollar Guarantee.

MAXIMUM ECONOMY IN
ERECTION,
OPERATION,
MAINTENANCE.


NATIONAL DRY KILN CO. INDIANAPOLIS, IND.
IND. ILLUST. CO.



SIDE ELEVATION OF DRIER


NATIONAL DRY KILN CO. INDIANAPOLIS, IND.
IND. ILLUST. CO.

Metal to Metal Joints.

No Lock Nuts or Packing to Blow out.

No Inaccessable Leaky Box Coil Heaters.

Every Joint in Heating System Visible to the Person Standing at Discharging End.

OUR CARS are wonderfully easy running, with extra long steel roller bearings. The parts shown in cuts usually made of cast iron by other manufacturers we have replaced by malleable iron and steel.

The equipment of the Drier throughout in design, material and workmanship is the best that money and experience can produce, and the results being obtained are fast putting it on a plane where it seeks a peer.

Correspondence is our delight, write us.

The National Dry Kiln Co.,

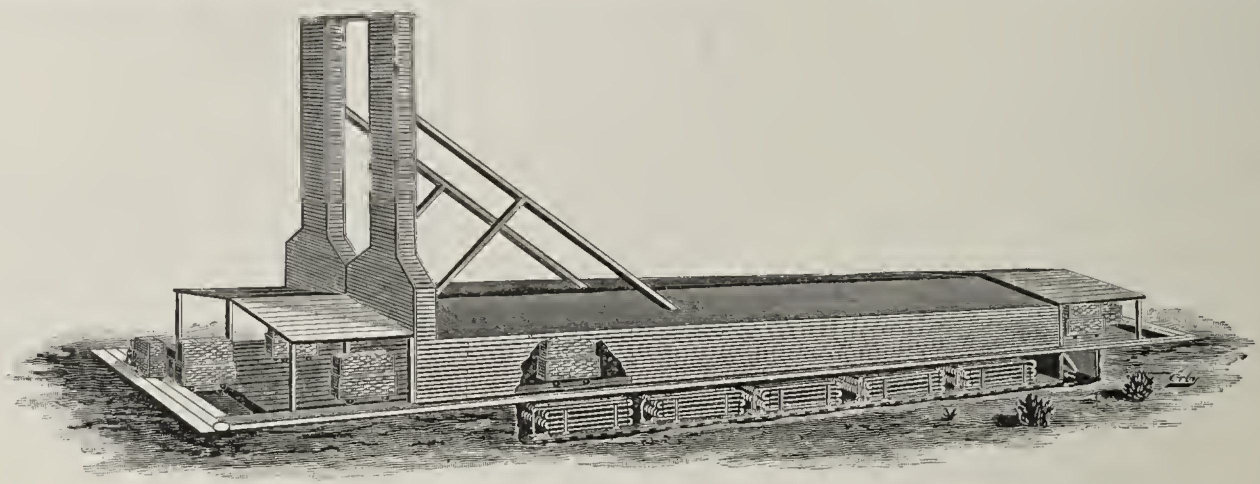
C. H. BEALE, Mgr. Southern States.
Montgomery, Ala.

JOHN McKAY,
Representative at Large.

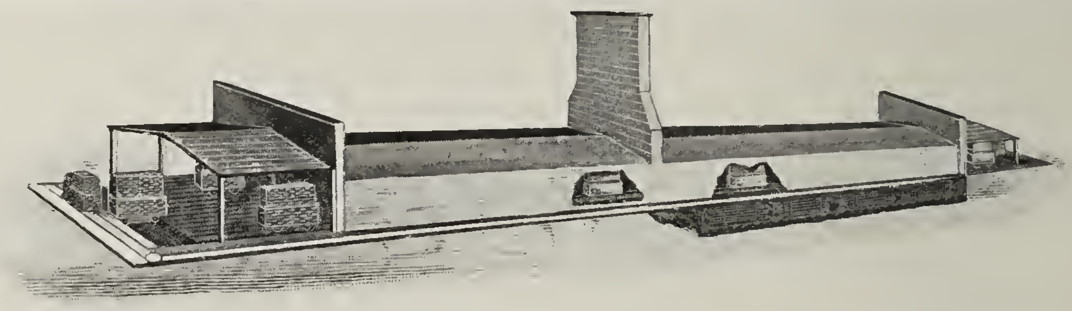
INDIANAPOLIS, IND.

The Chicago Iron Clad and Barron's Tender Clay Dryers.

The most perfect and economical system of drying brick in the world.
It performs wonderful feats in the largest plants, and equally as well in small plants.



The Up-to-Date Iron Clad Dryer Adapted to Rapid Drying.



The Barron Tender Clay Dryer, Adapted to Drying Tender Clay Products.

Read The Following Expression from a Successful Concern:

THOS. CAREY, Pres. and Treas. JOHN SHELHAMER, Vice-Pres. WM. A. SULLIVAN, Sec'y.

AMERICAN BRICK COMPANY,

Manufacturers of

COMMON AND SEWER BRICK.

Office and Yards 45th and Robey Sts.
Telephone, Yards 128.

CHICAGO, ILL., January 8, 1902.

MR. A. F. BARRON, CITY.

Dear Sir: The Four-tunnel Dryer which you installed at our plant last summer, guaranteed to dry one hundred and sixty-seven thousand (167,000) brick every twenty four hours, is proving a wonderful success. While Jack Frost has been making ice thirteen iches thick in the pond opposite, our Dry House has averaged one million brick every six days with apparent ease and is capable of doing much better providing our machinery was capable of turning out a greater capacity. We have proven this by running two hundred thousand through the dryer in one day.

Last summer we dried our brick outside, a comparison of the two systems prove that the expense for labor in handling the brick outside amounts to about the same as the cost for fuel required to supply steam for the dry house. Taking the loss of brick caused by rain and storms in outside drying, leaves a large margin in favor of your system of drying, besides this we are making a saving of 20 per cent. on fuel for burning the brick, and turning out a better brick in every respect. Our brick now all burn hard from bottom to top. Your improved dry house is certainly a perfect and economical system of drying brick.

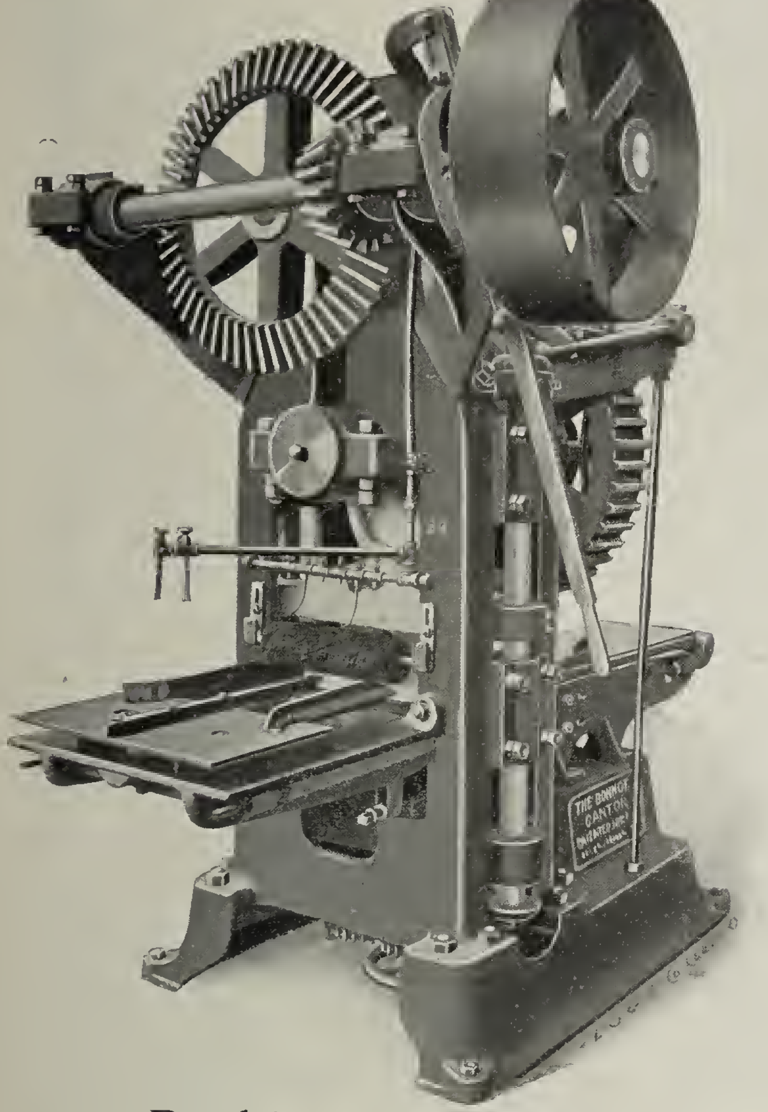
AMERICAN BRICK COMPANY,
JOHN D. SHELHAMER, Vice-President.

Send for Information, Estimates, Etc., Address

A. F. & A. E. BARRON,

Room 630, 225 Dearborn Street, CHICAGO, ILL.

Modern Brick Machinery.



Double Die Repress.

MACK MANUFACTURING CO.

Paving, Building and Fire Brick,
Sewer Pipe, Fire Clay.

WORKS:--New Cumberland, W. Va.

New Cumberland, W. Va., Feb. 28, 1901.

The Bonnot Company,
Canton, Ohio.

Dear Sirs:—

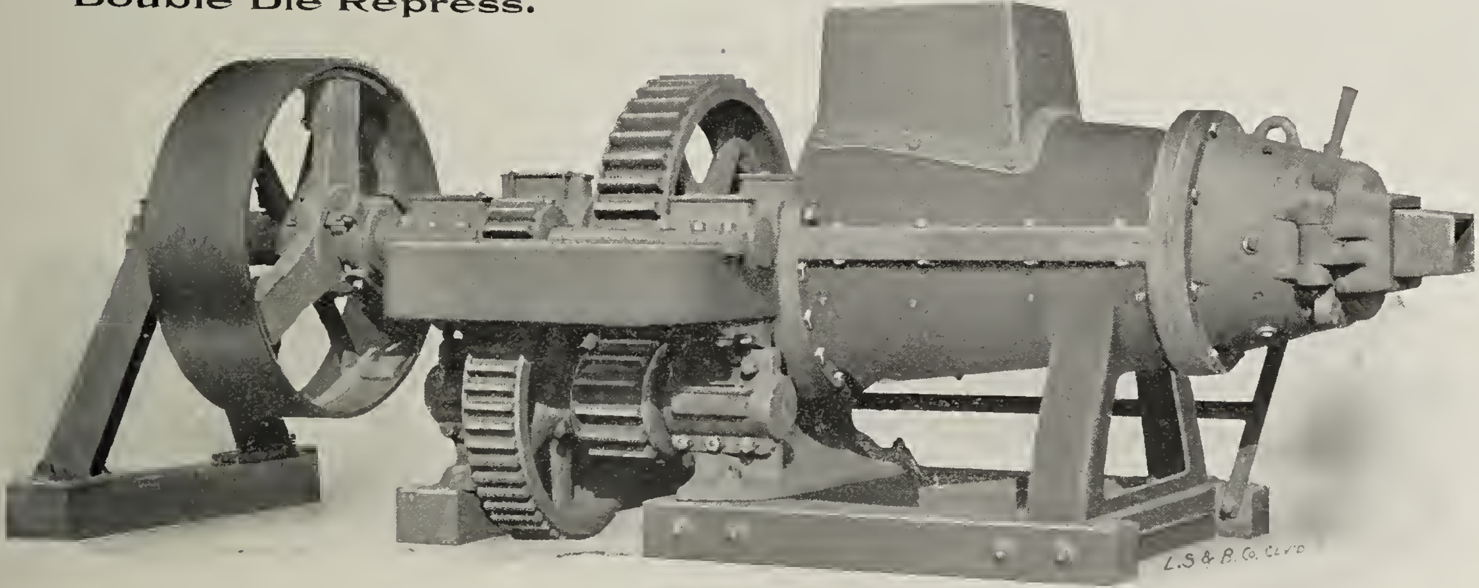
Replying to yours of the 13th, asking if we can still speak as favorably of your machinery as when it was first introduced, we beg to say that we can repeat and add to what we have already said. The Automatic Cutting Tables have given us no trouble from the day they were put in. The mechanism is very simple and everything about it is substantailly and intelligently arranged. We can change from a larger to a smaller brick and vice versa, in five minutes.

We have four of your double Represses and three Automatic Cutting Tables and they have been in constant use for over three years and they are capable of as good service as when first put in.

As an evidence of our opinion of your machinery, we now give you an order for another cutting table for our No. 6 plant.

We take great pleasure in exhibiting the merits of your machinery to anyone interested.

With assurance of continued regards, we are,
Yours very truly,
MACK MANUFACTURING CO.,
S. G. Gaillard, Mgr. & Secy.



Brick machines from 10,000 to 100,000 daily capacity.
Automatic Cutting Tables, Dry Pans, Pug Mills, Screens, Etc.

We manufacture a Complete Line of BRICK, POTTERY and CEMENT MACHINERY.

The BONNOT CO.,

Write for our Catalogue of Brick Machinery.

CANTON, OHIO, U. S. A.

Big Four Route

IS THE

Official Line

TO THE

N. B. M. A. Meeting,

At CLEVELAND, FEBRUARY 10 to 15, 1902.

All "Big Four" Lines Lead to Cleveland.

Magnificent Through Pullman Sleepers from

St. Louis, Indianapolis,
Cincinnati, Dayton,
Springfield and Columbus.

DINING CARS UNEQUALLED.

For full information and particulars as to rates, tickets, limits, etc., call on agents "Big Four" Route, or address the undersigned.

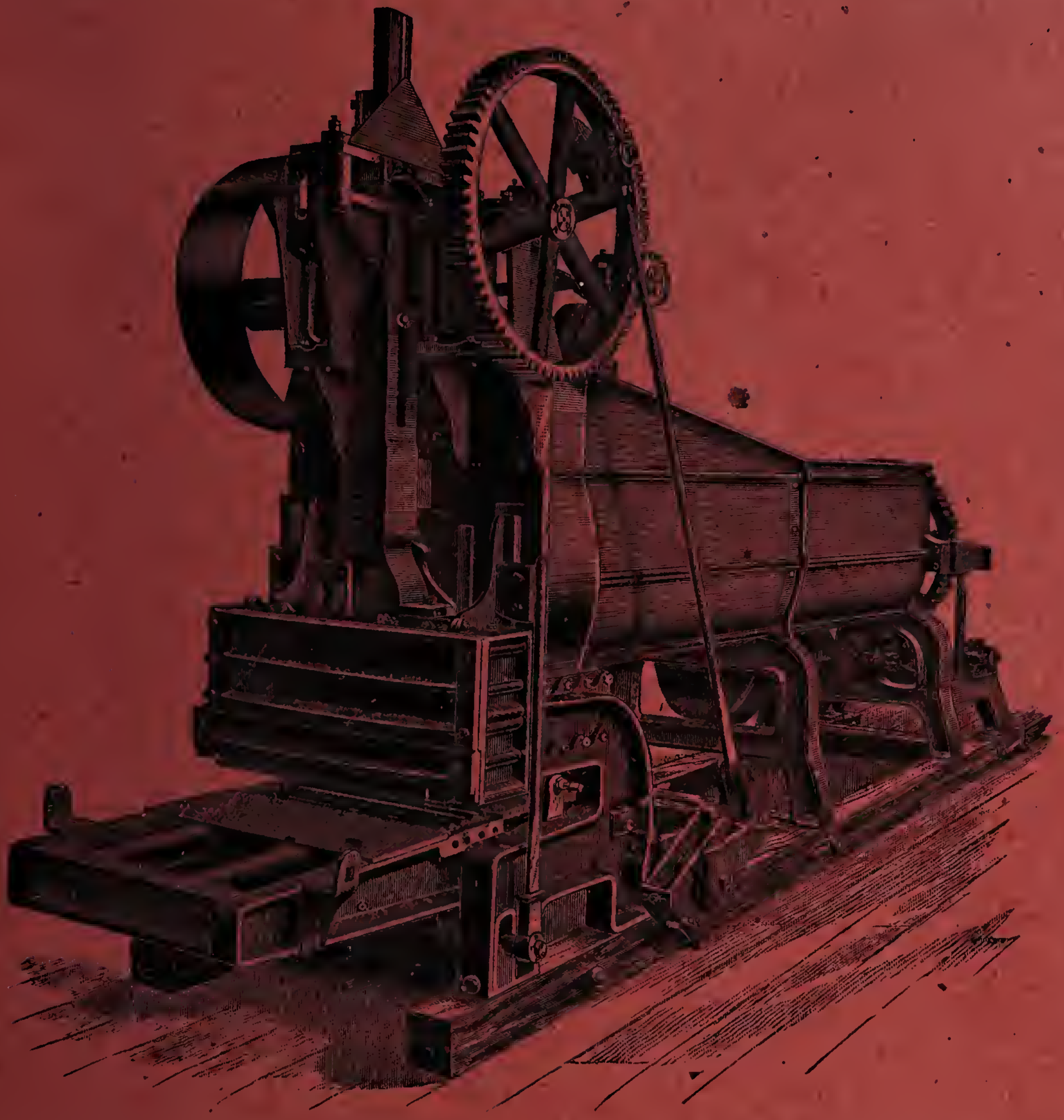
WARREN J, LYNCH,
Gen. Pass. and Ticket Agent,

W. P. DEPPE,
Asst. G. P. and T. A.

CINCINNATI, OHIO.

THE POTTS Horizontal Stock Brick Machine.

THE LEADING MACHINE OF AMERICA.



More Machines Sold This Past Season, Than In Any Two Former Years.

What We Claim: It is the Largest, Heaviest and Best Constructed. It has Double the Tempering Capacity of any Machine made, It will work the clays as stiff as it is possible to slip it from the moulds or strike the moulds, at the same time fill a six-brick mould perfectly with brick which will have CLEAN, SHARP CORNERS, SMOOTH SURFACES, and are STRAIGHT and SQUARE when burned.

All Shafts are made of the best grade of STEEL. STEEL GEAR—All surface joints planed, insuring good solid bearings.

There is no one to dispute, and prove his claim, that this is not the best Machine on the market today.

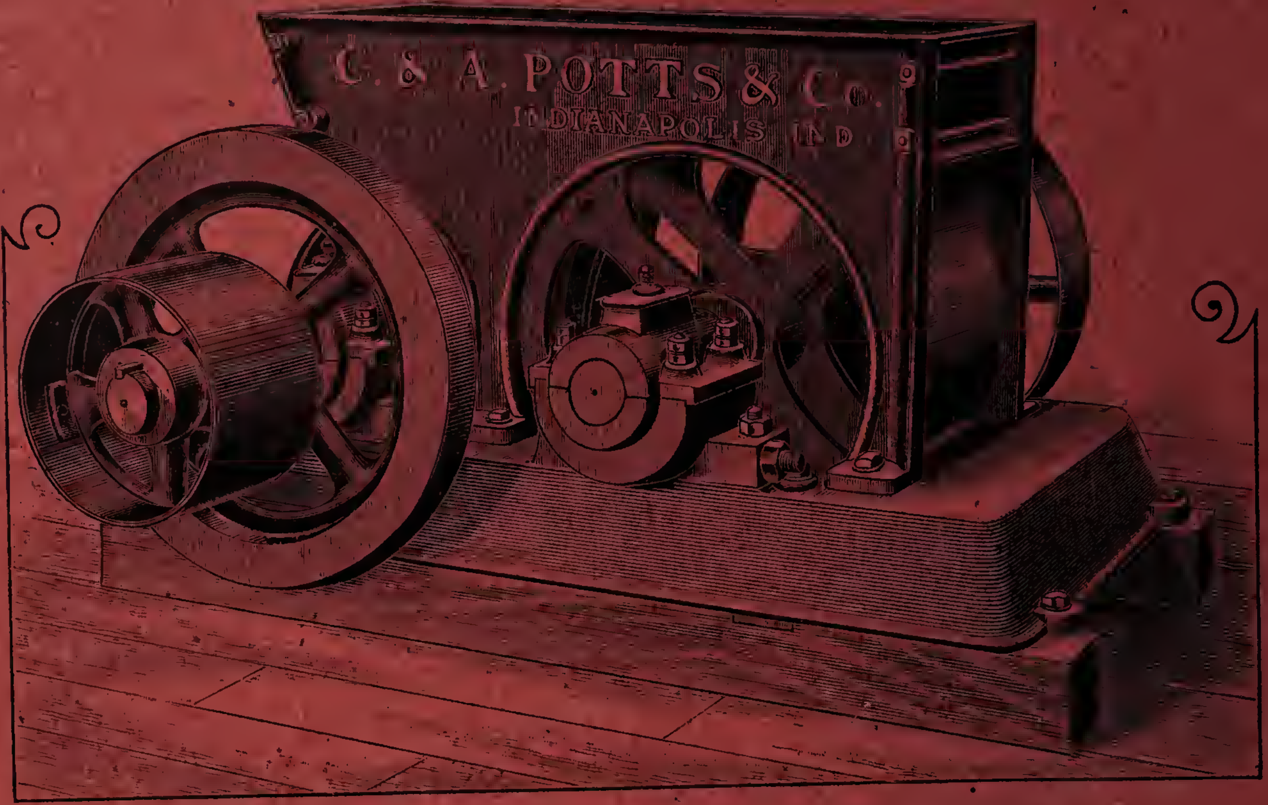
We guarantee all we claim with a guarantee which is good, no verbal promises.

Write for Prices and Terms.

C. & A. POTTS & CO., - Indianapolis, Ind.

Potts Disintegrators

Are used in all parts of the United States and Europe. They are acknowledged by the trade in general to be the only Reliable Machine ever made for the work.



(Patented.) **Style "P"** Four Sizes, Capacity 20 to 150 M Brick per day.

It grinds any kind of clay. Does not Choke or Clog from wet, sticky or hard, dry clays. Grinds the clay, leaving it in a loose, open condition so it will take water readily, and can be thoroughly tempered.

These Disintegrators grind the small stone, and separate the large ones.

There is no piece of machinery made which will make a greater improvement in the quality of your Brick or Tile.

Remember that a good thing, and one in general demand, soon has competitors, so with the Potts Disintegrator, which is the only machine made having ADJUSTABLE SECURED STEEL CUTTING BARS, all other Disintegrators have the lugs, or bars cast to the cutting roll (an underhand way competitors have taken to avoid our patents) these cast bars wear off in a week or two, with no way to replace them, only by purchasing a new roll. When some agent is trying to sell you one of these inferior machines, his only recommendation is that it is cheaper than the Potts.

Stop, Then, and figure what three new rolls for one of these machines will cost per year. You will purchase a Potts Disintegrator we know. THEY ARE THE BEST.

C. & A. POTTS & CO.,
Indianapolis, Ind.

Mention the CLAY-WORKER

Potts Mould Sanders.

(Patented February 5, 1889.) Mould Sander, Style "A."

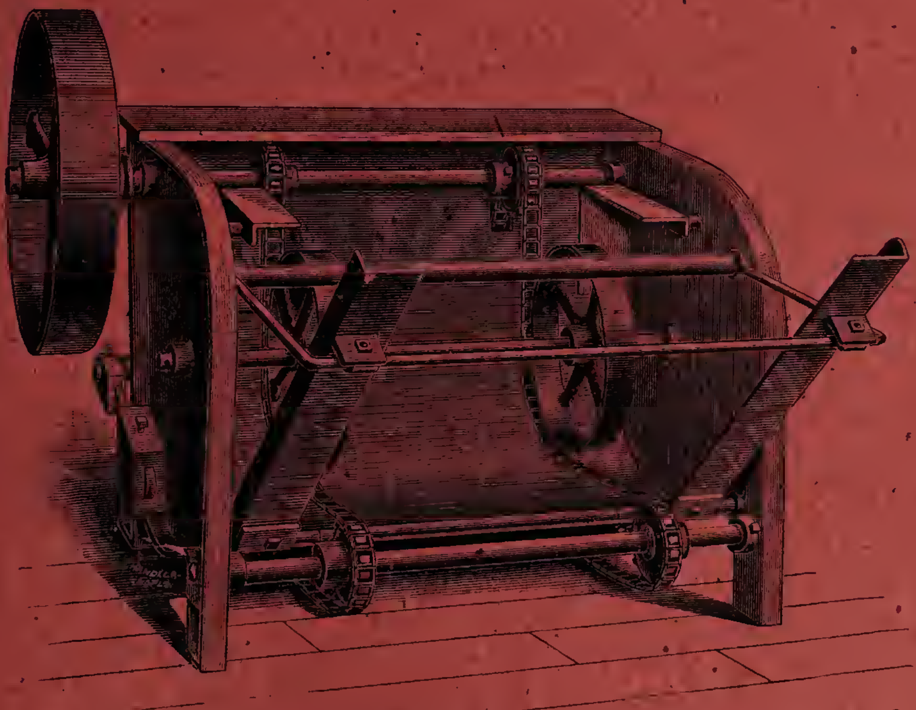
STYLE "A"

IN WHICH a Rubber Belt carries the Moulds through the Sand. WE GUARANTEE these belts to run from three to five years, in all this time you have not lost one minutes time or spent one cent for repairs. This is the best and most satisfactory Mould Sander made.

A good Mould Sander is a paying investment, the work is done by a boy better
an it can be done by hand, it never STRIKES or gets DRUNK, does not waste or spill
e sand, no unusual WEAR on Moulds. In fact after once being installed on the yard
s a joy forever.

STYLE "C"

F YOU want a good, cheap mamachine, here it is. It sands the Moulds better than can be done by nd Has no wearing parts, excepting NK CHAINS and SPROCKET WHEELS, re easily and cheaply replaced. It well built, strong and serviceable ma- ne. Don't fail to write for prices.



Mould Sander, Style "C."

C. & A. POTTS & CO.,

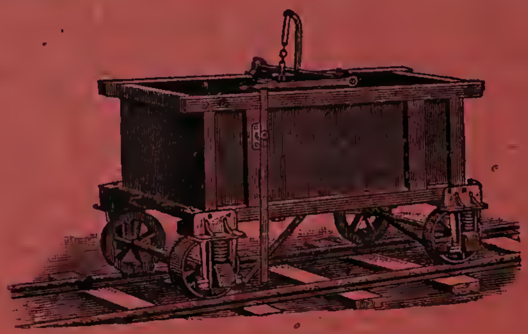
the CLAY-WORKER

Indianapolis, Ind.

Don't Put Off

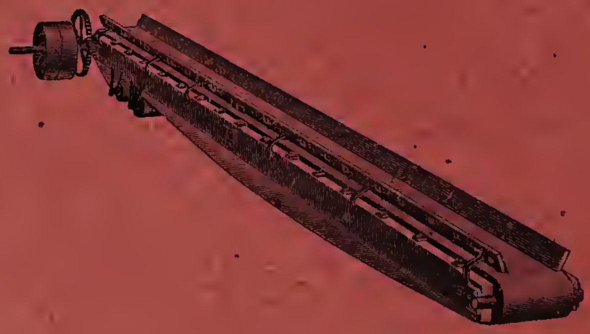
The Purchasing of Supplies, until
you are ready to use Them

Now is the Time to Purchase.



Clay Cars.

Bottom, Side and End Dump. Wheels thoroughly chilled. Steel Axles. Self oiling boxes. Oak Frames well rodded.



Clay Elevators.

Any length or width desired, well made of good material.

Trucks and Barrows.

Any style Truck you want, one or two wheels and springs as desired. Brick Barrows for every purpose, with or without springs. Trucks and Barrows made from thoroughly seasoned Oak or Ash, well and strongly made.

Winding Drums.

Made either Spur or Bevel Gear to suit any location.

Brick Moulds.

Made of all selected Cherry and bound with extra heavy steel, mortised and tenoned joints. They have no equal.

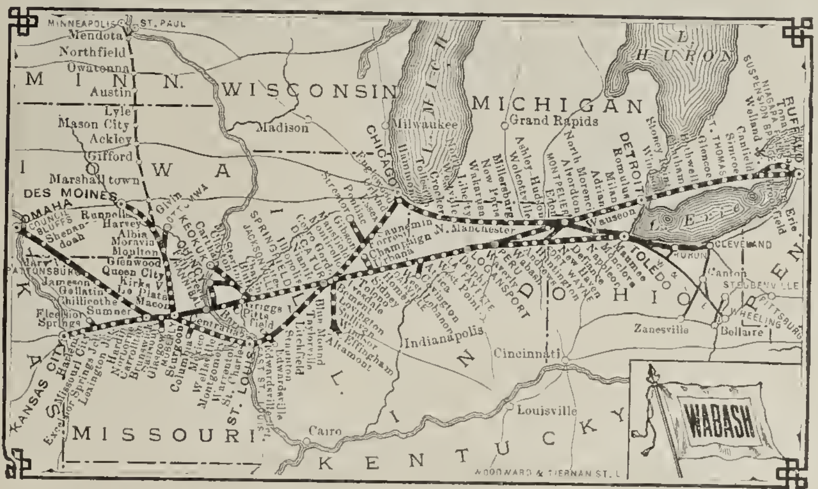
WE ARE the largest manufacturers of Brickyard Supplies in the United States, making everything used on the Brickyard. Our prices are such we know you will wonder how we do it. Don't fail to write.

C. & A. POTTS & CO.,
Indianapolis, Ind.

The...

WABASH

Is the Official Route to the N. B. M. A. meeting at Cleveland in February 1902.



A glance at the Map will show that the **Wabash** is the direct route to Cleveland from Kansas City, St. Louis, Chicago, Omaha and all points West. Fast schedules and elegant through service. The high standard of both Cuisine and Service maintained on the **Wabash** dining cars is well known and acknowledged. See that your tickets read via the **Wabash**. Delegates from the far West may go either via St. Louis or Chicago at same rate.

◆ ◆ ◆

J. RAMSEY, Jr.,
President.

H. V. P. TAYLOR,
Asst. Gen. Pass. and Ticket Agent.

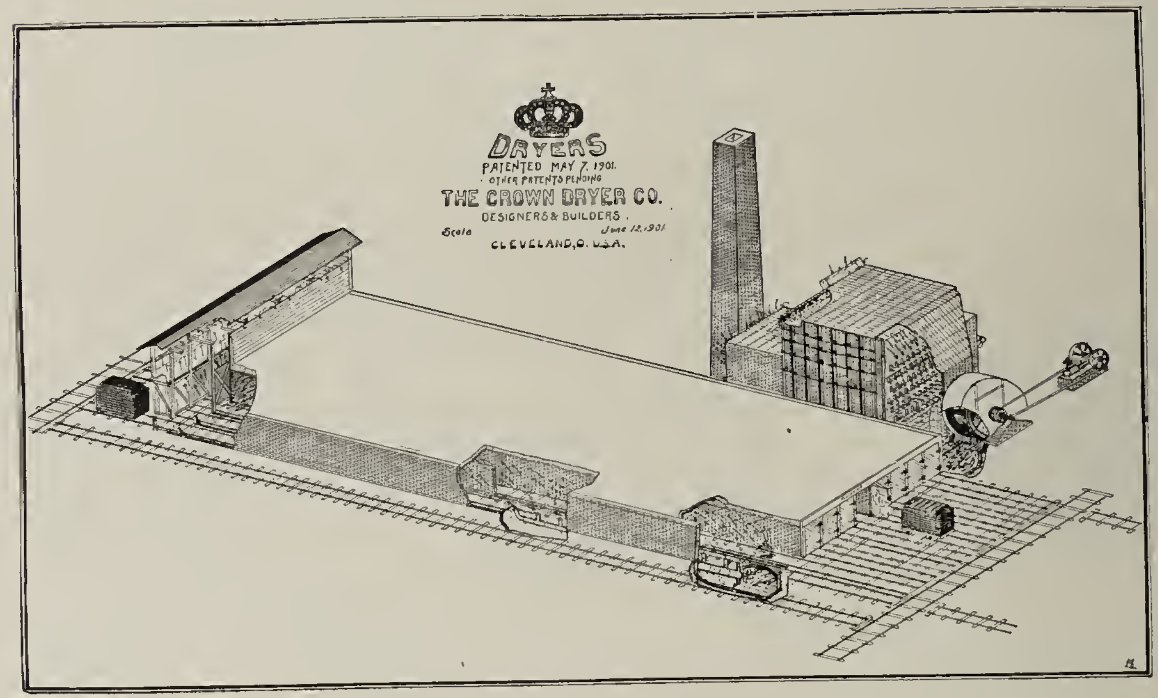
C. S. CRANE,
Gen. Pass. and Ticket Agent.

ST. LOUIS, MO.

WHEN YOU COME TO THE

Cleveland Convention,

CALL AND SEE US
At 810 NEW ENGLAND BUILDING, and we WILL interest you in the MOST ECONONMICAL way of DRYING BRICK.



This illustrates our System, and if you adopt it

Your COAL BILL will be LESS,
Your LABOR bill WILL be LESS,
Your REPAIR BILL will be LESS,
Your PROFITS will be GREATER,
Your OUTPUT will be GREATER,
Your SATISFACTION will be GREATER.

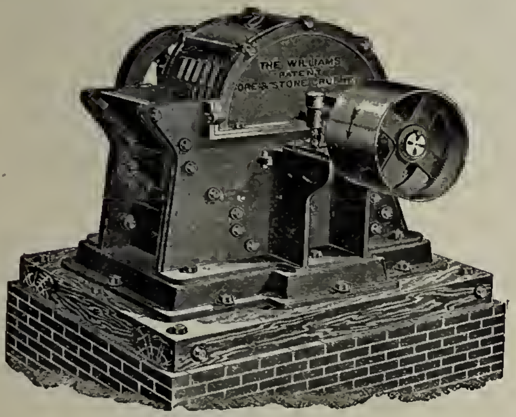
THE CROWN DRYER CO.,

810 New England Building CLEVELAND, O.

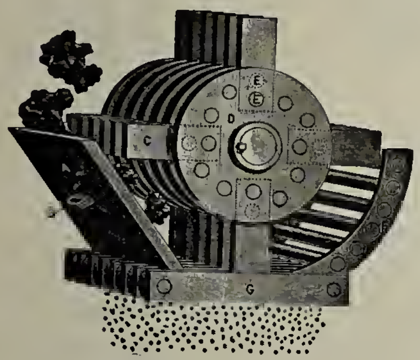
Mention The Clay-Worker.

The Williams Patent Crusher and Pulverizer Co.

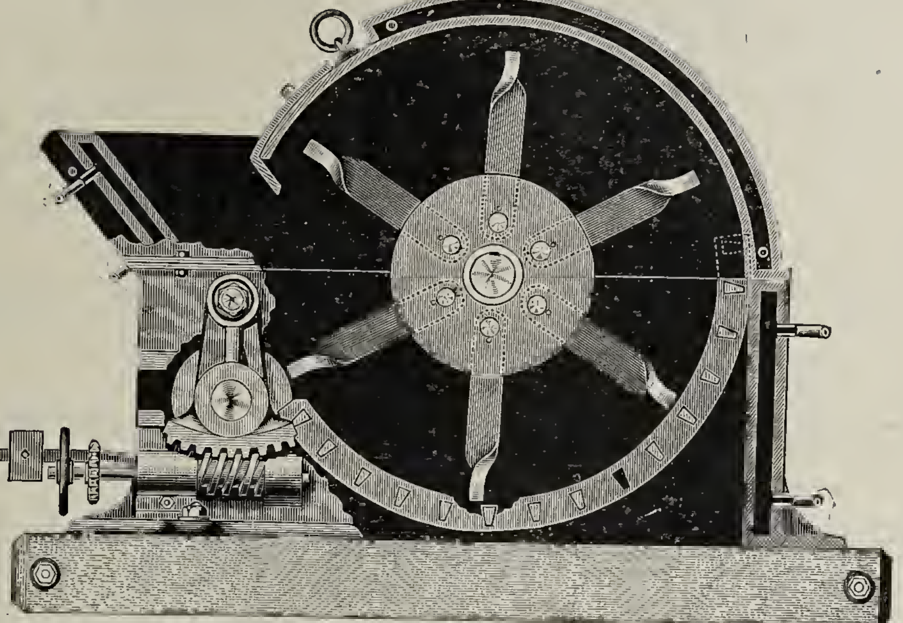
St. Louis, Mo., U. S. A.



SHALE CRUSHER ahead of a Pan. 5 Sizes.

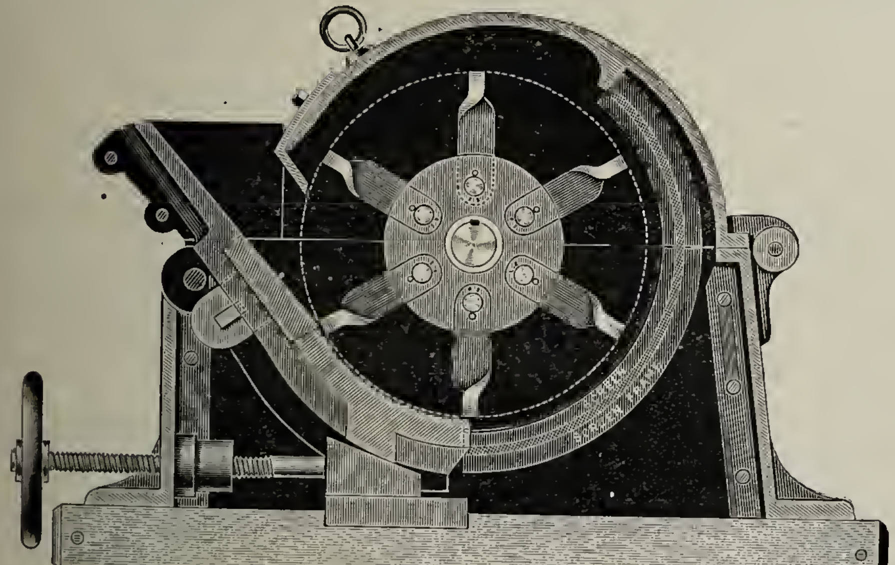


Interior of Same.

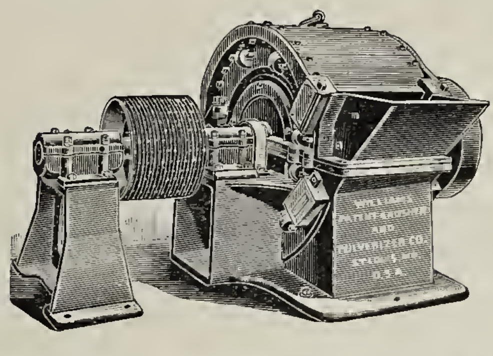


WET and DAMP CLAY DISINTEGRATOR, from the Bank. Five Sizes.

WE NEVER FOLLOW BUT ALWAYS LEAD. Our Steam Screen leads them all. We guarantee to work satisfactorily any clay that will make a Brick, wet or dry, with less cost than any other machine on Earth.



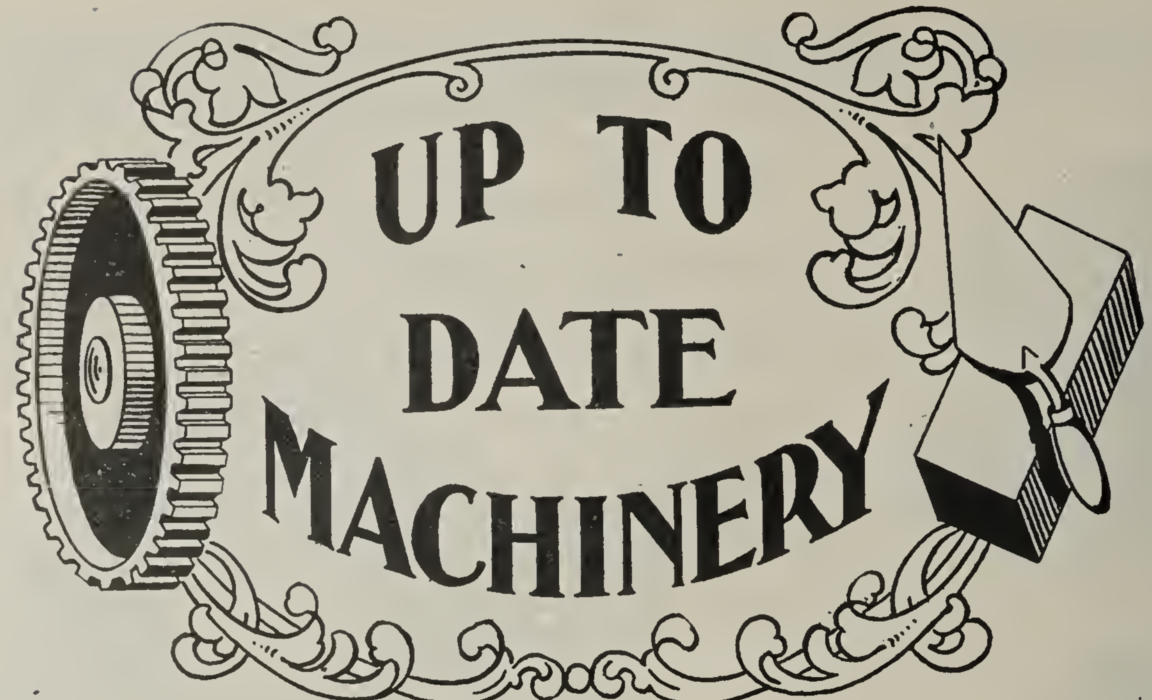
TAILINGS GRINDER (which finishes without additional Screening). Five Sizes.



SHALE and CLAY PULVERIZER. Five Sizes.

Branch Offices:

NEW YORK OFFICE: Singer Building.
WEST VIRGINIA OFFICE: Bramwell.
PHILADELPHIA OFFICE: Stephen Girard Bldg.
LOUISVILLE OFFICE: 1301 West Main Street.
CHICAGO OFFICE, 741 Temple Court Building.
SAN FRANCISCO: Partridge Building.



Modern Brick Plants

Call for Modern Machinery. Old Time Plants should be modernized with Up-to-Date Machinery and methods **Improvement** is the order of the age. All machines go out of date soon enough, without buying a back number to begin with.

Dry Press Machinery.

To have been first in any line indicates simply Age. To **become** first indicates Merit Our Berg Press is the youngest of the Dry Press family—but it went straight to the front and is still there. No machine can be too good for a Dry Press: The Berg is the highest grade machine built to-day.

Stiff Clay Machinery.

Our **Wonder Machine** succeeds where others fail; works clays that others cannot; overcomes cracking, destroys lamination, turns loss into gain; hence its name.

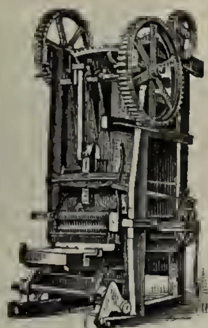
Soft Clay Machinery.

Horizontal Combination Machine for working clay direct from bank **Upright Machine** for use with pug mill or soak-pits. **Improved Horse Power Machine** for small yards. Latest designs and all improvements.

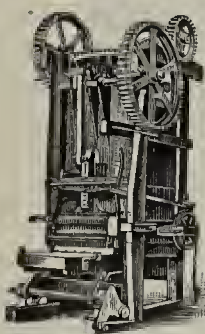
Send for **Up=to=Date Catalogue** of Machinery and Appliances.

Chicago Brick Machinery Co.,

225 Dearborn Street, CHICAGO, ILLINOIS,



EVERYTHING



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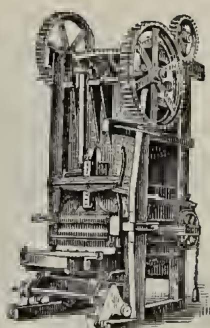
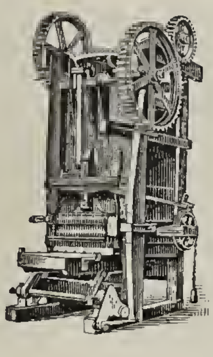


BRICKMAKER



NEEDS

THE HENRY MARTIN BRICK MACHINE MFG. CO., Lancaster, Pa.

MANUFACTURERS OF

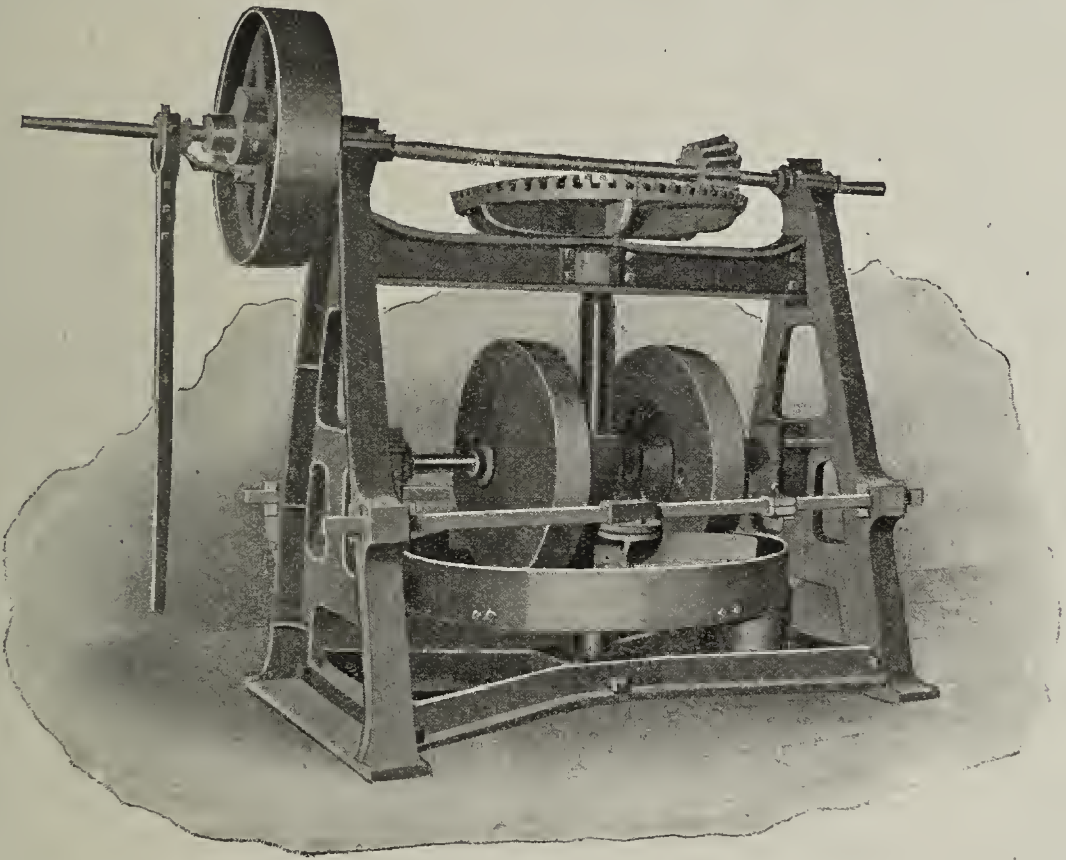
Soft Mud, Sand Faced, Wire Cut and Dry Press

BRICK MACHINERY.

◆ ◆

Pug Mills.
Granulators.
Disintegrators.
Stone Crushers.
Elevators.
Hoisting Drums.
Clay Cars.
Cable.
Grog Mills.
Cutting Tables.
Represses, Steam, Hand.
Sanders.
Turn Tables.
Etc, etc.

◆ ◆



DRY AND WET PANS. 5, 7 and 9 foot.

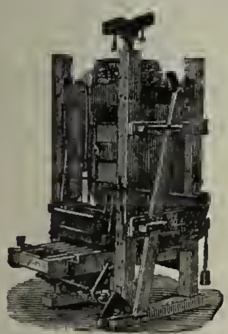
◆ ◆

Sand Dryers.
Mould Washers.
Clay Screens.
Sand Grinders.
Brick Moulds.
Barrows.
Trucks.
Dump Carts.
Dryer Cars.
Kiln Castings.
Engines.
Boilers.
Belting.
Pulleys.
Etc., etc.

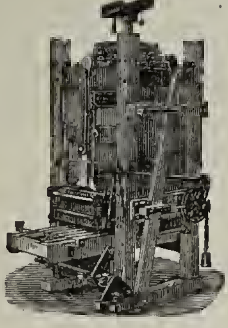
◆ ◆

We have facilities for carefully testing samples of clay and offer our services to any one contemplating embarking in the brick business.

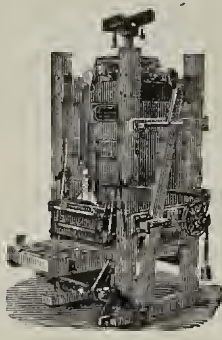
Every outfit shipped from our works is first fully erected and tested and we guarantee the same in every particular.



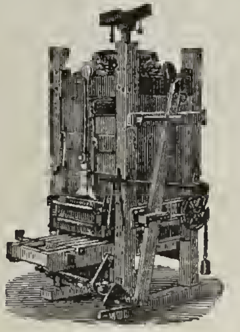
HAVE



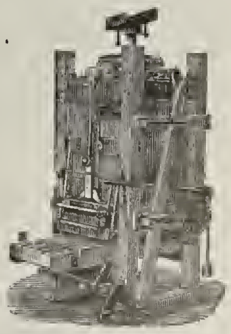
YOU



OUR



CATALOG



The

Eagle Repress.

◆ ◆ ◆

The Peer of Presses.

◆ ◆ ◆

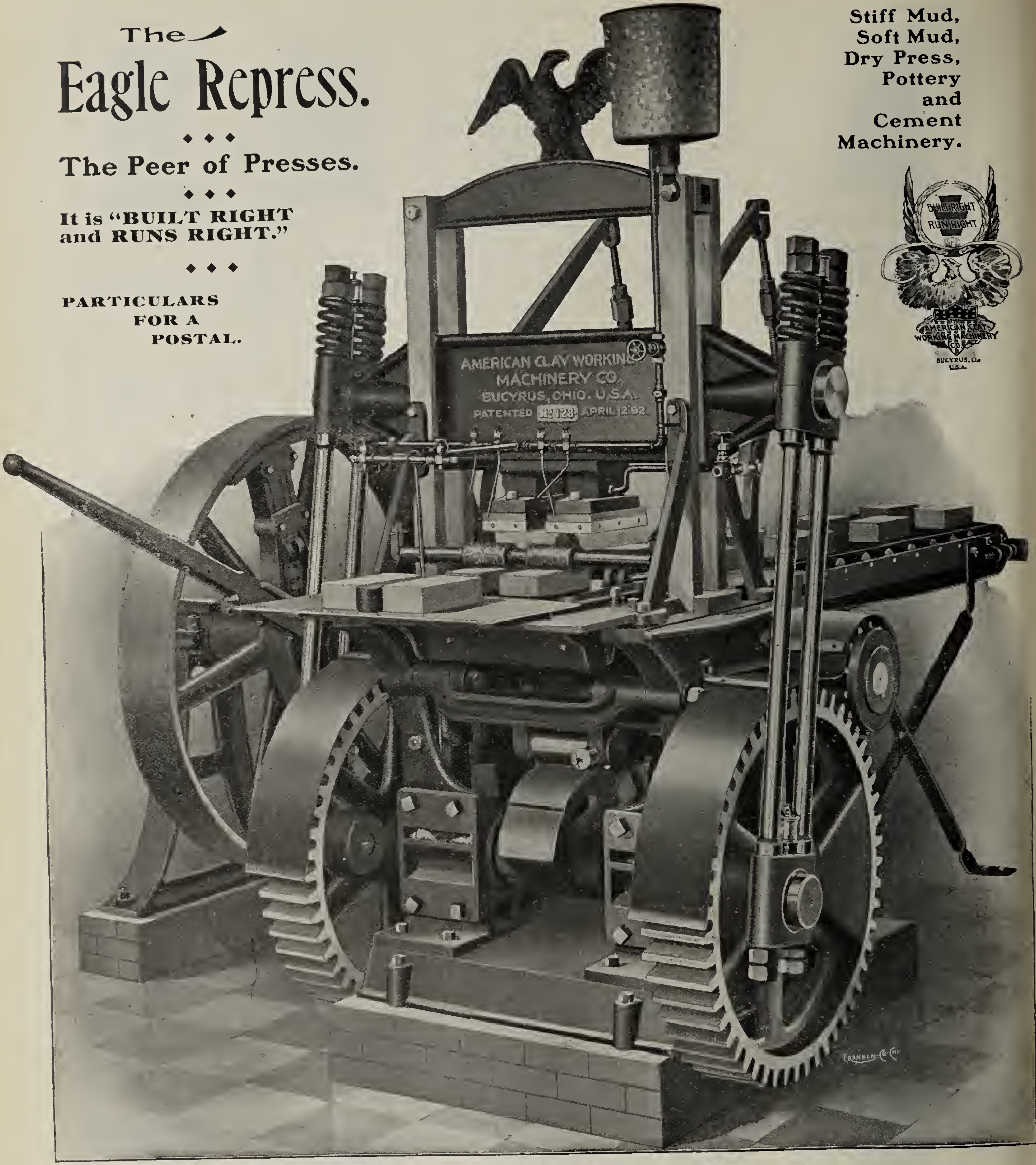
It is "BUILT RIGHT and RUNS RIGHT."

◆ ◆ ◆

PARTICULARS
FOR A
POSTAL.

**Stiff Mud,
Soft Mud,
Dry Press,
Pottery
and
Cement
Machinery.**

BUILT RIGHT
RUN RIGHT
AMERICAN CLAY WORKING MACHINERY CO.
BUCYRUS, O.
U.S.A.



The American Clay-Working Machinery Company,

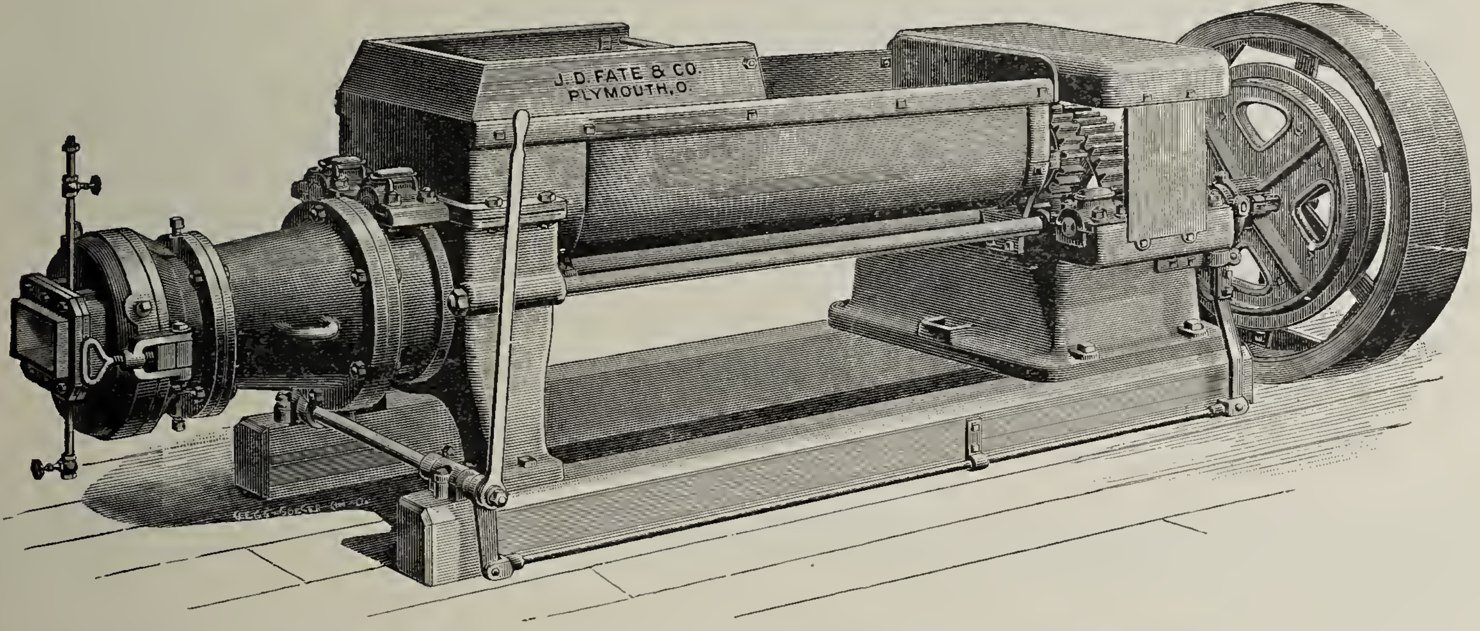
BUCYRUS, OHIO, U. S. A.

NEW YORK OFFICE:
39 and 41 Cortlandt St.,
Rooms 101 to 106.

See Ad. on Page 12.

THEY Knew a Good Thing When They Saw It.

The largest Enameled Brick Plant and the largest Roofing Tile Co., in the United States each wanted a new machine, one that would thoroughly pug and prepare their clay. They each sent a representative to visit the different Brick Machine Works and examine their Machinery and after seeing them all, decided that our **"Hummer"** Combined Machine had more and better pugging capacity and was altogether the best Combined Machine on the market. They are each now using these Machines


J. D. FATE & CO.
PLYMOUTH, O.

The "HUMMER" Combined Pug Mill, Brick and Tile Machine.

and are pleased with their selection. The Roofing Tile Co. has also recently put in a "Premier," or large size "Hummer."

If this machine is a good one for these people it will be for you.

A Postal card will bring you our Catalog and full description of these Machines and also the other good Machinery we make.

Inquire about the **Bensing Automatic Cutters.**

J. D. FATE & COMPANY,

PLYMOUTH, Richland Co., OHIO.

Western Representative:--B. E. LADOW, 1107 Chamber of Commerce, Chicago, Ill.
Agent for Virginia and North Carolina, H. L. JACOBS, Suffolk, Va.

Steam Shovels

FOR BRICKYARDS.

Model "80," 3 1-2 Yard Machine.

During the month of January, 1901, we sold 26 shovels to Brickmakers. Railroad Companies and Contractors.

We have all sizes from the Model "98," a 6½ yard machine, down to the Model "20" and the Style "C," a ¾ yard machine. The Model "90," 4½ yard machine, and the Model "80," a 3½ yard machine, are sizes well adapted where large capacities are required and also for excavating hard material. Very many of the prominent brickmakers of the country are using these machines to their advantage and profit. Ask the users what they think of them.

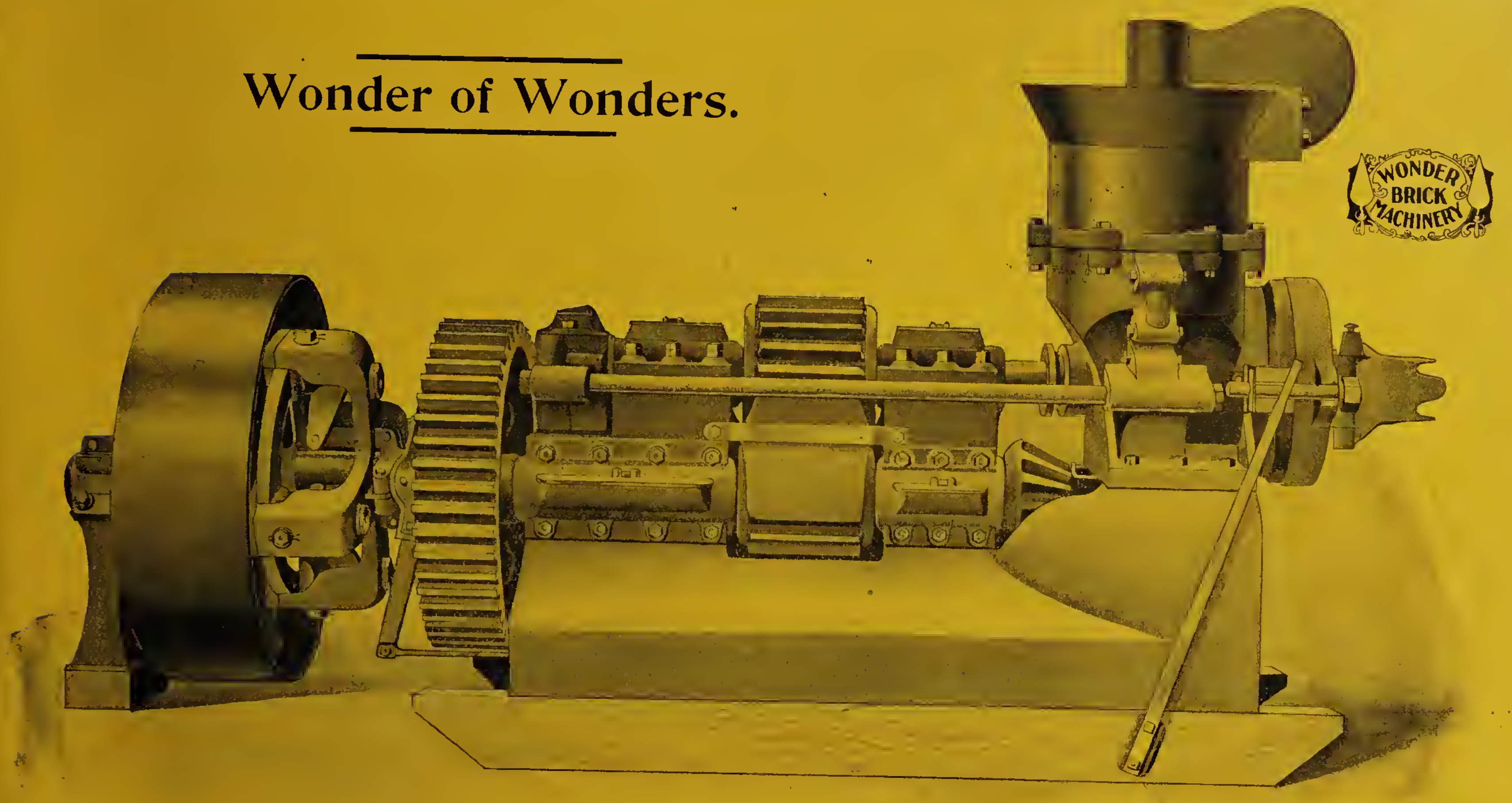
For Full Information Write

The Marion Steam Shovel Co.,

MARION, OHIO.

The Family of Wonders.

Wonder of Wonders.



WONDER BRICK MACHINERY

THE WONDER BRICK MACHINE, which has long since been conceded the best Stiff Mud machine on the market, stands to-day without a peer, in as much as it overcomes the objection to stiff mud brick: viz: lamination. We have no hesitancy in saying that the Wonder machine will work any clay that can be worked by a stiff mud machine and a great many clays that other stiff mud machines can not handle at all.

The Wonder will produce a brick that will stand the frost of any climate and not disintegrate, in as much as the lamination is entirely destroyed.

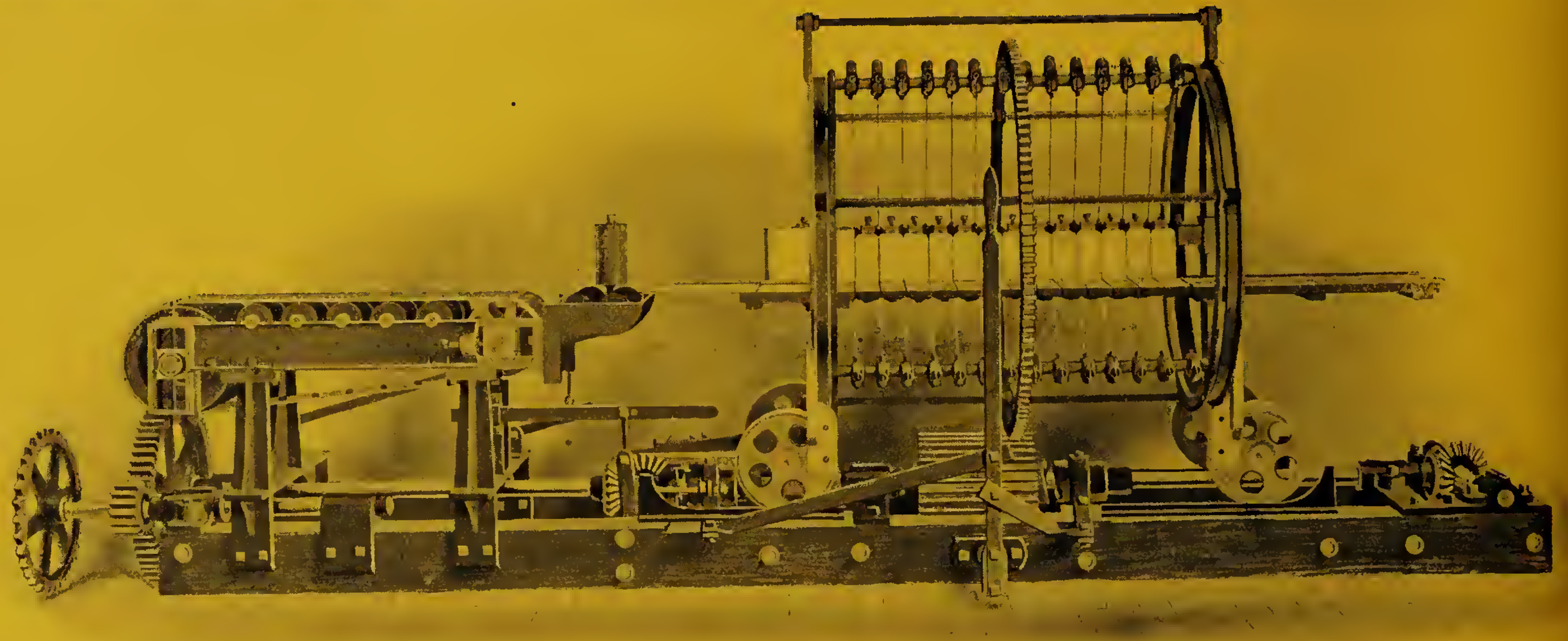
Lamination is the prominent subject before the brickmakers of the country to-day. Thousands of brick are made at an expenditure of thousands of dollars and when dried are laminated so badly that they are unfit for the market, thus entailing a heavy loss. This is obviated by the use of the Wonder in as much as it entirely destroys lamination and produces brick which can be split and shaped by the mason as readily as can hand made brick. However, the "Proof of the pudding is in chewing the string" and we would be pleased to refer you to some of the users of the **Wonder** machines that you may be convinced that we "Practice as we Preach."

The Wallace Mfg. Co.,

Mention THE CLAY-WORKER.

FRANKFORT, IND., U. S. A.

The Latest in the Family of Wonders.



Wonder Side-cut Brick Cutter.

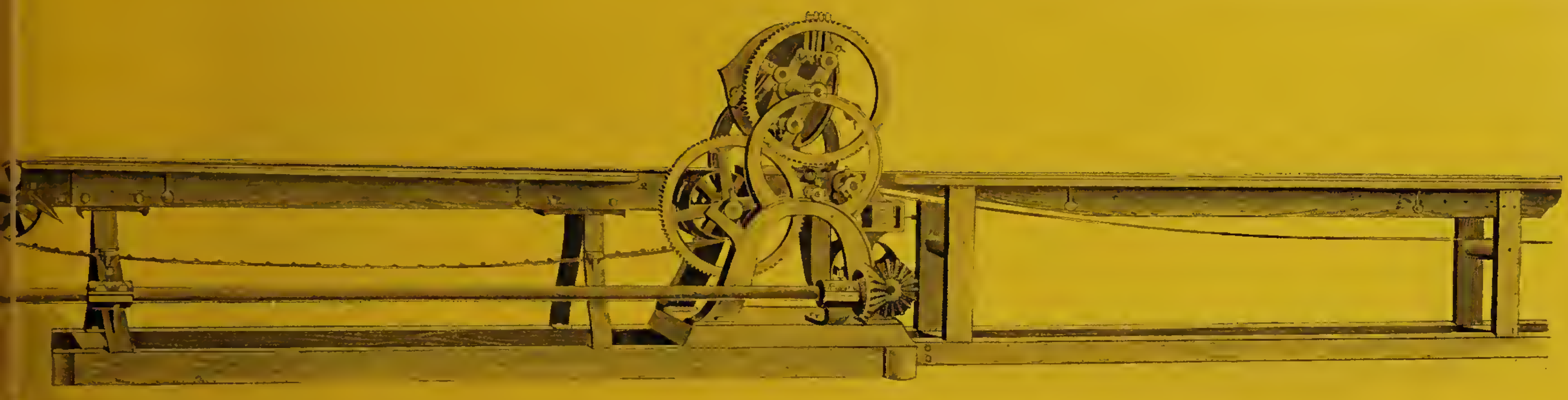
HAVE YOU SEEN our latest? It is a STAR and a WINNER. The Side Cut Cutter shown in the above cut alleviates the troubles of the brickmaker. It is by no means an unusual occurence when going on a brickyard to be confronted with the statement—"Yes, my machinery does fairly good work with the exception of my Cutter, but it seems that the Cutters are all so complicated that it necessitates the constant attention of an expert mechanic to operate them and keep them adjusted and even then they cut the brick crooked, break the corners and mar the brick so that they are hardly saleable." Realizing the annoyance of the brickmaker from the inferior cutters, we have gotten out a new Cutter which is simplicity itself. This Cutter can be used either as an Automatic, a Semi-Automatic or Hand Cutter and can be operated by a mere boy. There is so little machinery about it—no small devices to get out of alignment and all that is necessary for the boy to do is to throw the lever to and fro and replace wires when broken. The cutting devise on this Cutter is so arranged as to give a downward cut at all times, which produces a straight, smooth brick and prevents feathered edges and broken corners. This Cutter is no experiment, but is now in successful operation and we have no hesitancy in saying that the Wonder Cutter is without an equal for side cut brick. Sold on its merits only.

THE WALLACE

SOUTHERN AGENTS:
Atlanta Brick Machinery Co.,
403 Prudential Building, ATLANTA, GA.

Frankfort,

Weighed in the Balance.



Rotating Automatic End-cut Cutter.

WE ARE NOT only prepared to furnish you machinery for making Side Cut brick, but End Cut as well.

The Cutter as shown above illustrates our Rotating Automatic End-Cut Cutter. This Cutter can be made either one, two or three stream and will work in connection with any make of Auger machine.

This machine has been on the market for several years and we have never had an unfavorable report from it. We have them in successful operation from San Francisco to Maine.

Our machines are sold strictly on their merits and we would be indeed pleased to have you investigate our machinery for we feel that an investigation will lead to their adoption.

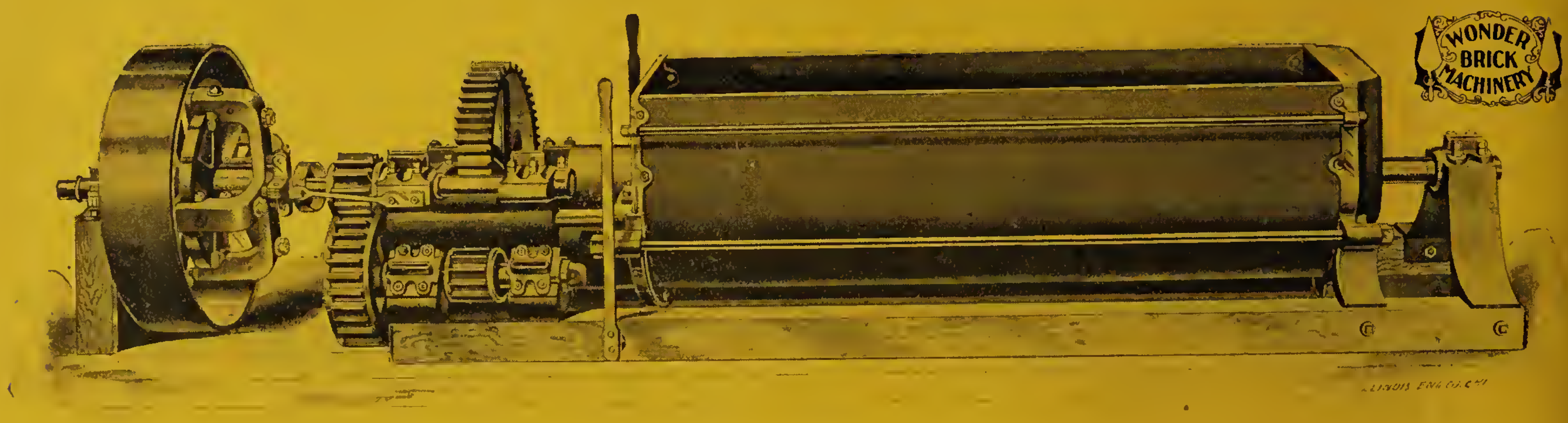
"Our choices are our destinies"—choose well.

MANUFACTURING CO.,

Indiana.

WESTERN AGENTS:
Chicago Brick Machinery Co.,
225 Dearborn Street, CHICAGO, ILL.

OUR FAMILY IS COMPLETE.



No. 2 Open Top Pug Mill.

IT IS NECESSARY in making brick or any other clay product, to have the moisture evenly distributed through the clay and to have the clay thoroughly mixed and the successful mode of doing this is by the use of a Pug Mill. The Open Top Pug Mill is generally preferred, in as much as it enables the operator to do his work better, in as much as the clay is at all times under his observation, however, for some particular purposes, such as for use in Potteries, Glass Factories, etc., the closed top mills are preferable, and for this reason we make several different styles of Pug Mills suitable for any and all clays.

Our Pug Mills range in capacity from 25,000 to 100,000 brick per day. We can furnish you any size or style Pug Mill that you desire, in fact, we can furnish you anything you want in the way of Brickyard supplies, in as much as we manufacture a complete line of Stiff Mud Brick Machinery.

If in the market write us and get our catalogue, which illustrates the line of machinery we manufacture. We are in a position to supply your wants promptly and will take great pleasure in doing so. Correspondence solicited.

The Wallace Mfg. Co.,

FRANKFORT, IND., U. S. A.

SOUTHERN AGENTS:
Atlanta Brick Machinery Co.,
403 Prudential Building, ATLANTA, GA.

WESTERN AGENTS:
Chicago Brick Machinery Co.,
225 Dearborn Street, CHICAGO, ILL.

Handle Your Clay With One Man and

The Thew Steam Shovel.

ESPECIALLY ADAPTED for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

Only One Operator Required.

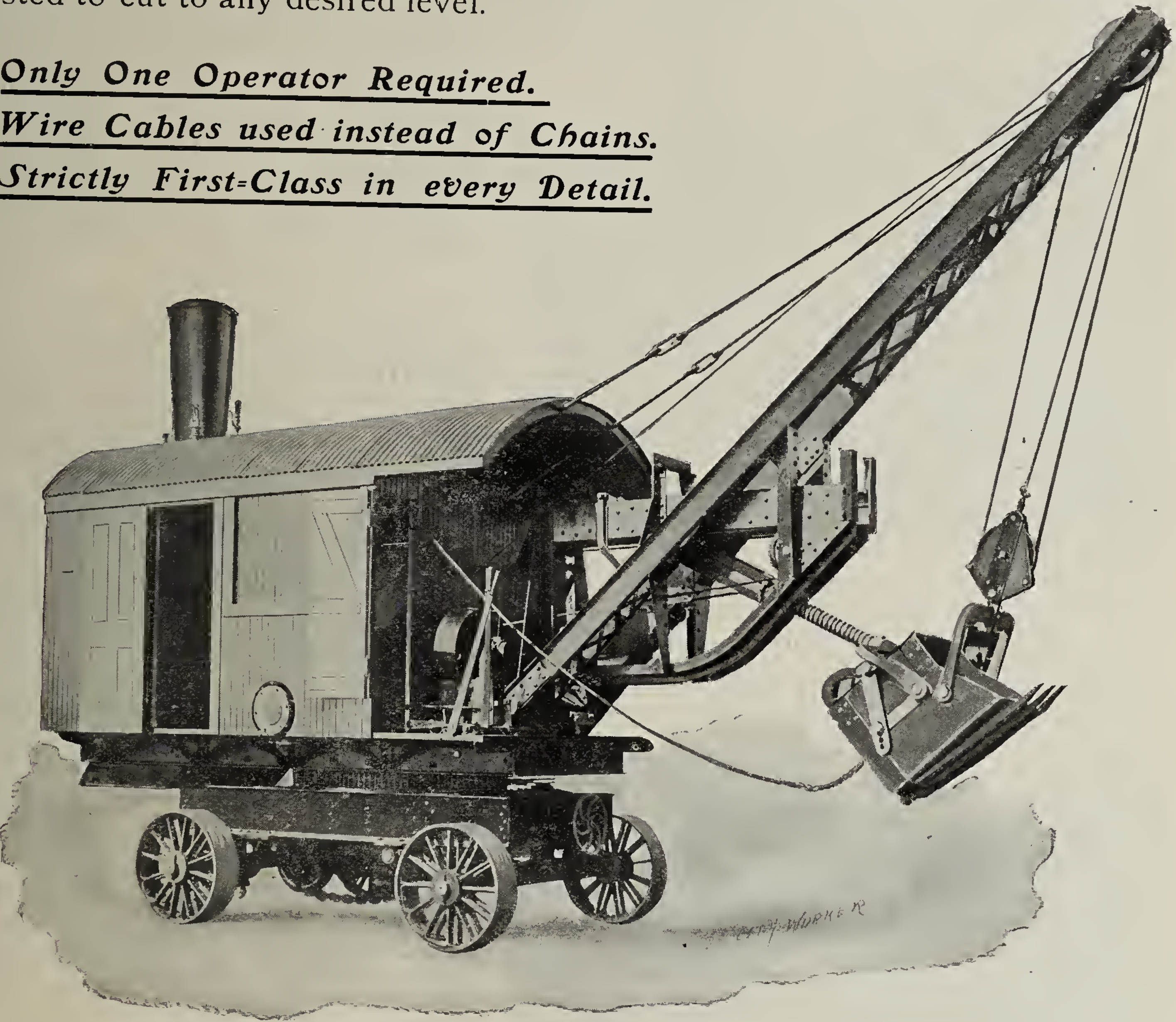
Wire Cables used instead of Chains.

Strictly First-Class in every Detail.

Made in All Sizes.

◆

Mounted on Car Wheels or Traction Wheels.



OUR IMPROVED TYPE No. 1 SHOVEL. Three-fourth Yard Dipper.

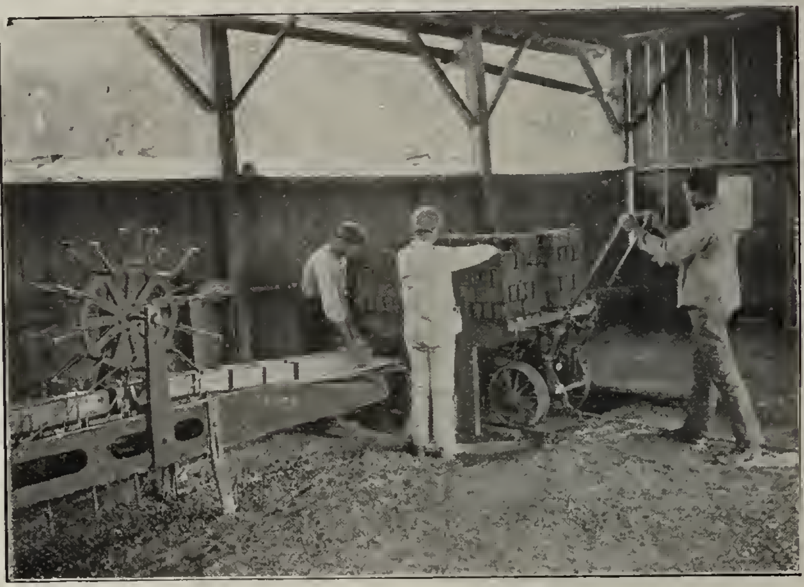
Visitors to Cleveland Convention Will be gladly welcomed at our works at Lorain, 25 miles west of Cleveland. Take Lorain Electric Cars and change to Lorain-Elyria Line. Our shovels can be seen in operation at Geo. Gynn's Brickyard, take Broadway car and change to Forest City Park. C. G. Barkwill's Brickyard, take Kinsman Street car to Dickerman St. Ore Docks of the C. and P. R. R. and of the N. Y. P. and O. R. R. in Cleveland. Blast Furnace Yard of the Lorain Steel Company at Lorain.

WRITE US FOR CATALOGUES OR INFORMATION.

The THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.

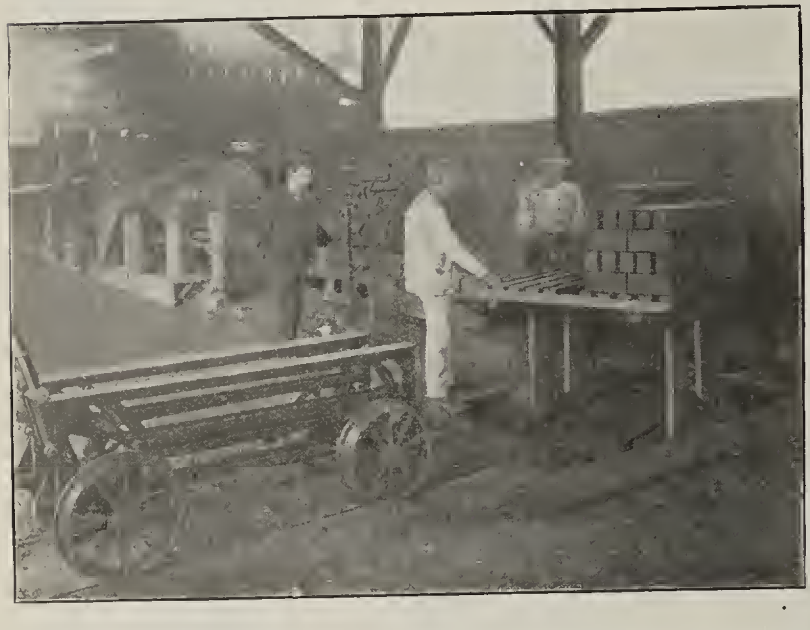
A PERFECT CAR SYSTEM

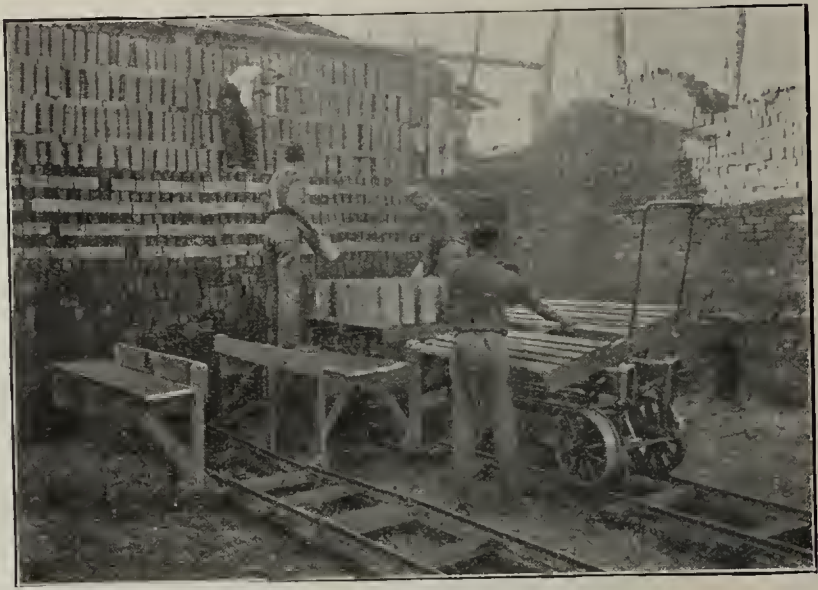
For Either Soft or Stiff Mud.



With only TWO CARS
One man will handle 40 M brick per day.

No Fan to Run. No Boiler to Steam.
No Pipes to Burst. No Fireman to Pay.
ø ø ø No Dryer. No Fuel.



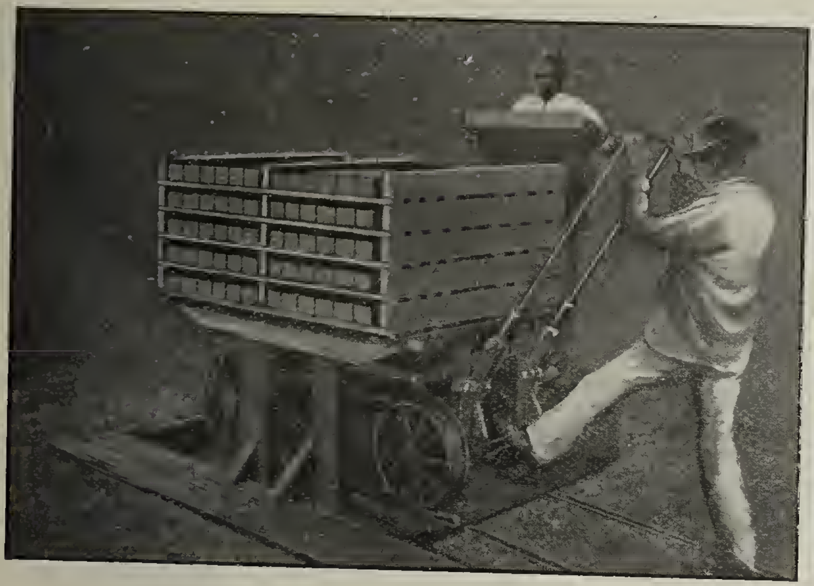


We Guarantee This to be the cheapest, best and only out-door car system ever offered the brick manufacturer. We guarantee to handle from the machine and put on the yard in good condition, from thirty to forty thousand green brick per day, with one man, and same amount to kiln. We guarantee our patent car and system to perform the work for which they are built, and all the workmanship and quality of material to be first class. Our Covers and Storm Curtains give absolute protection from rain and storms and also protects tender clays.

THIS SYSTEM consists of two elevating and lowering brick cars for a thirty to forty thousand capacity brick plant; these take the place of several hundred common cars. The car is made of channel steel, with movable deck, which is raised and lowered by a compound lever. From two to five hundred brick are taken from the machine and placed on a pallet, the lever lowered, raising pallet off the rests. The load is then on car, which is run on the yard to the rests along each track; the lever is again raised, thus lowering deck of car which places load on the rests.

ALEX A. SCOTT & CO.,

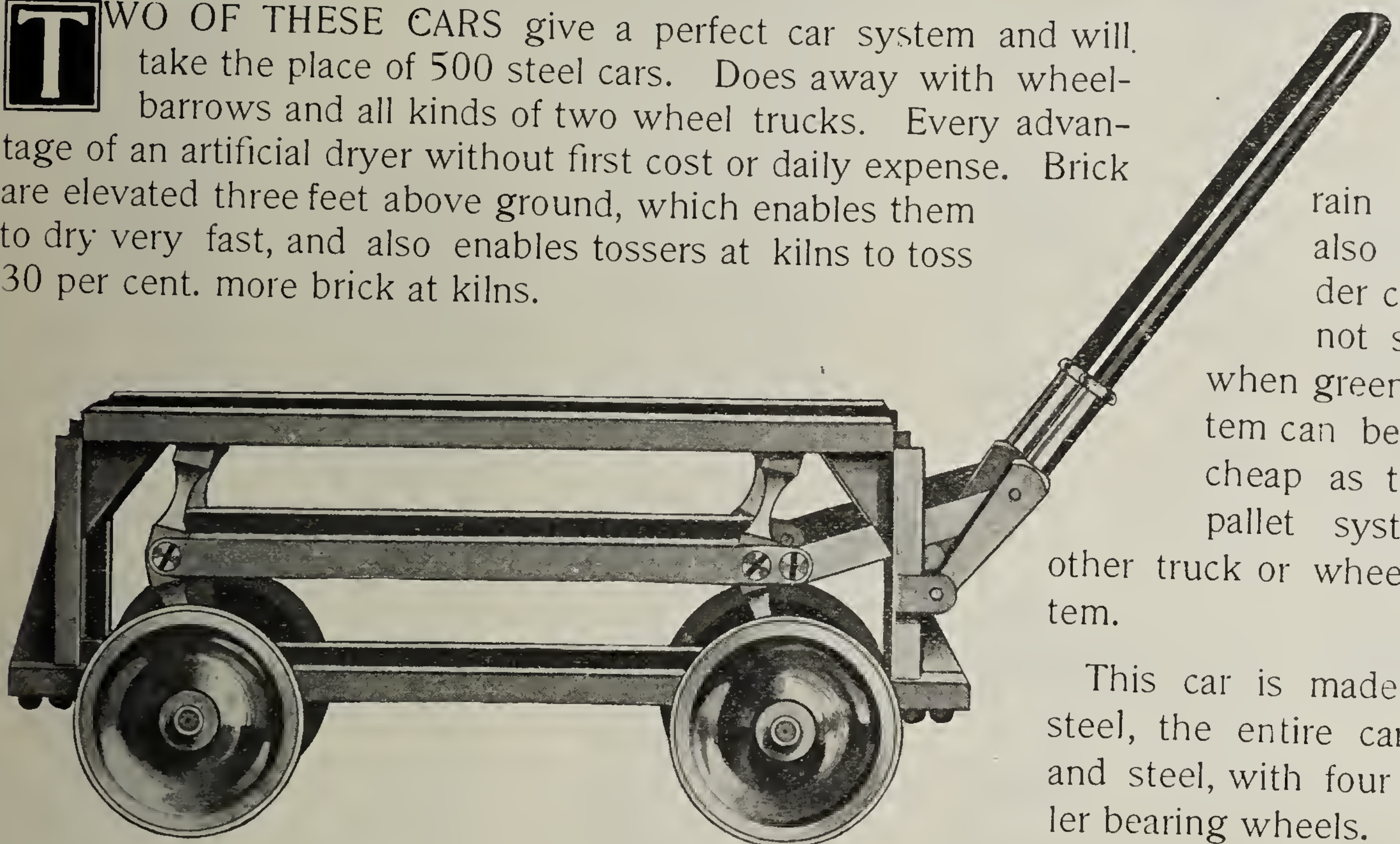
Write for Catalogue. **Knoxville, Tenn.**



Showing Manner of Handling Brick at Machine.

Showing Brick on Drying Racks.

TWO OF THESE CARS give a perfect car system and will take the place of 500 steel cars. Does away with wheelbarrows and all kinds of two wheel trucks. Every advantage of an artificial dryer without first cost or daily expense. Brick are elevated three feet above ground, which enables them to dry very fast, and also enables tossers at kilns to toss 30 per cent. more brick at kilns.



Our covers give absolute protection from rain and storms; also protects tender clays that will not stand the air when green. This system can be installed as cheap as the rack and pallet system or any other truck or wheelbarrow system.

This car is made of channel steel, the entire car is of iron and steel, with four 18-inch roller bearing wheels.

Soft Mud Process.

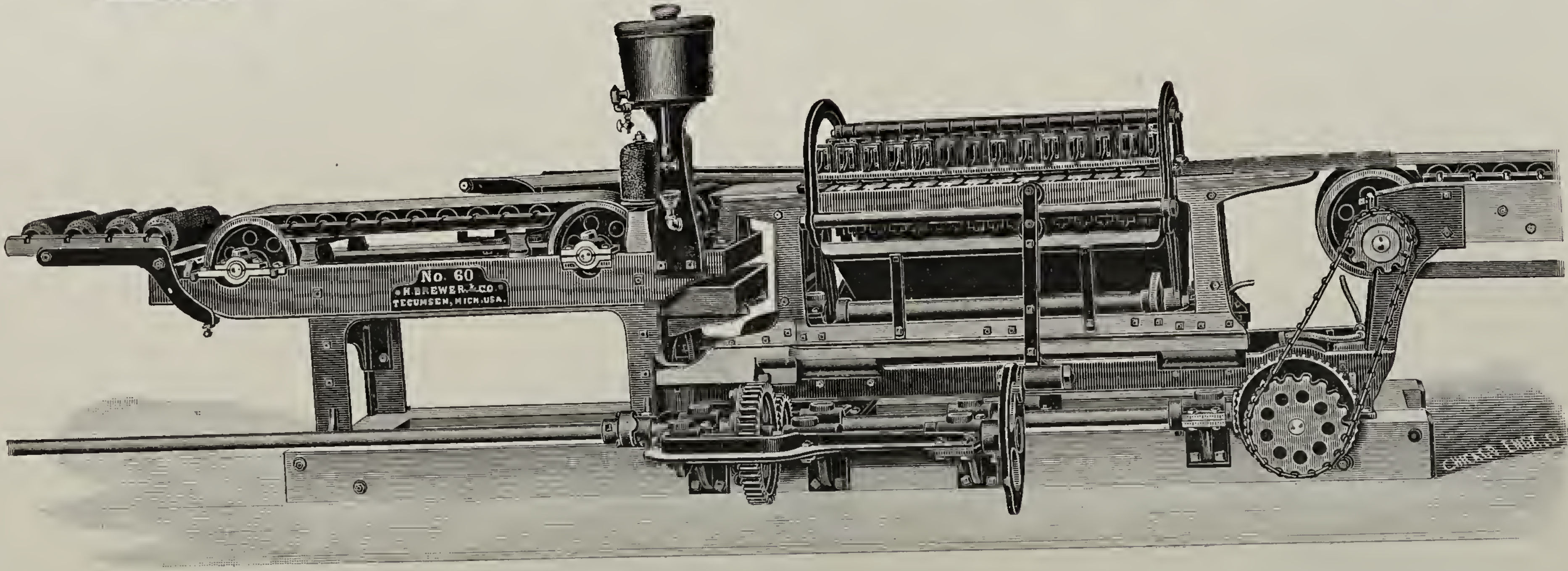
We handle both soft and stiff mud brick. These cuts shows one way of handling soft mud brick; we also use another system equally as good, using a frame, the pallets with green brick are slipped in this frame from machine, car run under, lever lowered lifting frame, pallets and brick; they are run out on yard and left on dry racks, from there to the kiln without handling brick or pallets until brick are tossed in kiln. All old pallets can be used as frame can be made to suit any pallets. We can save from $5 to $15 per day in labor, the amount saved will be according to capacity of yard, besides giving you a perfect car system. WRITE FOR CATALOGUE.

ALEX A. SCOTT & CO., Knoxville, Tenn.

THE BREWER

No. 60 Automatic

Brick Cutter.


No. 60
H. BREWER & CO.
TECUMSEH, MICH. USA.

The Best in the Land. The simplest in design. Faultless in construction. Perfect in operation and Lowest in Price.

Could Better Evidence be Offered.

Seattle, Wash., Oct. 9, 1901.
MESSRS. H. BREWER & CO., Tecumseh, Mich.

Gentlemen:—The No. 60 Automatic Brick Cutter was purchased from you last year partly as an experiment, as it was the first automatic cutter ever introduced in this section of the Pacific coast. After using it for over a year we take pleasure in testifying to its great value. It is conceded by all brick men who have seen it in operation, to be the most perfect brick cutting machine ever operated in this part of the country, and the longer we use it the greater is our satisfaction.

Yours truly, HARPER BRICK & POTTERY CO.
By F. C. Harper, Pres.

Darlington, S. C., Oct. 2, 1901.
H. BREWER & CO., Tecumseh, Mich.

Gentlemen:—We have been using one of your No. 60 Automatic Side Brick Cutters for two seasons. It is simple, works well, gives perfect satisfaction, is economical (the repairs have been less than $2.00 on each million), and we have found it to be one of the best investments we have ever made. We bought another last season which gives equal satisfaction, so that we are now running two of your No. 60 Automatic Side Cutters.

Yours truly, THE DARLINGTON BRICK CO.
By Bright Williamson.

Abbeville, S. C., Sept. 28, 1901.
MESSRS. H. BREWER & CO., Tecumseh, Mich.

Gentlemen:—The No. 60 Automatic Brick Cutter I bought from you this summer is giving entire satisfaction. I consider it perfect in every respect.

Yours truly, J. L. McMILLAN.

Mason City, Ia., Sept. 21, 1901.
MESSRS. H. BREWER & CO., Tecumseh, Mich.

Gentlemen:—We have used your No. 60 Automatic Brick Cutter the past year, making about twelve million brick, and we find it to be the most complete machine we ever saw. We also cut all sizes of hollow blocks on it as accurately as can be done by hand and as rapidly as they can be handled.

Yours truly, AMERICAN BRICK & TILE CO.,
Per C. L. Smith, Manager.

Mason City, Ia., Sept. 23, 1901.
MESSRS. H. BREWER & CO., Tecumseh, Mich.

Dear Sirs:—We are very well pleased with your No. 60 Automatic Brick Cutter and cheerfully commend it to any party wanting an automatic, side cut, brick cutter.

Respectfully, MASON CITY BRICK & TILE CO.,
O. T. Dennison, Pres.

Mason City, Ia., Sept. 23, 1901.
H. BREWER & CO., Tecumseh, Mich.

Gentlemen:—After using your No. 60 Automatic Brick Cutter a year and a half, we must say we have no fault to find with it. It is all right all the time.

Very truly yours, MASON CITY CLAY WORKS,
F. A. Stephenson, Pres.

Fremont, Ohio, Sept. 20, 1901.
MESSRS. H. BREWER & CO., Tecumseh, Mich.

Gentlemen:—The No. 60 Automatic Brick Cutter is a first-class machine, and will cut all the brick that can be taken away from it in good shape. Cutting the brick on a curve is a great feature in this machine. It is also a great machine for cutting cellar bottom and building blocks.

Respectfully, D. M. POTTER.

Grant Park, Ill., Sept. 20, 1901.
H. BREWER & CO., Tecumseh, Mich.

Gentlemen:—We take pleasure in recommending your No. 60 Automatic Brick Cutter to all brickmakers. Our machine is cutting from 60 to 80 M. brick per day, in a manner which is more than satisfactory to us. We should be pleased to have you refer to us at any time.

Yours very truly,
THE ALONZO CURTIS BRICK CO.,
By V. S. Curtis, Sec'y.

Greenwood, S. C., Sept. 23, 1901.
MESSRS. H. BREWER & CO., Tecumseh, Mich.

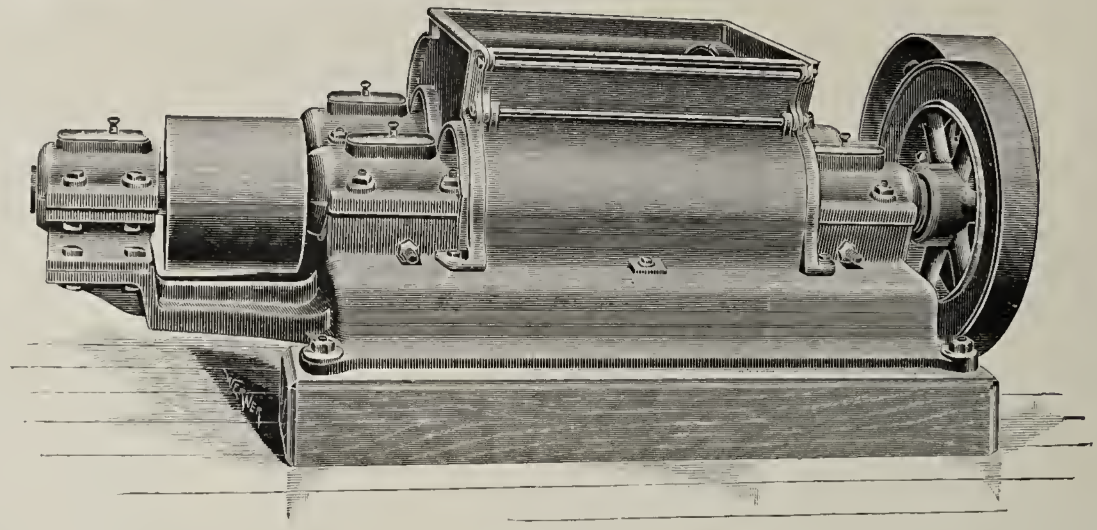
Gentlemen:—I have used your No. 60 Automatic Brick Cutter this season. Am well pleased. Brick are perfect and regular in size, with smooth edges.

Very respectfully, W. H. MAYS.

H. BREWER & CO., Tecumseh, Michigan.

We Manufacture

A full line of BRICK MACHINERY to equip an Up-to-Date Plant.

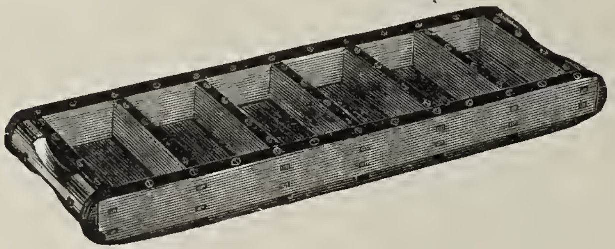


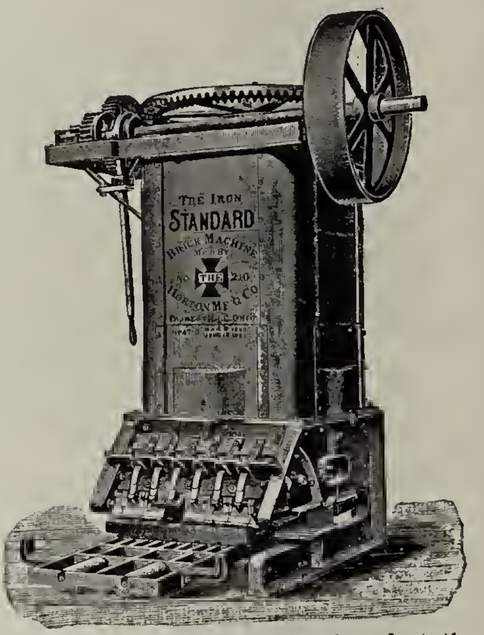
The above cut represents our No. 3 and No. 4 Disintegrators. Notice the heavy construction and out bearing box.

MOLDS.

Is one of our Specialties. Either Hand, Machine or Shapes. We have a shop full of Special Machinery for the Manufacture of these as well as Trucks of all kinds, Wheelbarrows. Dump Cars, and Carts. In fact everything used on a Brickyard.

Iron Standard Horse Power Brick Machine—The Leader of all Horse Power.





Standard Steam Power Brick Machine—Just the Machine for Medium Sized Yards.

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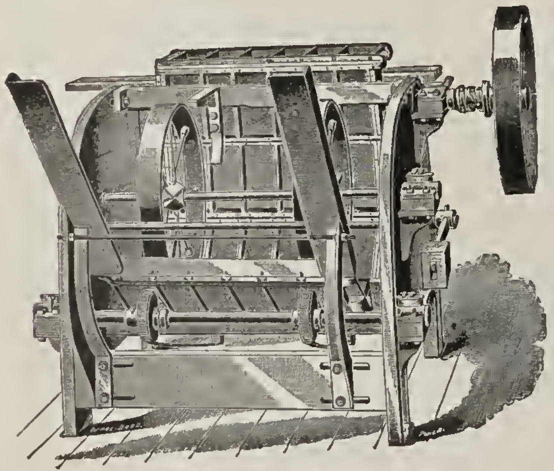
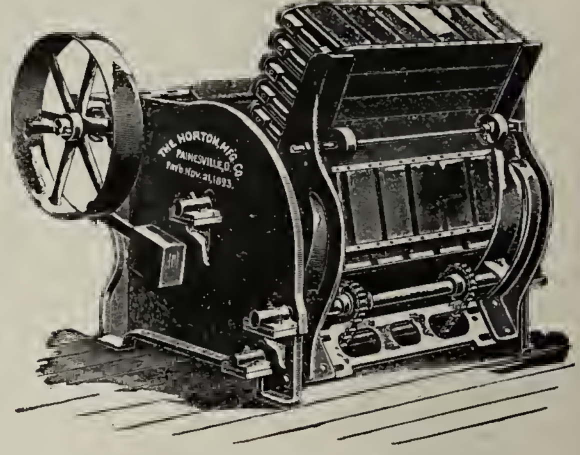


No. 1 Sander for Pallet System.

TWO STYLES.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PAINESVILLE, O.
PAT'D NOV. 21, 1893.

No. 2 For Open Yards.

THE HORTON MANUFACTURING CO.,

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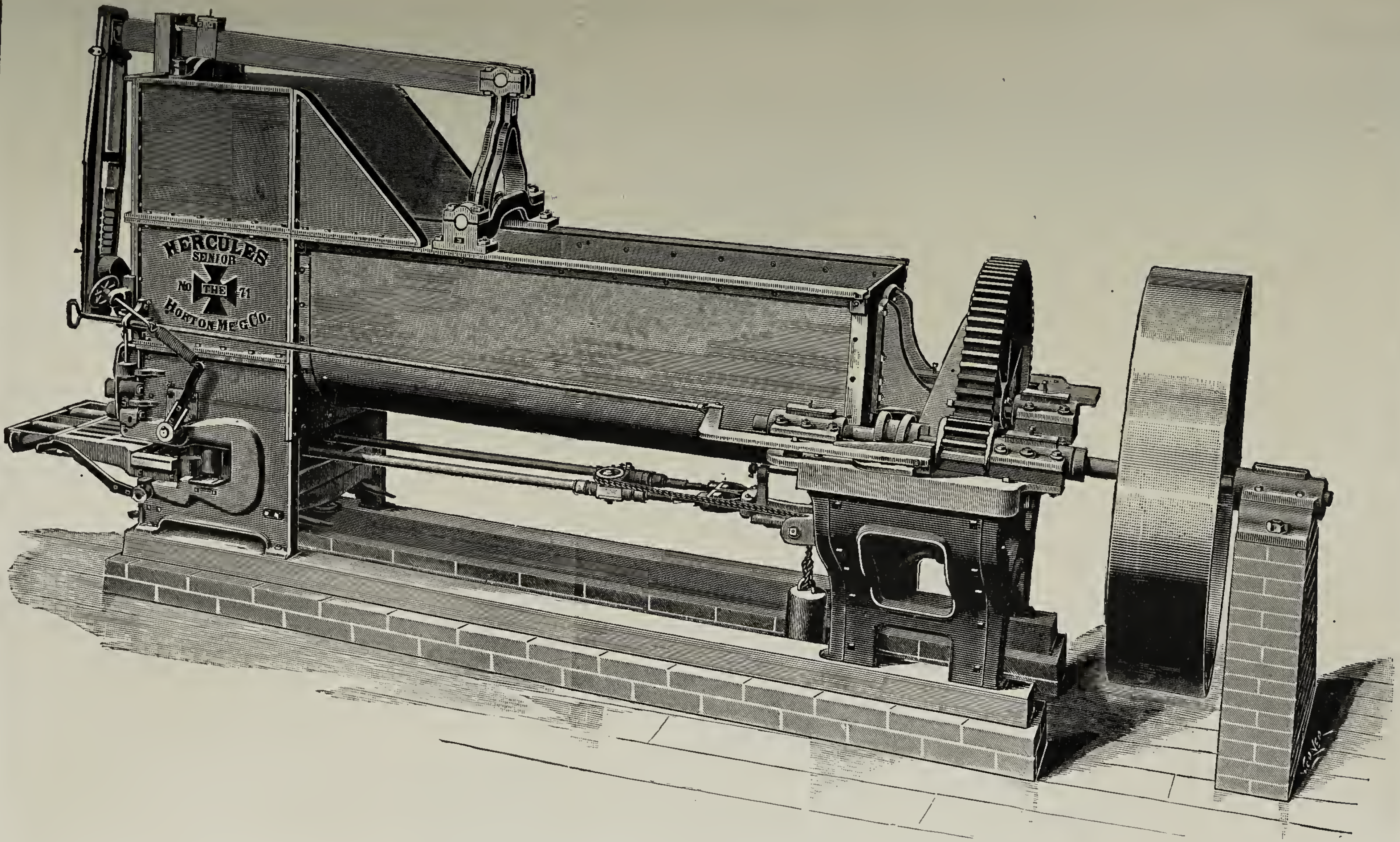
Mention THE CLAY-WORKER.

The Hercules.



READ THIS:

THE HORTON MFG. CO., Painesville, O.

St. Elmo, Ill., Dec. 4, 1901.

Gentlemen:—We are well pleased with the "Hercules" Machine purchased of you for various reasons. First, is its simplicity. Anyone with a reasonable amount of machine sense can safely operate it. Second, the machine is well made, everything fitting to perfection. Third, the wearing parts are few and well protected. We have run the machine all summer with no repairing. Fourth, the machine is very speedy. We made on an average of 25,000 brick per day with thirteen men and one team. This includes engineer and all. Fifth, the quality of the work is fine. The machine makes a perfect brick, filling molds out full at every press. Last, but by no means least, is the power. We have handled our machine the entire summer, including the No. 2 Disintegrator, with a seven and ten-cylinder engine, doing all the crushing and pugging at the same time. The pugging capacity of the machine is perfection itself, doing its work in a fine condition. We worked our mud stiff enough that we could handle brick direct from the molds, making the drying very simple and easy.

Yours very truly,

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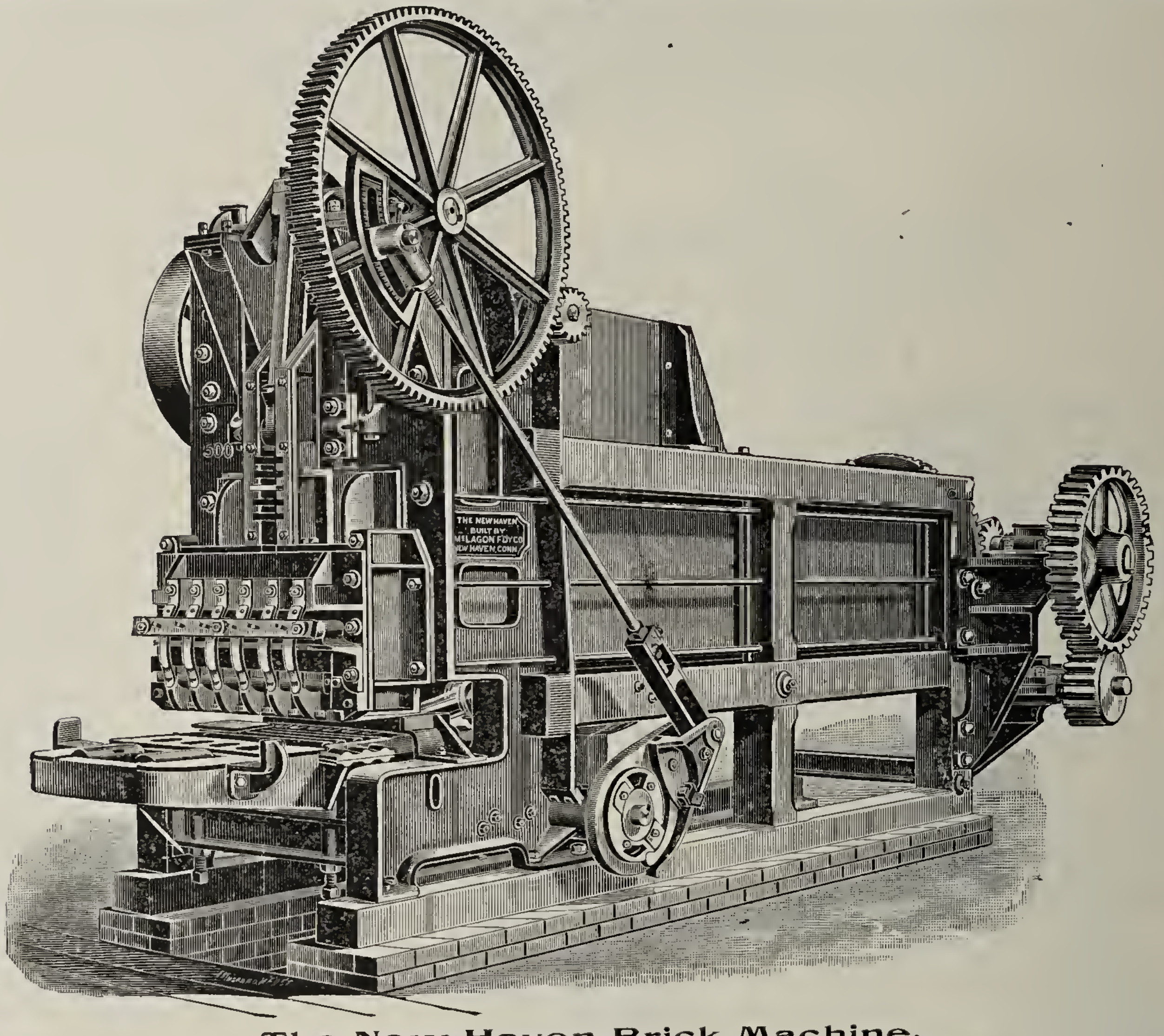
"ENDURANCE IS THE CROWNING QUALITY."

It Makes a Fellow Mad

To find the machine broken down and the machine gang standing round waiting for it to be fixed or until they can be set to work at something else. It means time, brick and money lost.



The New Haven Brick Machine.

Why Not Save This Waste of Nerve Force

By buying and using a **"New Haven" Machine** which is a good deal less liable to break and will wear ever so much longer than lighter and cheaper machines. They may not cost quite so much to begin with but think of these delays and expenses that follow. **"New Haven" Machines** either Horizontal or Vertical are worth careful consideration.

Not the Cheapest but the Best.

The EASTERN MACHINERY CO., NEW HAVEN, CONN.

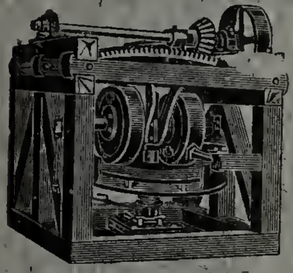
The STEVENSON CO., WELLSVILLE, OHIO, U. S. A.

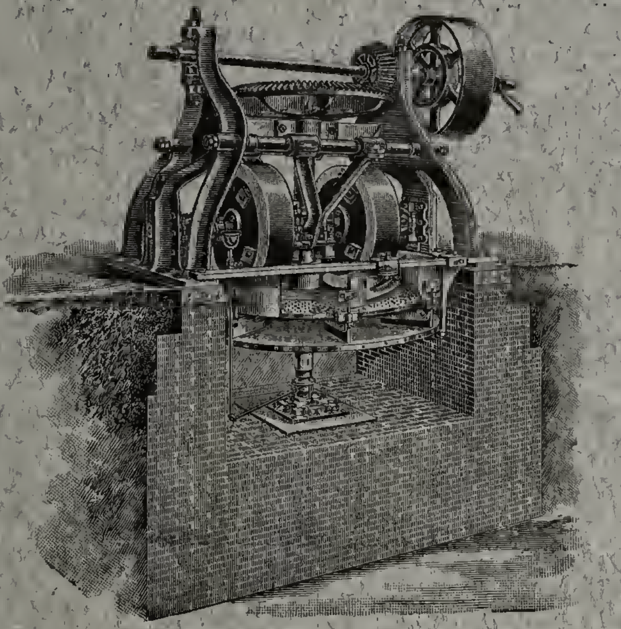
(Successors to Stevenson & Co.,)
MANUFACTURERS OF

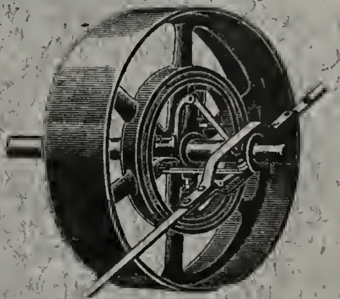
Brick Machinery.

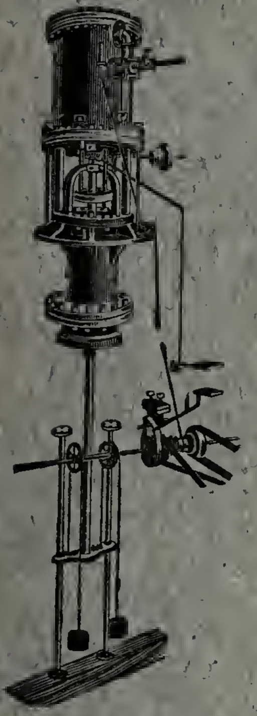
COMPLETE EQUIPMENTS.

Tile Machinery.

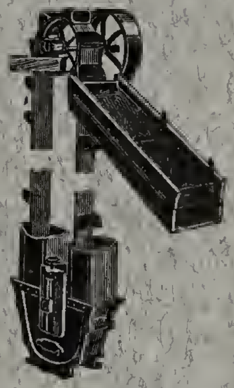








Best Dry Pan on the Market,
See our Customers.



Equipment for Sewer Pipe, Terra Cotta, Brick and Tile Factories, Steam Sewer Pipe Presses, Terra Cotta and Sewer Pipe Dies, Dry Grinding Pans, Tempering Pans, Pug Mills, Elevators for Brick, Pipes, Clay and Trucks, Engines, Boilers, Heaters, Pumps and all Pipe Fittings and Fixtures for Steam Equipments. Shafting, Bearings, Plain Iron Friction Clutch and Wood Split Pulleys . . .

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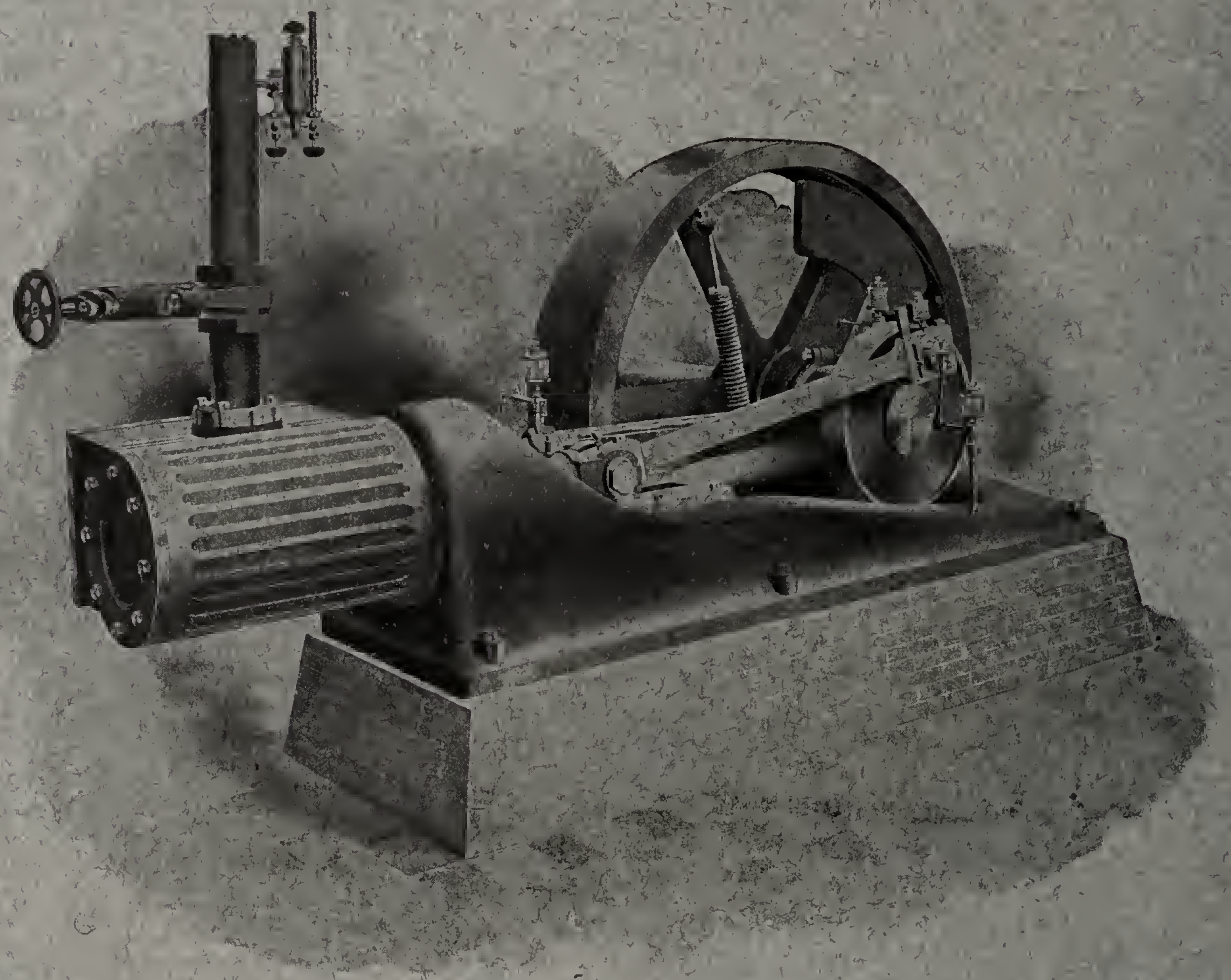

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Automatic and Throttling Steam Engines. Well Drilling Engines. Horizontal Tubular Steam Boilers, with Half Arch and Full Flush Fronts. Plain and Submerged Tube Vertical Boilers. Send for Catalogue.

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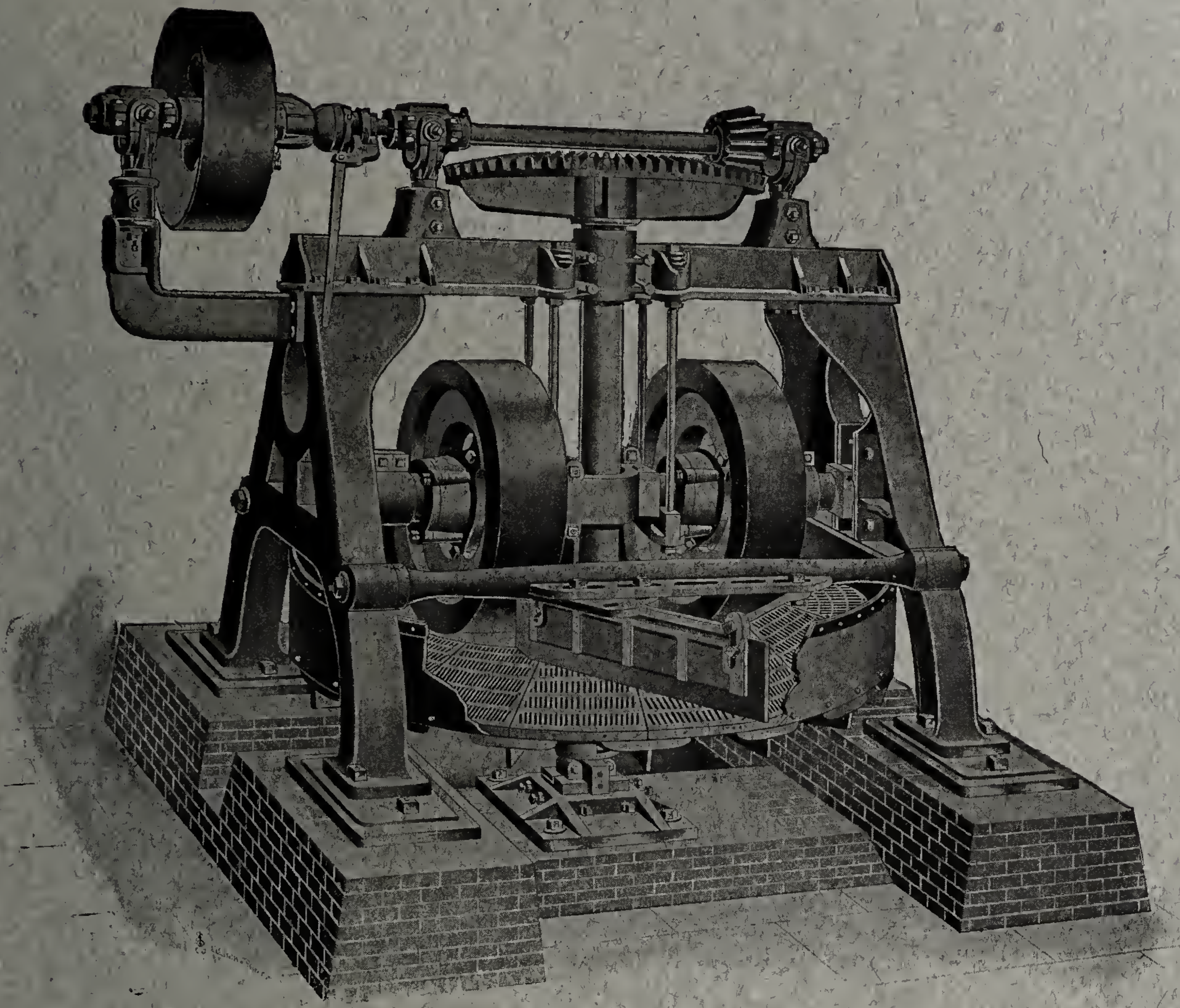
Established in 1851. CHICAGO and GALESBURG, ILL., U. S. A.



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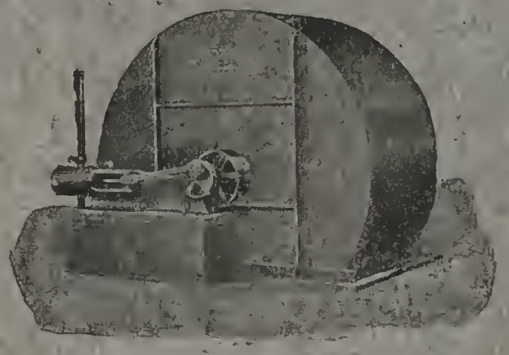
CHICAGO and GALESBURG, ILL., U. S. A.



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Gives results that its users pronounce "Splendid."

"After several months' use of the 'Waste Heat' System, we can say that it comes up to our expectation in every way. Both Fans furnished are all that could be desired in the way of construction, and the results obtained in drying are splendid. About the only expense connected with running it is the oil required for lubricating the journals."

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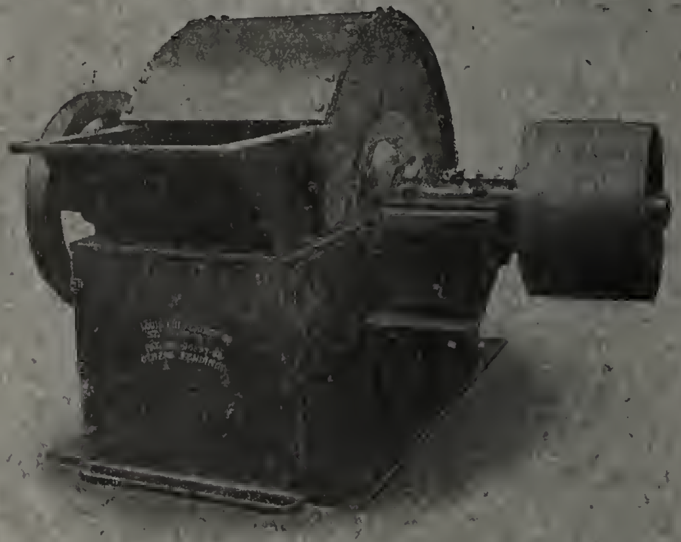

St. Louis Pulverizer Company,
416 N. Main St.,
ST. LOUIS, MO., U. S. A.

ON SIX SEPARATE ORDERS

From one Brickmaker, we shipped 225 Steel Dryer Cars and three Represses, this year.

What Better Recommendation Could You Ask?

Single Deck Steel Dryer Cars.

YOU WOULD BE EQUALLY AS WELL PLEASED IF YOU ORDERED FROM US.

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WRITE US FOR PARTICULARS.

Steam and Hand Represses. Steam Dry Presses, Two Mould.
Steam and Hand Silica Presses. Steel Dryer Cars.
Sword Brick Machines.

The Ohio Ceramic Engineering Company,
CLEVELAND, OHIO.

Table of Contents, Page 254.

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INCLUDING BRICK TILE TERRA-COTTA SEWER PIPE POTTERY ETC.

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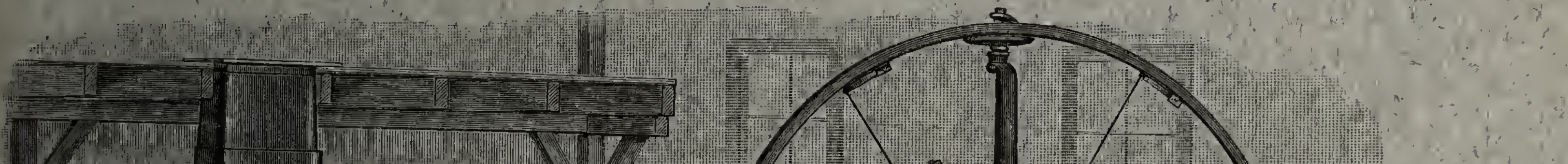
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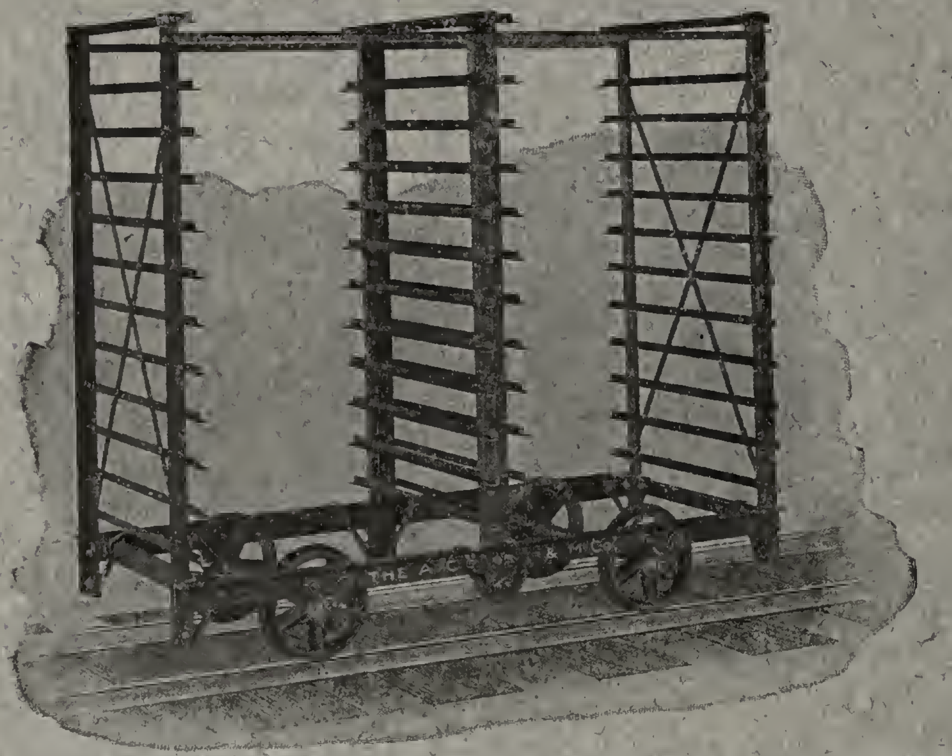

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We also make a full line of

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INDEX TO ADVERTISERS.

Brick Machinery—Dry Press Process.

Name. Page.
American Clay-Working Mach Co, The 176
Anderson Foundry and Mach. Works 174
Chicago Brick Machinery Co. 289
Chisholm, Boyd & White Co 168, 169, 170, 171
Fernholtz Brick Machinery Co. The 173
Ill. Supply & Construction Co. 177
Ross-Keller Brick Machine Co 172
Simpson Manufacturing Company The 175

Brick and Tile Machinery.

American Clay-Working Mach Co., The 176 298
Anderson Foundry and Mach. Works 174, 285
Battenfeld Mfg. Co., The 267
Brewer, H. & Co 297
Bonnot Co, The 294
Chambers Brothers Co. 165, 260, 261
Chicago Brick Machinery Co. 289
Eastern Machinery Co, The 310
Fate & Co., The J. D 299
Freese, E. M. & Co, 259, 308, 309
Henry Martin Brick Mach. Mfg Co The 304 305
Hensley J. W 269
Horton Mfg Co, The 306 307
Ill. Supply & Construction Co. 177
Kells Foundry and Machine Co 274
Leader Mfg. Co, The 285
Madden & Co 272
Ohio Ceramic Engineering Co., The 312
Potts & Co., C. & A. 302, 303
Raymond Co., The C. W 255 257
Stedman Foundry and Machine Works 167
Steele & Sons, J. C 280
Stevenson Co., The 296
Wallace Mfg. Co, The 295
Wellington Machine Co, The 263
Wiles Co., A. M. & W. H 281

Brick Kilns and Dryers.

American Blower Co, The 265 312
Barron, A. F. & A. E 288
Bushong, M. M 283
Crown Dryer Co., The 291
Eudaly, W. A 283
Frey Engineering Co 284
Haigh, H 279
Illinois Supply and Construction Co, The 177
Justice, I. M 282
Morrison & Co., R. B 275
New York Blower Co., The 292
National Dry Kiln Co, The 278
Phillips, S. G 276
Pike, E. M 275
Reppell, L. H 279
Standard Dry Kiln Co, The 180
Wurz, Egidius 275

Brick Yard Supplies.

Atlas Car & Mfg. Co. 166
Arnold, D. J. C 282 286
Bechtel, B. E 280
Cleveland Car Co 290
Caldwell & Son Co., H. W 277
Carmichael, T. W 279
Carnell, Geo 281
Cox, Geo. S 275
Dunlap Mfg. Co 278
Frost Engine Co 311
Gandy Belting Co., The 273
Gray, S. B 271
Gregory, M. E 270
Harrington & King Perforating Co, The 167
Henry Martin Brick Machine Mfg. Co, The 304 305
Horton Mfg. Co, The 306 307
Jeffrey Manufacturing Co, The. 273
Kendall & Flick 274
Marion Steam Shovel Co 284
Main Belting Co 273
Mershon, Schuette, Parker & Co 276
Newton, A. H 276
Phillips & McLaren 274
Rockwood Mfg. Co, The 274
Patterson Foundry and Machine Co, The 274
Smidth & Co., F. L 279
Scott & Co., Alex A 300 301
St. Louis Pulverizer Co 312
Tecktonius, E C 275
Thew Automatic Shovel Co, The 287
Williams & Co., M. F 280
Williams Patent Crusher and Pulverizer Co 293

Miscellaneous.

American School of Correspondence 277
American Road Machine Co 271
Audel & Co., Theo 272
Baird & Co., Henry Carey 275
Big Four Route 276
Caldwell Co., W. E 273
Chesapeake & Ohio R. R 276
Clinton Paving and Building Brick Co., The 179
Coaldale Paving Brick Co., The 178
Clark W J. Co., The 275
Crown Fire Clay Co., The 272
Dean Bros. Steam Pump Works 271
Eastern Paving Brick Co. 178
Evens & Howard 270
Evert & Co., H. C 273
Gabriel & Schall 276
Green & Hunter Brick Co 178
Indianapolis Engraving and Electro Co 273, 275
Indiana, Decatur & Western 277
Johnsonburg Vitrified Brick Co 178
Lake Erie & Western 277
McAvoy Vitrified Brick Co 179
Miller Oil and Supply Co 274
Munn & Co 278
New York Brick and Paving Co 178
Ohio Steam Pump Co., The 271
Ohio State University 272
Preston Brick Co 179
Pennsylvania Line 277
Purington Paving Brick Co, The 179
Perrine & Son, H. C 272
Reese-Hammond Fire Brick Co 272
Roessler-Hasslacher Chemical Company, The 281
Sangamo Brick Co 178
Terre Haute Brick and Pipe Co. 179
Vandalia Line 276
Wabash Clay Co., The 179
Ads., Small Wanted, For Sale, etc.

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SEWER PIPE
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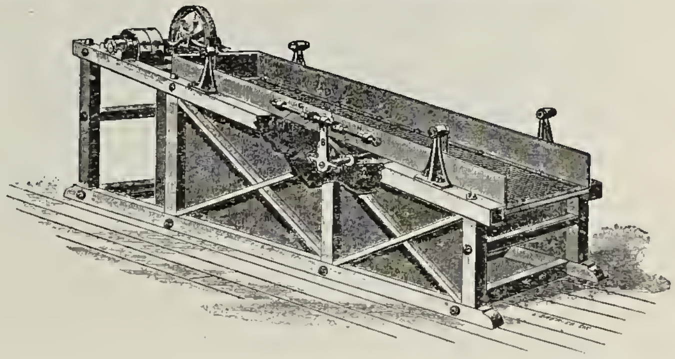
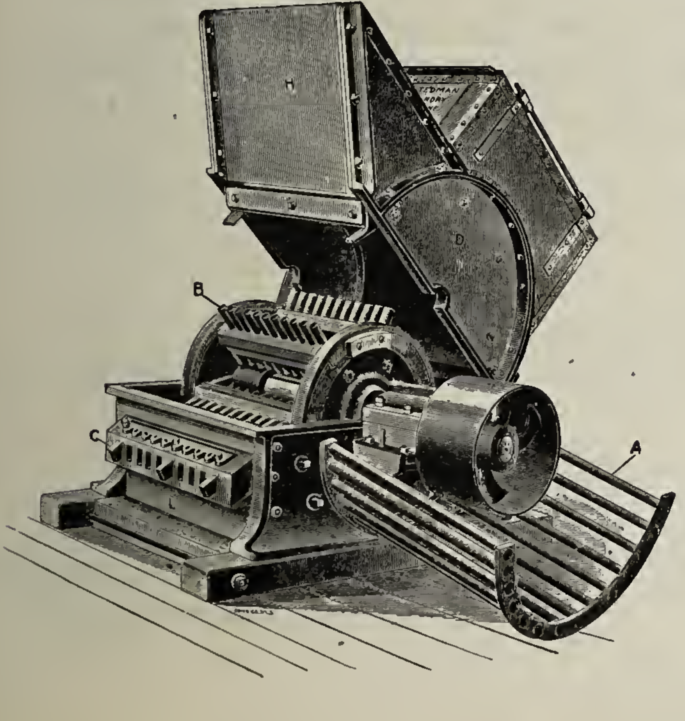


A GOOD Screen for properly screening to any degree of fineness a great variety of materials, and especially clay, is a long felt want. Our Incline Agitating Shaker Screen meets the requirements of the trade in the most successful manner possible.

In this screen we have one of large capacity for small floor space and one that will screen fine without clogging, as the agitating device we have underneath the screen wire prevents any clogging of the screen holes when screening clay or any other material in a dry or semi-dry condition. The screen will run with little power and without any shake or jar to the building, as the moving parts are well balanced by an adjustable counter-weight within the rim of the balance or fly wheel.



STEDMAN'S TORNADO CLAY PULVERIZER.

For Thoroughly
Pulverizing Clay in a
Dry, Semi-Dry or
Damp Condition.

Its construction is such that it will not clog in pulverizing damp clay, and the journal bearings are constructed dust proof.

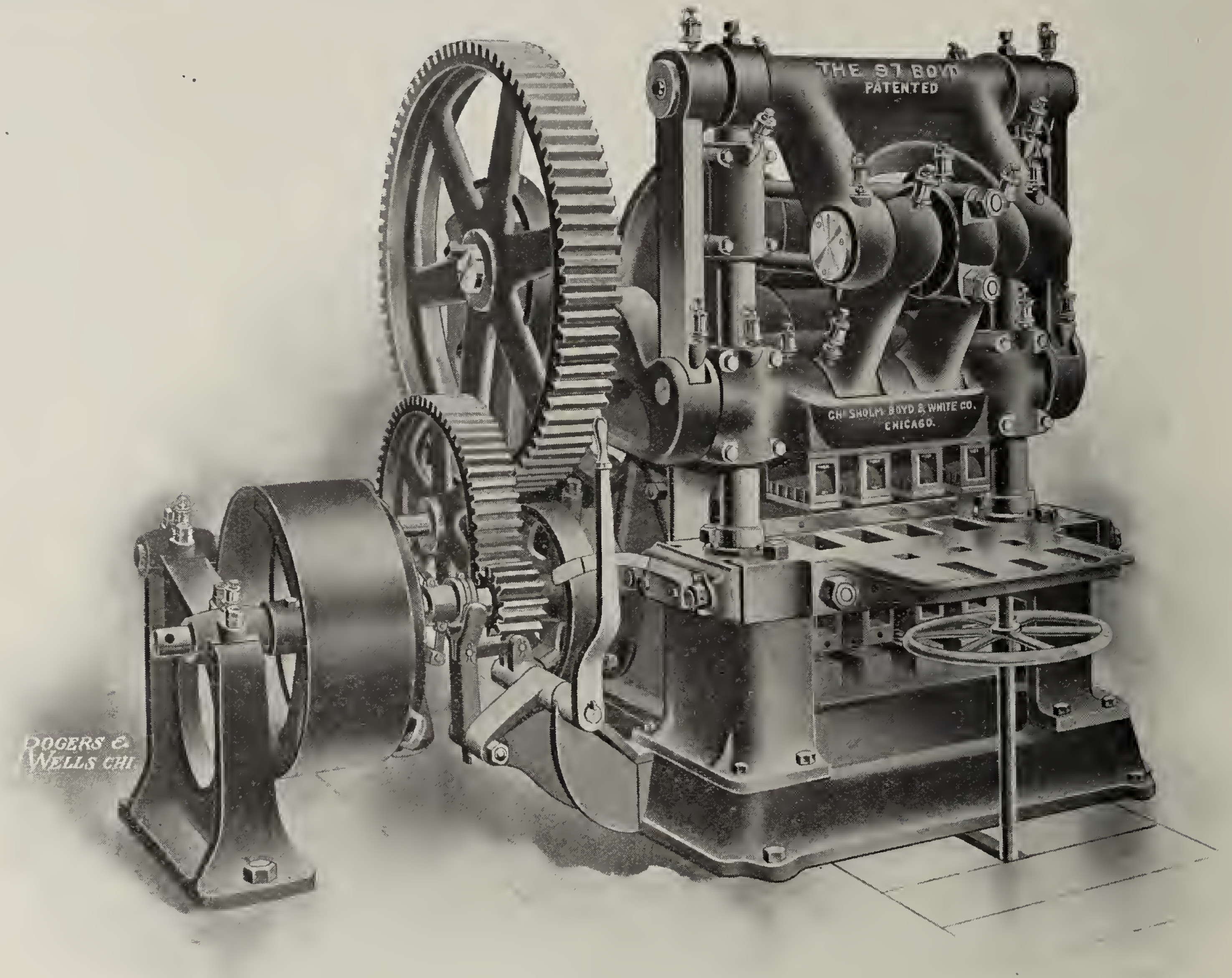
Write for catalogue, giving full description, references and testimonials.

Stedman Foundry and Machine Works,
Aurora, Indiana.

The Improved Boyd Brick Press.

The '97 Model.

IT'S NAME A GUARANTEE.



The '97 Boyd Brick Press has Enormous Strength and Great Durability: It is Compact; The Adjustments are Convenient; It Operates Quietly and Smoothly; The Workmanship and Material are of the best; The Design Ingenious, and shows the most Perfect Application of Scientific and Mechanical Principles to the Art of Brickmaking.

Sent on trial and subject to purchase after the making and burning of one or more Kilns of Brick.

Fifty Presses of this Pattern Now in Use.

Can not be broken in pressing brick. Fully Guaranteed.

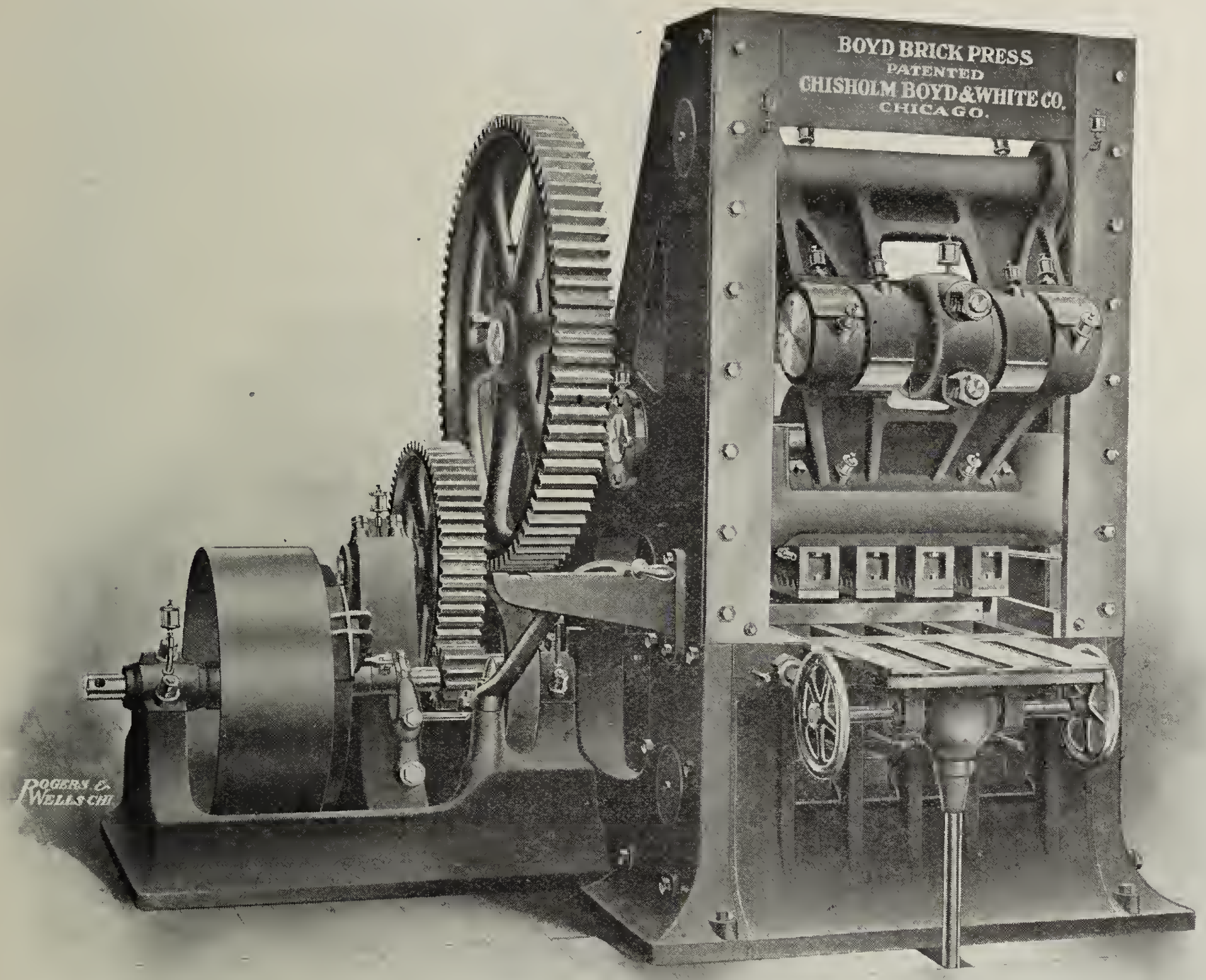
Write for Descriptive Catalogue, No. 9.

CHISHOLM, BOYD & WHITE CO.,
CHICAGO, U. S. A.

OFFICE AND WORKS:
57th and Wallace Streets.

Cable Address; CHISHOLM, CHICAGO.
A. B. C. and Liebers Code.

The BOYD BRICK PRESS.



The Boyd Brick Press will make Better Brick from Clay or Shale than can be made from the same material by any other press.

Especially adapted for Working Shales; and is the only Successful Machine for Making Fire Brick.

Its Record: More Boyd Presses in Actual Operation than of all other Press Brick Machines Combined.

Brick Plants of any desired capacity designed and constructed complete, Under Guarantee of Producing Satisfactory Burned Brick.

CHISHOLM, BOYD & WHITE CO.,
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OFFICE AND WORKS:
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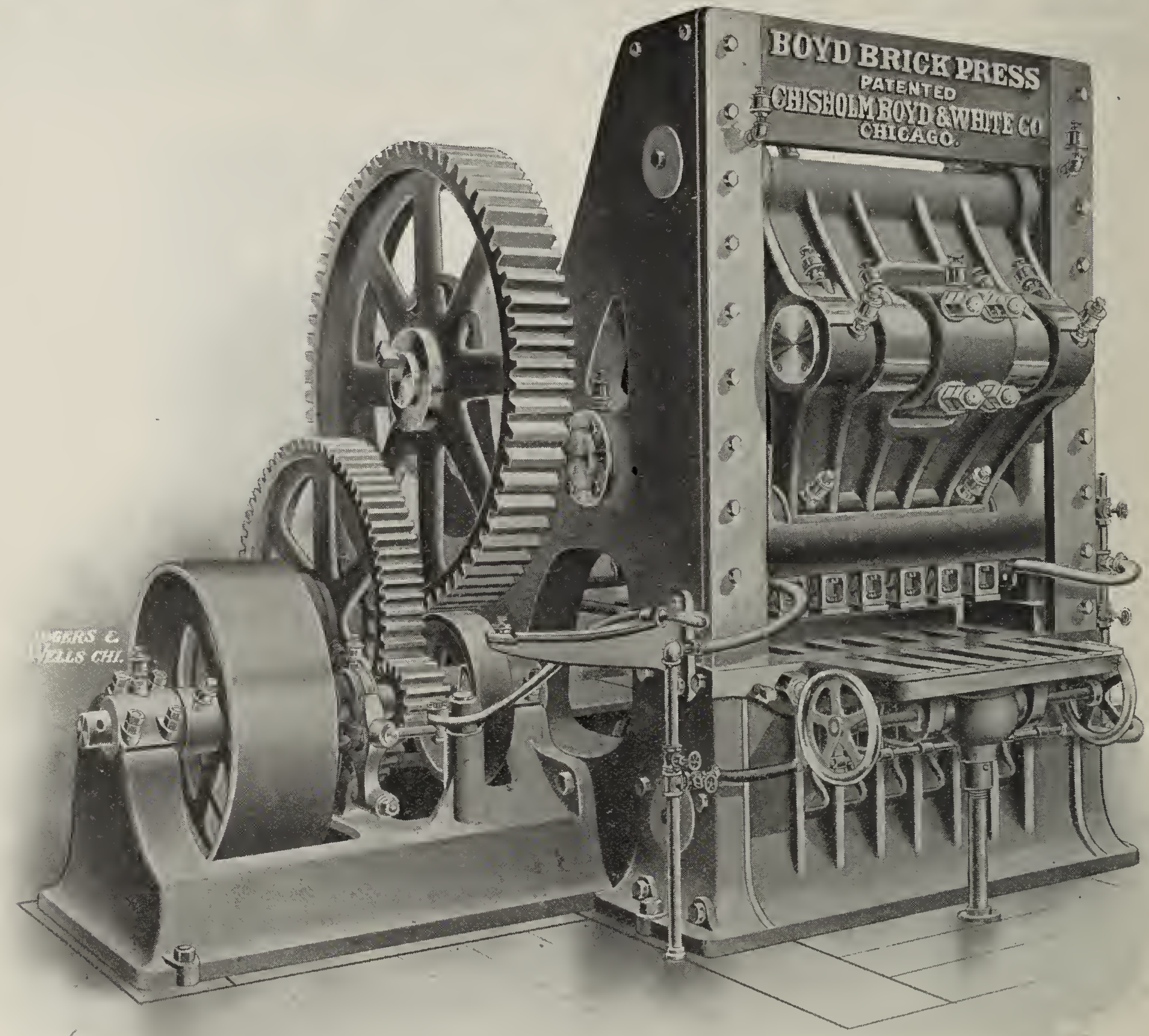
America's Greatest Brick Press.



Another Record for the Boyd Press!

Six of our Six-Mold Presses in use **on one yard** since 1892. Average cost of repairs for each machine $1.00 per year.

The Boyd Press exerts greater pressure than any other machine made. It is the only Press in which the lower plungers are independent of the lower crosshead. This feature positively ensures equal pressure and finish on both sides of the brick, and no granulated or soft centers.

The mold liners are made of the hardest and toughest known metal, and are guaranteed for two years. The movement of the Boyd Press is noiseless and without jar or shock ; no rubber or air cushions, hooks, latches or other uncertain and unmechanical devices are employed.

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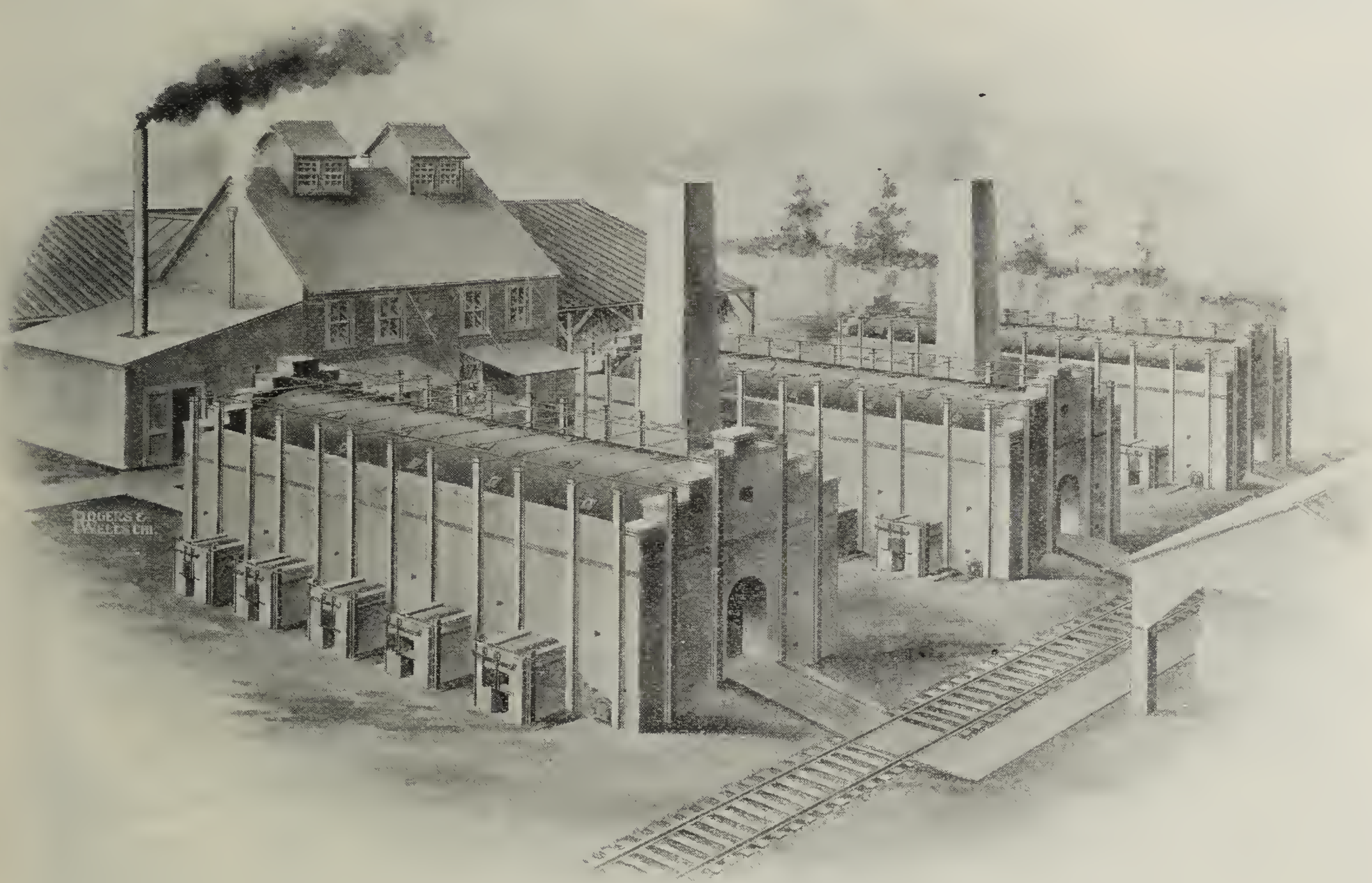
Chisholm, Boyd & White Company,

ENGINEERS AND CONTRACTORS FOR BRICK PLANTS.

MANUFACTURERS OF

The Boyd Brick Press.



A MODERN BRICK PLANT—As Equipped by Us.

A Sure Thing—We are prepared to construct and equip a Brick Plant of any desired capacity, furnishing the brickmaking machinery and power plant, erect the necessary buildings and kilns, and turn the plant over to the purchaser in proper working order, under guarantee of satisfactory results.

Brick Plants designed and equipped by us have the highest reputation for efficiency. They are modern, up-to-date, compact, convenient in arrangement, and are not encumbered with unnecessary or useless machinery or appliances. CORRESPONDENCE SOLICITED.

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OFFICE AND WORKS:
57th and Wallace Streets.

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The LATEST IMPROVED

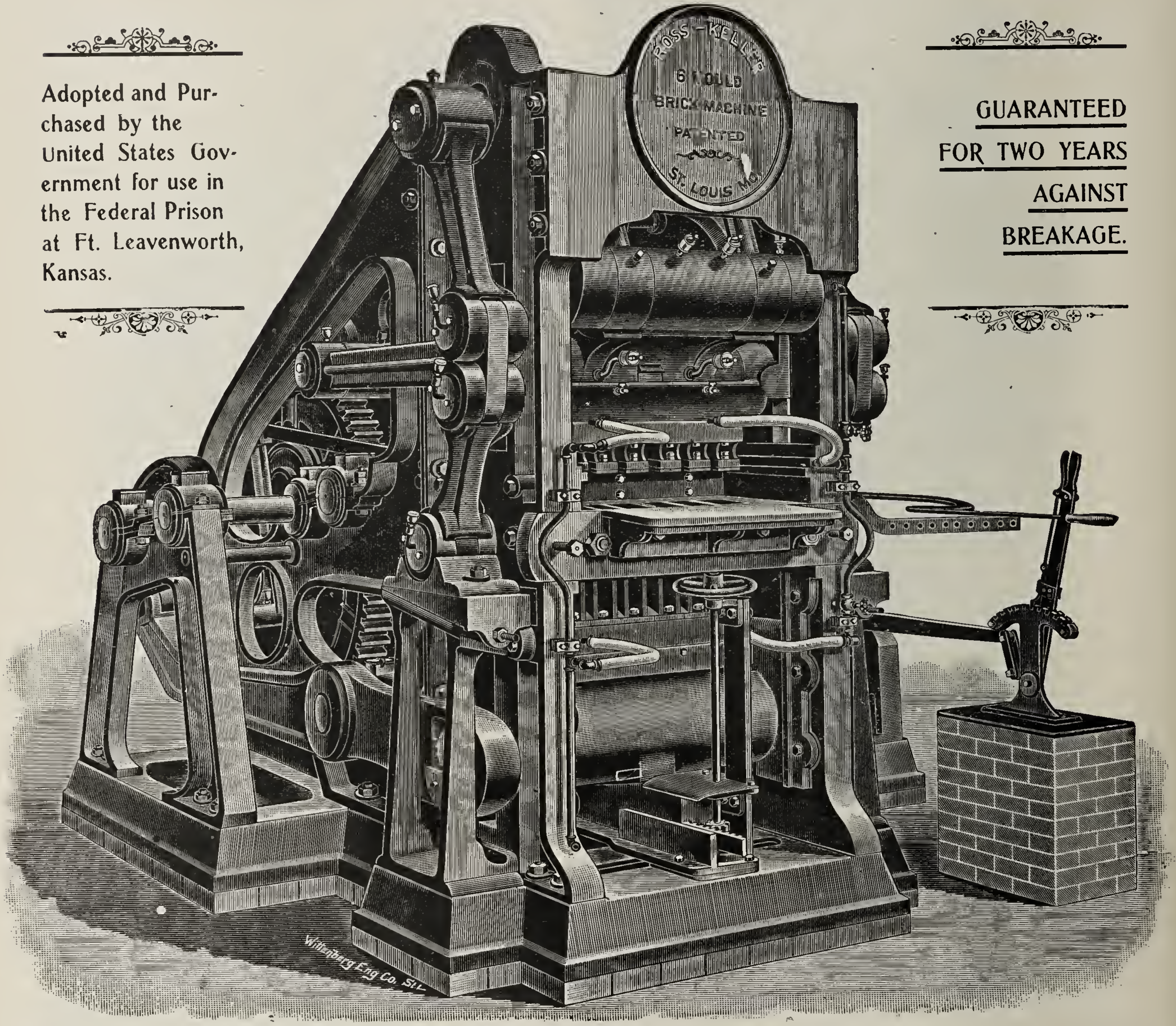
Ross-Keller TRIPLE PRESSURE Brick Machine

Manufactured in four and six-mould sizes. Weight of four-mould machine 58,000 pounds; capacity 24,000 brick per day. Weight of six-mould machine 75,000 pounds, capacity 35,000 to 40,000 brick per day.

BRICK SET IN KILN DIRECT FROM MACHINE.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

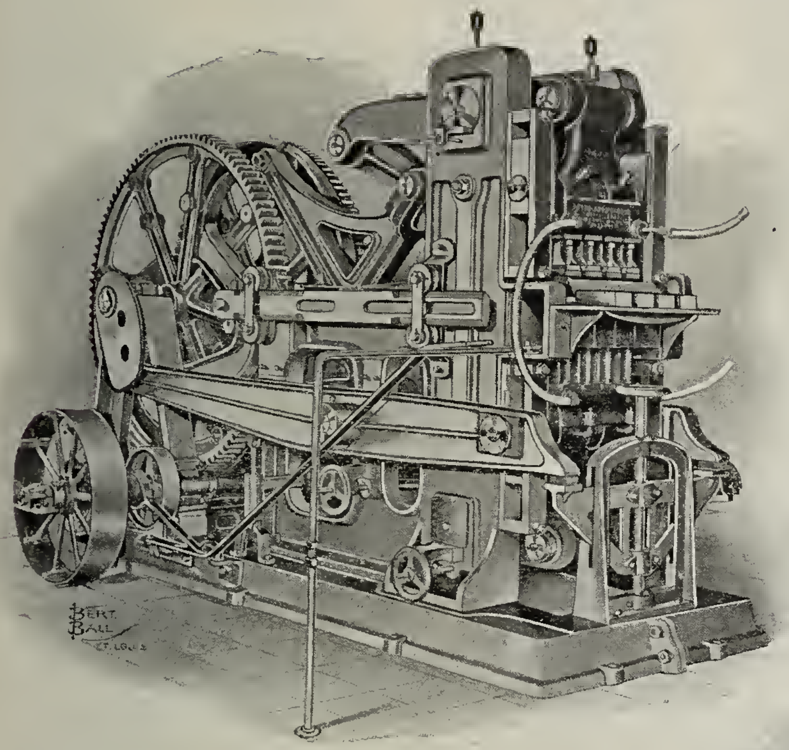
GUARANTEED FOR TWO YEARS AGAINST BREAKAGE.



THIS machine has an unbroken record of success. It is used on a number of the best equipped brick plants in the United States. It has never failed to give entire satisfaction and we are perfectly safe in guaranteeing that it will work any clay of which pressed brick can be made, and make them better and cheaper than any other press. It makes better brick because the pressure is greater and is applied in a way most effective. It makes brick cheaper because it is unbreakable and hence there are no repair bills or expensive delays and stopping of work which brickmakers know are more costly than the repair bills themselves. If you want to make the best brick at the least expense the season through don't fail to investigate this machine, with it you can "put money in your purse." Let us tell you more about it and give the address of those now using it. Remember "the proof of the pudding is in the eating of it."

For Prices and Full Particulars, address **ROSS-KELLER BRICK MACHINE CO.,** **915 and 916 Holland Bldg. ST. LOUIS, MO., U. S. A.**

The New Fernholtz Brick Press.



WONDERFULLY
IMPROVED.

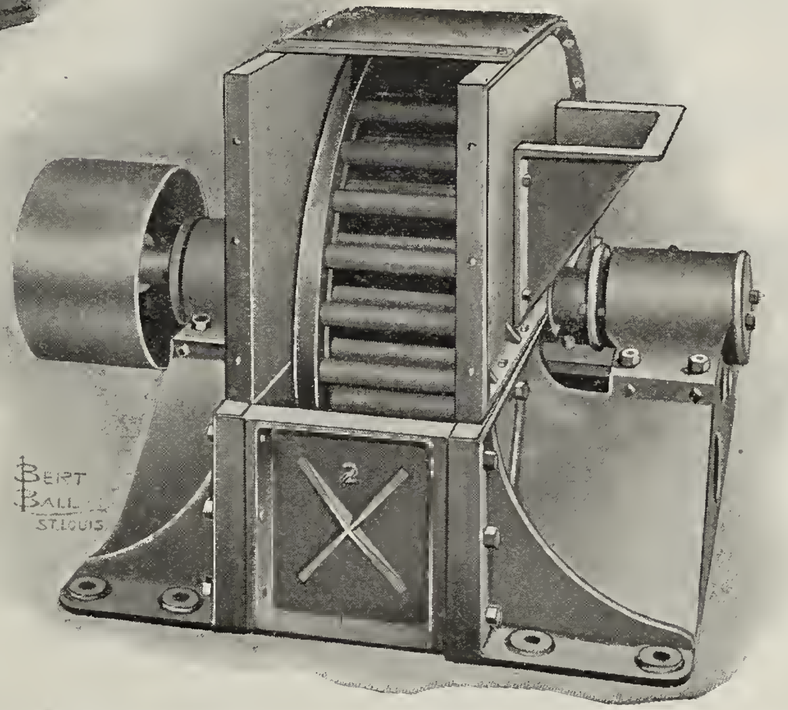
Fitted with the Celebrated

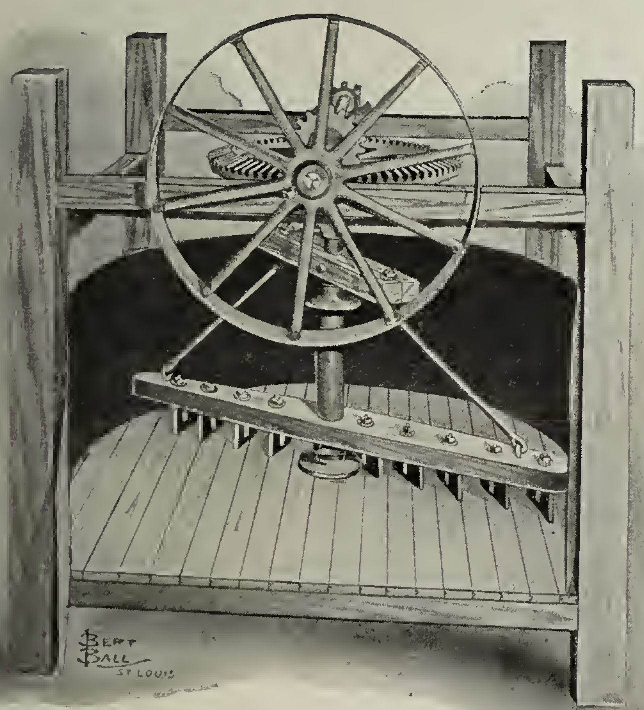
FERNHOLTZ MOLD BOX

Which is used by leading Brick Manufacturers in other Dry Presses.

The Fernholtz PATENT Clay Pulverizer.

No more rivetting Pins in Cage.
Any one can put them in. Most economical Clay Grinder ever made.





The Fernholtz Clay Mixer.

"The Mixer that Mixes."

WE HAVE a first class repair department and can repair all kinds of Brick Machines and Machinery. We make a specialty of Molds for Fancy Shape brick at reasonable prices.

Dealers in BRICKYARD SUPPLIES.

If you don't see what you want ask for it. No trouble to answer questions.

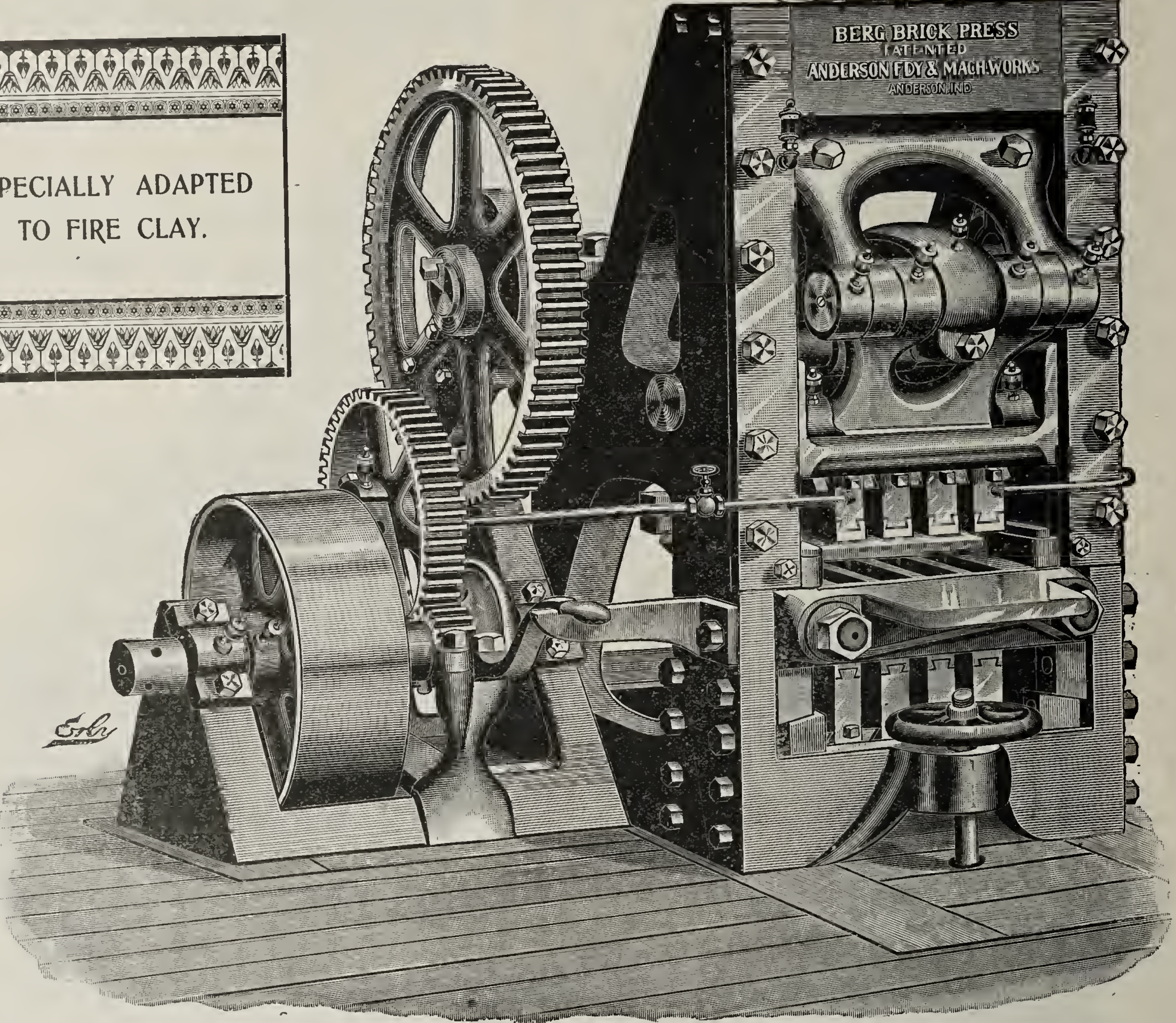
The Fernholtz Brick Machinery Co.,

CABLE ADDRESS "FERNBRICK."
WESTERN UNION CODE.

1214 to 1216 Poplar Street, ST. LOUIS, MO., U. S. A.

The BERG BRICK PRESS.

ESPECIALLY ADAPTED TO FIRE CLAY.



The Highest Development of the Art of Brickmaking—so Pronounced by the U. S. Government.

Three distinct pressures.
Greater Pressure than any other machine.
Greater Strength than any other machine.
Will put more clay into given space than any other machine
Less working parts than any other machine.
No Plunger Stems, eye rods or Springs.

Mold Liners Made of Tempered Tool Steel.

Makes all size Brick and Tile from 2 to 24-inch.

SOLD BY

Chicago Brick Machinery Co.,
225 Dearborn St., CHICAGO.

MANUFACTURED BY

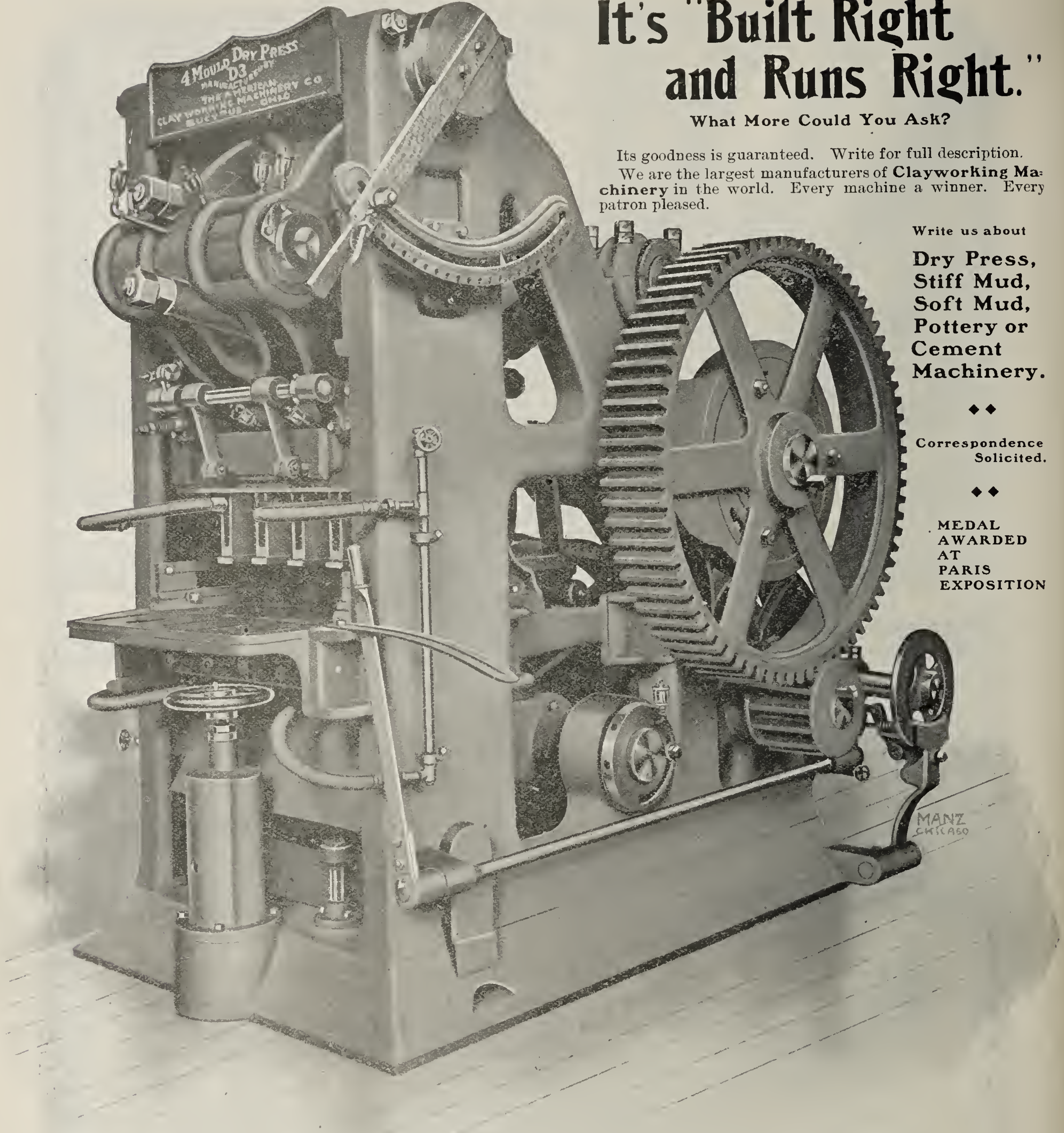
The Anderson Foundry & Machine Works,
Anderson, Indiana.

IN NATIONAL and international use for the last 17 years, giving the greatest satisfaction, receiving the highest confidence and conceded to be the most adaptable and least expensive—that is the record and reputation of the Simpson Brick Press.

Our Catalogue Including a Treatise on "Dry Press Brickmaking," Mailed Free.

The Simpson Manufacturing Co.

Works: Winthrop Harbor, Illinois. **Offices:** Suite 1208 Chamber of Commerce, **Chicago.**



It's "Built Right and Runs Right."

What More Could You Ask?

Its goodness is guaranteed. Write for full description.

We are the largest manufacturers of **Clayworking Machinery** in the world. Every machine a winner. Every patron pleased.

Write us about

Dry Press,
Stiff Mud,
Soft Mud,
Pottery or
Cement
Machinery.

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Correspondence Solicited.

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MEDAL
AWARDED
AT
PARIS
EXPOSITION

The American Clay=Working Machinery Company,

BUCYRUS, OHIO, U. S. A.

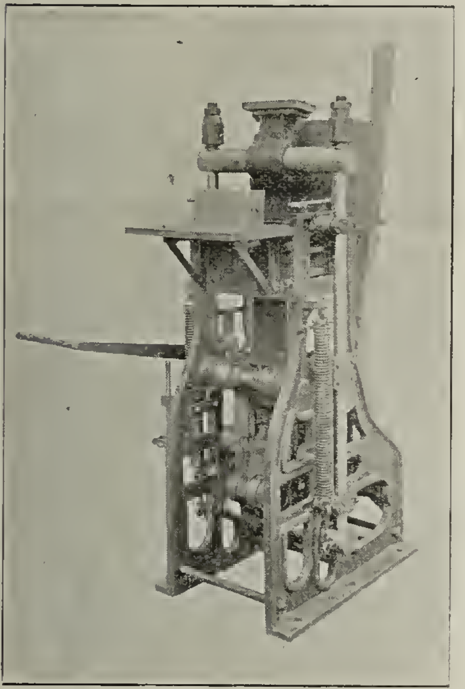
NEW YORK OFFICE:
39 and 41 Cortlandt St.,
Rooms 101 to 106.

See Ad. on Page 298.

THE NEW

Grath Hand-Power Brick Press

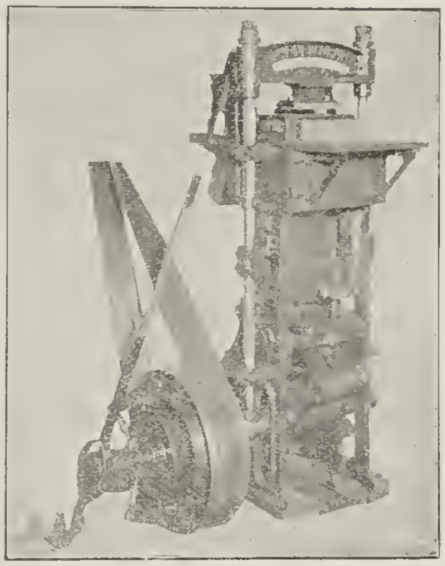
FOR MAKING PLAIN AND ORNAMENTAL PRESS BRICK FROM SEMI-DRY CLAY.



The accompanying cut shows the only successful **HAND POWER PRESS** for pressing brick direct from the clay. The brick made on same are equal to those made on any steam power or hydraulic press. They have a polished face and perfect edges and corners. As will be seen, the press is equipped with charger and feed box. Two men can easily make 2,000 best quality press brick per day. By simply changing the liners and die plates, brick of any size up to 12½ inches long, 8½ inches wide and from 1 to 4¼ inches in depth can be pressed. In making brick on edge the mould is 9 inches deep. No brickyard is complete without a press of this sort. It is also recognized as the only successful press for making plain press or front brick for small yards that are making brick by the plastic process.

The Coffeyville (Kansas) Vitrified Brick & Tile Co. were the first one to order one of these presses, and to show what they think of same, they have only recently placed an order for two more of them.

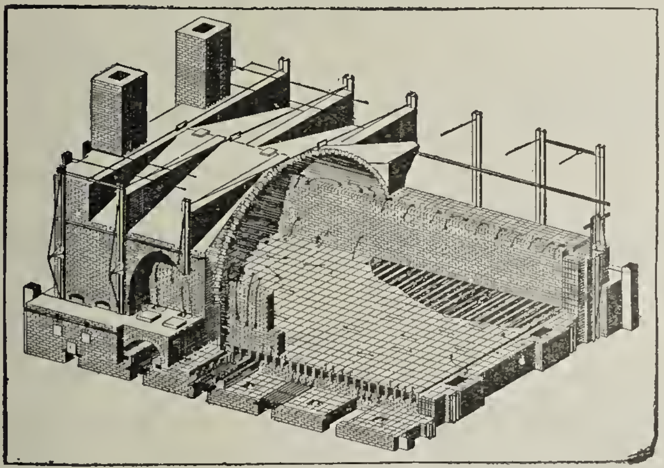
The Grath ONE AND TWO Mould Steam Power Press



The accompanying cut shows the latest improvement in Brick Presses which are built in two sizes. The One Mould, which has a capacity of 5,000 best quality press brick per day. The Two Mould having a capacity of 10,000 best quality press brick per day. This press is so constructed that all shapes and sizes of ornamental brick can be made on same by simply changing moulds and die plates, and is the cheapest as well as the simplest and most powerful Press of its kind in the market. The brick made are very dense with perfect edges and corners. The Press is guaranteed against breakage for one year. All parts subject to strain are of steel.

The Grath Gas and Coking Furnaces

Can be attached to ALL kinds of Kilns, either old or new, and produces better results with SLACK than lump coal in ordinary furnaces. PROTECTION GUARANTEED TO ALL USERS. REWARD FOR INFORMATION ON INFRINGEMENTS.



The GRATH Combined Radiating Floor and Direct Down-Draft Kiln,

(THE PERFECT KILN.)

BUILT ROUND, SQUARE AND CONTINUOUS.

PATENTED.

BY OPERATING the Tile Dampers over the furnaces the heat is directed to any part of the kiln. When the dampers are closed all the heat from the furnaces is drawn into the flues under the Radiating Floor, then up the bag on the opposite side, then down through the ware. If the dampers are entirely open, all of the heat from the furnaces ascends directly up the bag and then down through the ware. If the dampers are split, part of the heat ascends up the bag and the balance is drawn into the flues under the Radiating Floor, up the bag on the opposite side, and then down through the ware. The heat passing under the Radiating Floor burns the ware in the lower part of the kiln by radiation to any degree of intensity. Thus it will be seen that all the material in the kiln is thoroughly burnt to any degree all at the same time. This constitutes the long sought for perfect kiln. For Catalogue and Prices apply to

Mention The CLAY-WORKER.

The Illinois Supply & Construction Co., ST. LOUIS, MO., U. S. A.

JOHNSONBURG VITRIFIED BRICK CO.
Johnsonburg, Penn.

Street Paving **Brick and Block.**

High Grade Fire Brick. Samples on Application.

VITRIFIED PAVING BRICK.

A valuable treatise on the manufacture and use of Paving Brick up-to-date. By H. A. Wheeler, E. M. Mailed to any address on receipt of $1.00.

T. A. RANDALL & CO., Publishers, Indianapolis.

C. RIDGELY, President. C. V. HICKOX, Secretary. H. A. EUDALY, Superintendent.

The SANGAMO BRICK COMPANY,
SPRINGFIELD, ILL.
MANUFACTURERS OF

Building Sewer and Paving **BRICK**

Two Yards Connections with all Railroads Centering at Springfield.

ORDERS PROMPTLY FILLED.

Send for Specifications and ask for Delivered Prices.

W. C. SIBLEY, PRES. J. W. SIBLEY, GEN'L. MAN.

THE COALDALE PAVING BRICK CO.,
MANUFACTURERS OF

Standard Paving Brick,

Also Fine Pressed and Ornamental Brick.

COALDALE VITRIFIED PAVERS,
Represent the Highest Standard of Excellence.

Not only have they repeatedly withstood the most exacting tests required by expert engineers, but they have proven by that more practical test—actual use, to have unsurpassed wearing qualities.

The extent and character of our clays and facilities for manufacture insure uniform quality of product.

Samples, prices, etc., furnished on application.

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COALDALE, ALA.
TELEGRAPH OFFICE,
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BRANCH OFFICES
BIRMINGHAM, ALA.,
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NEW ORLEANS, LA.

New York Brick & Paving Co.,
Manufacturers of

VITRIFIED PAVING BRICK,

Sewer and Hard Building Brick,
. . . ALSO . . . .
Berlin Vitrified Brick that Withstands all Acids.

OFFICE:
204 S., A. & K. BUILDING.

SYRACUSE, N. Y.

STREET PAVEMENTS and PAVING MATERIALS.

A Manual of City Pavements: The Methods and Materials of Their Construction. For the Use of Students, Engineers, and City Officials.

By GEORGE W. TILLSON, C. E.,

President Brooklyn Engineers' Club, Mem. Am. Soc. C. E., Mem. Am. Soc. Municipal Improvements, and Prin. Asst. Engineer, Department of Highways, Brooklyn, N Y.

8vo. xii+532 pages; 60 figures. Cloth, $4.00.

Contents:—The History and Development of Pavements. Stone, Asphalt, Brick-clays and the Manufacture of Paving Brick. Cement, Cement Mortar and Concrete. The Theory of Pavements. Cobble and Stone-block Pavements. Asphalt Pavements. Brick Pavements. Wood Pavements. Broken-stone Pavements. Plans and Specifications. The Construction of Street-car Tracks in Paved Streets. Width of Streets and Roadways, Curbs, Sidewalks, etc. Asphalt Plants.

The CLAY-WORKER, Indianapolis.

The Eastern Paving Brick Co.,

MANUFACTURERS OF THE
HIGHEST GRADE

VITRIFIED PAVING BRICK
and BLOCK,

For Streets and Sidewalks. Positive guarantee as to wearing qualities. Largest capacity in the East.

Correspondence solicited.

Office and Works, CATSKILL, N. Y.

Thurber Brick Are now recognized as equal to the best paving brick produced in this country. There is no better paving material than shale brick and Thurber brick are made of the best shale, by improved methods that insure a uniform product—that is unexcelled for wearing qualities. We guarantee them fully. Send for samples, prices, etc.

FINE FACE and HIGH GRADE VITRIFIED PAVING BRICK a Specialty.

GREEN & HUNTER BRICK COMPANY,
Ft. Worth, Texas.

Factory at Thurber, Texas.

The Purington Paving Brick Co.,

of GALESBURG, ILLINOIS,

HAS the largest and best equipped plant in the United States for the manufacture of Paving and Sidewalk Brick. The Galesburg Paving Brick have a reputation second to none and this Company points with pride to its record for quality of material and its methods of conducting its business.

Correspondence respectfully solicited.

The Terre Haute Brick and Pipe Co.,

Manufacturers of Best Quality of

VITRIFIED PAVING BRICK.

You should use them in sewers and building foundations as well as streets. If you do not think so—write us, we will say why.

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OFFICE: 306 Opera House,
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The Clinton Paving and Building Brick Company,

Manufacturers of the Highest Quality of

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Which are offered to the municipalities of the Central States under positive guarantee as to wearing quality. None better.

Prices and samples sent on application.

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Office and Works: **Clinton, Ind.**

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The Wabash Clay Co.,

MANUFACTURERS OF ALL SHALE

PAVING **BRICK** AND BLOCKS.

Our leading brands are POSTON BLOCK, WABASH STANDARDS, "SPECIALS," for crossings on macadam streets, GUTTER BLOCKS and COLUMBIAN SIDEWALK BRICK.

Our material has for years successfully stood the heaviest traffic of Indianapolis, Terre Haute, East St. Louis and dozens of other large cities of Indiana and Illinois. We ask investigation and comparison by those seeking the best paving material. Samples furnished on application.

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Preston Brick Co.,

MANUFACTURERS OF

Vitrified Shale Paving Brick,

SEWER AND HARD BUILDING BRICK.

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T. B. McAVOY. PRESIDENT.
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McAvoy Vitrified Brick Co.,

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Is the largest and best equipped plant in the East for the manufacture of Paving Brick. All brick sold under a guarantee.

Correspondence solicited.

OFFICE:—1345 ARCH ST., PHILADELPHIA.
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THE STANDARD DRIER
USERS PUT IT ABOVE ALL OTHERS.

> *"We are pleased, indeed, to be able to recommend your Drier to the trade in general. Our experience with it has been monumentally satisfactory, both in quantity of brick dried and in the economical use of steam. We cheerfully endorse THE STANDARD System.*
>
> *WESTERN BRICK CO.*
> *F. W. Butterworth, Gen. Mgr.*
> *Danville, Ill., Nov. 9, 1901.*

The above endorsement is significant and entitled to more than ordinary weight for the reason that it is the result of an exhaustive test made of "THE STANDARD" and TWO OTHER makes of steam Driers, operated under like conditions, and which demonstrated conclusively that "THE STANDARD" excelled in quantity of brick dried and also in economy of steam—TWO VERY IMPORTANT POINTS.

THE STANDARD DRIER

Because of proven goodness—because of proven economy, is worthy of the most serious consideration of every Brickmaker, who has any use for a Drier. Many of its users have enthusiastically denominated it THE ONE PERFECT BRICK DRYING PROCESS on the market. An investigation will prove to you that this isn't such an exaggeration after all.

Let us send you our Catalog and
"Story of a Dried Brick" to clinch the argument.

THE STANDARD DRY KILN CO.,
INDIANAPOLIS, IND., U.S.A.

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THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXXVII. INDIANAPOLIS, IND., FEBRUARY, 1902. No. 2.

OFFICIAL REPORT.

Proceedings of the Sixteenth Annual Convention of the National Brick Manufacturers' Association of the U. S. of A., held at Cleveland, Ohio, February 10 to 15, 1902.

THE PREDICTIONS that the Sixteenth Annual Convention of the N. B. M. A. would be the largest attended and most successful meeting in the history of the Association came true. Thirty States and Territories were represented. The delegates came from Maine in the far East, Canada on the North and Utah in the West, while the South was well represented. The representative of the Central Traffic Association, who vised the railroad certificates, estimated the attendance at 475, of which number nearly one hundred were ladies.

A NEW AND TAKING FEATURE.

As the delegates presented themselves at the Secretary's headquarters in Parlor 100 of the Hollenden they were required to register, and representatives of the local committee presented each one with a souvenir badge, a card of invitation to the banquet and theater tickets. A button bearing the number opposite each name on the register was placed in the delegate's lapel. This novel procedure caused much merriment and questioning, but when, on the second morning, the delegates were presented with a printed list, giving the number and name of each delegate, the utility of the scheme became apparent and was commended on every hand. The list was revised and reprinted each day, and proved a source of great satisfaction in that it enabled the delegates to identify one another without asking questions.

President W. H. HUNT, Cleveland, Ohio.

The new palm garden of the Hollenden was used as a Convention hall. It is large, and, when completed, will be a beautiful room, having a seating capacity of over 400. The walls were prettily decorated with flags, but the facilities for heating it were insufficient, which marred what would otherwise have been an ideal place of meeting. When the President called the first meeting to order there were few, if any, vacant seats, and the interest in the proceedings was such that a large number of those present remained to the close of the session, despite the chilly atmosphere in the rear of the room. The closing sessions were held in the banquet hall, where all the sessions of the former Cleveland Convention were held. Though less spacious, it is a cozy, comfortable room. Here the delegates warmed up to the subject in hand, as the reader will see when going over the report of Friday's sessions, the discussions being animated and the delegates at times fairly clamoring for the floor.

FIRST SESSION.

Wednesday, 2:30 P. M.

President W. H. Hunt: Gentlemen of the Convention, it is with unfeigned pleasure that I once more take up the gavel, sound the call to order and look into the faces of the brick manufacturers of the United States in convention assembled. It is, indeed, an honor to preside over such a body of representative men. The destinies of the ancient art of clayworking is in your keeping, and if I may judge from your appearance, from the air of earnest purpose manifest in every face of this splendid assembly, the result of this, the sixteenth, yearly meeting of the National Brick Manufacturers' Association will be felt in every section of the country, where deft hands, guided by keen minds, are forming materials of everlasting utility and art from the common clay of mother earth. Surely we, of all men, should bow to the Creator, who made us from the dust of the earth in His own image. Hence it is especially fitting that we should open our first session with prayer, and I am pleased to introduce the Rev. Chas. S. Mills, who has kindly come to serve us in that way.

THE OPENING PRAYER.

Rev. Charles S. Mills: Our Father, those who are gathered here in this fraternity of business and of industry come to invoke Thy blessing upon their gathering. They would acknowledge before Thee their indebtedness to Thee. Every good gift is of Thy beneficence. Hence we thank Thee for the richness of the earth and for all that we may derive from it. We thank Thee for all the gifts of brain and hand. We thank Thee for Thy kindly care. We rejoice in the fact that we may come to Thee in all our business affairs, and we know that honest toil and production and industry is a part of Thy kingdom on earth. So, O Lord, may we do with a spirit of gratitude whatever Thou givest us to do. For all manner of Thy goodness and love we return thanks to Thee, and we pray that Thy blessing may rest, indeed, upon this gathering, upon the renewal of old acquaintances, upon the making of new friends, from heart to heart and life to life, and upon the interests that are here represented; that more and more this industry may speak the truth of the relation of brother between man and man, and be helpful, indeed, in the building of that kingdom not made with hands, and which is so expressed in our earthly toil. Hear us as we pray, and may the power and glory be Thine, in Christ's name. Amen.

President Hunt: It would have been a source of great pleasure to us to-day had it been possible for the Mayor of our city, Mr. Tom Johnson, to have given us a word of greeting in turning over the keys of the city to you, but in his place Rev. Harris R. Cooley, Director of Charities and Correction, will speak a few words of welcome. (Applause.)

OFFICIAL WELCOME TO CLEVELAND.

Rev. Harris R. Cooley: Ladies and Gentlemen, I regret very much, indeed, that our Mayor is not able to be present in person to welcome you to the city of Cleveland. But in his behalf, and in behalf of our municipality, I wish to extend to you a most cordial welcome. It is to me personally a pleasure to look into your faces and to greet this ancient craft. I say ancient craft, for if you were to go into the halls in Egypt, six thousand years old, you would see inscribed in the hieroglyphics and in the pictures on the walls people making brick. It would be an interesting thing if one of these Egyptians could come to life and attend these Conventions of the present time. He would realize, better than we, the great progress that has been made in this art. I remember some of the struggles that men have gone through to achieve success in this molding of clay. In my earlier days I remember reading of the struggles of Bernard Palissy, the great Frenchman, who labored for sixteen years, and when he died with great honor, after his sixteen years of failure and final success, they put upon his monument this inscription: "A Worker in Clay." And I remember that out of the earth and out of the clay not only man, but all the wondrous things that we see have been made, and sometimes I feel that way about the work of the minister, working, as he is, with human clay; that he is, indeed, a clayworker, and somehow I feel that I have a right to speak as a worker in clay, and I feel that our successes are not always as sure as yours. We do not know what the results will be as certainly as you do. And so I am glad, as a co-worker, to welcome this ancient craft, represented to-day by so many men and so great interests, to our fair city, because it represents one of the useful industries. I suppose there is not a single house in our city that has not some of the results of your handicraft, so much have you entered into the modern life, so much have you contributed to making possible the great cities, and the building of homes and the adornment and the ornamentation of them. So we speak to you these words of welcome. I hope that no one from Cincinnati will take offense when we say that we welcome you to the metropolis of Ohio. We are proud of that, and yet we are very modest. We regret that you did not come to Cleveland in June, for our city has on its fairest clothes at that time. Now our trees are bare, our parks are covered with snow and our beautiful river frozen over—at least I hope it is. Our city is not as fair as in June, but our hearts are as warm. We are glad you are gathered together here in mutual helpfulness, and, as you came face to face this afternoon, it was a pleasure to see the hearty greetings of friend to friend in the same business and carrying on the same work. It is a great thing to build a building; it is a great thing to build a steamship, and, in the wonder of it, we sometimes forget the man back of the steamship, that he deserves the credit, and the men who have contributed the building material of our great city. It is a wonderful thing to look at the results; it is a still greater thing to look at the men who have done this work and made these buildings of strength and beauty possible. We are glad you have come. Sometimes, when we have made preparations for our guests, and we have labored and prepared for them, and they have gone away, we have felt that we have been well repaid, because, somehow, they have left in our homes something better, and we are richer and better because of their visit. And so we feel to-day in our municipal life. Wo will be richer and our city will be a better city because of the presence of so great a Convention. So, in the name of our Mayor and municipality, I extend to you all a cordial and hearty welcome to our city. (Applause.)

First Vice-President C. CHASE, Milwaukee.

President G. M. FISKE, Boston.

Second Vice-President H. C. BRADLEY, Cleveland.

President Hunt: I shall ask Mr. Eudaly, of Cincinnati, to respond to Rev. Cooley's address.

RESPONSE TO THE ADDRESS OF WELCOME.

W. A. Eudaly: Mr. President, Ladies and Gentlemen, I naturally feel that the last census was taken on rather uncertain grounds in this quarter of the State. I rather enjoy the spirit of the citizens of Cleveland as voiced by the Mayor, as voiced by Rev. Cooley, as prompted by the President of the Association, in their great pleasure, that Cleveland now is the ranking city of this very great State. I assure you, as a citizen of Cincinnati (laughter), that it affords me very great pleasure, indeed, to know that so great a city, filled with so many great and good men, should rejoice so much in the fact that they have a few more people in the county than we have within our city. (Laughter.) I think that if any one in this State has reason to be proud at this time it is a citizen of Cincinnati. A thing long sought to be accomplished, a thing very much to be desired, a thing much wished for and worked for, is this: to outrank the populace of dear old Cincinnati. It is a very laudable ambition, and, if they want a few more, we have a few citizens down in Cincinnati that they can have if they want them. So we will keep on in our own way, and rejoice with the city of Cleveland and with the Mayor in this thing they have been seeking so long to accomplish. Cleveland is justly entitled to be the greatest city in this country. By country I mean Ohio, of course. Every one knows that we mean Ohio when we say this country. We feel proud of Ohio, and we down in the southern part of the State have that proper spirit of loving everybody in Ohio. And there is no city in the State that we think more of than we do of dear old Cleveland. We did at one time think seriously of getting our water supply from this quarter. That is all we could get up here to quench our thirst, and that is all we could get from any quarter to quench our thirst—we have everything else in abundance. (Laughter.) I don't know how long I am to talk in response to the gentleman. I would say anything at this time that would please the Mayor, indeed I would. For I believe that the Mayor and those associated with him are doing a great deal for our comfort and pleasure, and therefore I only voice the sentiment of these gentlemen when I say anything I can, everything that is favorable of this great city, of this great Mayor, represented by this great man. Now, I have said these few things on the spur of the moment, not knowing that I was to be called upon. If I had had a little time I could have arranged for something better. I thank you, Mr. President, for this opportunity, and I thank Rev. Cooley, and, through him, the honorable Mayor, and the policemen, who are to be absent while we are here. (Applause.)

Secretary T. A. RANDALL, Indianapolis.

Third Vice-Pres. J. C. MILLER, Washington.

Treasurer J. W. SIBLEY, Birmingham, Ala.

A RESOLUTION OF SYMPATHY FOR EX-PRESIDENT EGGERS.

D. V. Purington: I have a resolution that I have prepared and desire to introduce at this time. With your permission I will read it:

"Whereas, This Convention has learned that the Hon. F. H. Eggers, one of the most highly respected members of this Association, and one of its former Presidents, is compelled to forego the pleasure of meeting with us by reason of the serious illness of one of his sons; therefore,

"Resolved, That this Sixteenth Annual Convention of the National Brick Manufacturers' Association tenders to Mr. Eggers and his family its sincere sympathy in this their hour of trial and affliction, and that our prayers and hopes are that this young man may be speedily restored to health and strength. Also,

"Resolved, That the Secretary of this Association convey to Mr. Eggers and his family this expression of our sorrow and sympathy."

C. H. Yohe: I move the resolution be adopted by a rising vote.

Seconded by J. C. Adams and carried.

President Hunt: The Secretary will please announce the next in order.

Secretary Randall: I take it for granted that you understand that the enrollment of members will be taken up again after adjournment. The course to be followed this year, in giving out the buttons, tickets to the banquet and to the theater, the badges, etc., make it necessary for us to have quite a clerical force, and we will resume this work again after adjournment. Members who have not enrolled are requested to call at Parlor 100 D, where they will be fitted out. The enrollment of members being incomplete, the roll call will have to be passed at this time, and this brings us to the President's annual address.

ANNUAL ADDRESS OF PRESIDENT WM. H. HUNT.

Gentlemen of the Convention:

Another milestone has been reached in the life of this Association. It is with rare pleasure that I welcome to the metropolis of Ohio the members of the National Brick Manufacturers' Association, assembled in sixteenth annual convention. It was in this State that our organization had its birth. While we must concede to our sister city, Cincinnati, the honor of having christened this organization, we Clevelanders, nevertheless, take delight in honoring its sixteenth birthday.

My personal observation of the work of the National Association covers the period of time since the annual Convention held in this city, in this very building, seven years ago. To be thus honored with a second meeting within so short a period of years gives us just pride in the recognition thus accorded our great and beautiful city. In my duel capacity as President of the National Association and as chairman of the local entertainment committee, I can asure you that a pleasant time is in store for all. The President of the Association has taken counsel with the chairman of the committee, and is thus enabled, with confidence, to make this report. (Laughter.)

It has been my good fortune to serve as your President during a year of unprecedented prosperity to the business interest of the country. Notwithstanding the loss of our country's beloved President, and the threatened depression of business because of this calamity, our institutions have prospered without interruption and the opening of this new year is full of promise. The year 1901 surpassed all previous years in the extent and magnitude of building operations. In all the large cities the increase has been from 15 to 250 per cent. From every section of the country come reports indicating that the present year will eclipse any previous period in the history of the building industry in the United States. This means a continuance of the great demand for all grades of material which enter into building construction. Necessarily the paving and fire brick manufacturers, the terra cotta and tile makers, will have generous demand for their products, with general business conditions so prosperous.

During the past year much difficulty has been experienced in commanding transportation facilities adequate to the demand of the business. Millions of dollars, however, are being expended for cars and motive power; hence that menace to the clayworking interests will in some measure, no doubt, be relieved this year. With many manufacturers it has hardly been a question how to secure business so much as how to properly serve it.

The greatest progress in the clayworking industry has doubtless been made during the last twenty years. We have only to contrast present conditions with those of two decades ago to realize the substantial advancement which has actually been made. It is but a comparatively short time ago that brickmaking was generally regarded as a clumsy, disorganized, unsystematic, rural industry; the men engaged in it believed to be somewhat more menial in their occupations than their neighbors in other branches of trade. The development of the cities and towns of the country, with the consequent demand for more lasting and fireproof materials, has called into existence thousands of clayworking institutions, from one end of the country to the other, the natural forces which direct competition having evolved a distinct manufacturing business of high order, wherein science, art, the highest technical skill and the best business ability contribute to make it a calling than which none is more noble.

W. A. EUDALY, Cincinnati, Ohio.

I am sometimes impressed with the belief that the fifteenth century was the greatest of all the cycles of time that have come and gone. Had it not been for the discovery of new countries, the wonderful progress which has marked the last century and which has been in so great part due to the genius of our great republic, would have been practically impossible. It would appear that the Father of all good gifts had kept in reserve for our use this great country, until such time as we had advanced sufficiently to appreciate and utilize the wonderful inventions and the great practical ideas which have been developed in recent years.

When compared with Marconi's wireless telegraphy, with Santos Dumont's airship and the Holland submarine war vessels, silently piercing the ocean's depths, carrying destruction in the path, the achievements of the worker in clay may seem unimportant. But great progress has been made, nevertheless, in our own chosen line. The quality and standard of the product of the clayworker is higher to-day than was dreamed of but comparatively few years ago. Time was when art perished with the artist. Time was when a rare product of pottery died with the maker. Happily, these times have passed, and to-day the constant aim is to improve and perpetuate art in all lines of industry.

Nothing is more helpful in the development and advancement of the best ideas in all branches of business than trade associations. In this connection, I was impressed by an extract from an article recently called to my attention:

"In every trade we have first-class, second-class and third-class merchants. After the first, the second and the third-class merchants get together the first-class merchant will set the standard for the second and the third-class merchants; in other words, they will raise the second and third-class merchants to their ideas of business; whereas, if we have no trade associations of that sort the first-class merchant naturally associates with the merchant of his standard; he stands away from the trade in general; his good influence with the trade is lost, and the result is that, as a rule, the second and third grade of men go right along without improving. We believe that we can trust a member of our Association when we are united, but cannot as readily do so when separated. If the best men should step out, all their good influence on other men in similar lines of trade would be lost."

The writer of the foregoing expresses a benefit derived from association which this national organization has realized in a generous and substantial way for many years. Organization has come to be regarded a necessity among business men in all branches of trade. This is an era of united effort. Competitors no longer regard each other with enmity, thrusting contemptuous glances at one another with smothered maledictions when passing by. The day for all that has passed. Men engaged in the same pursuits, while perhaps competitors, hardly regard each other as opponents. It is right that they should stand together for their common good.

Our Association is to-day larger and stronger than ever before in its history. Our growth, however, must not lead to a feeling of undue satisfaction. Much has been accomplished; there is yet much to do. The art of brickmaking is broad, and its ramifications are so extensive that but a small part of the truth has yet been established. The science of political economy, which is recognized to-day, more than ever before, as the basis of success in business enterprises, should be a part of the study of every member of this Association, and as an organization we should encourage, as far as lies in our power, a more liberal adoption of its fundamental principles.

In the work of the National Association have we not allowed ourselves to dwell too extensively upon its technical and mechanical sides, to the exclusion of thought concerning the business end of the clayworking industry? We have accomplished much when we make brick of a high standard of quality and effect every possible economy consistent therewith in manufacture. But beyond this our offices may need some attention. The manufacturing end of the business should be departmentized, making it possible to determine with accuracy the results and costs of each department, as only by so doing is it possible to know where the plant is weak or strong.

Again, if our great industry is to take rank in the commercial world with iron and steel and lumber, we must introduce into our methods the best business practices, directing the sales of our product, our collections, our records of accounts, to conform to the established rules of all important manufacturing and commercial institutions. Unquestionably the marked successes among men engaged in our pursuit have been because of close attention given features of the business which are generally regarded as minor and unimportant details. From the clay bank to the job, the successful brickmaker must know his business.

For instance, the successful clayworker should study carefully all conditions surrounding the clay bank. He should know the chemical analysis of his clays, to determine the presence of properties which must be taken into consideration in the treatment of his crude material. Likewise as to the water used in his boilers. A purifier, if necessary, costs little money and is easily installed.

The question of fuel is an important one, ofttimes overlooked, not only in brickmaking, but in other industries where it plays an important part. The cheapest coal is often the most expensive to use.

In considering the proposition of brickmaking, the question of uniformity throughout the entire process is of paramount importance. Clay should be of uniform condition and bricks set uniformly in the kiln, from end to end and from side to side, in such manner as to insure uniform draught throughout the kiln. Uniform results are only possible by charging the kiln uniformly in all parts. From beginning to end, in setting, drying, firing, increasing temperature and cooling uniformity of method is most essential. Care and skill must be exercised during this entire period if sound and well-burnt brick are to be produced.

Give patient consideration to new appliances that may effect possible economies or improvement in character of product. Above all, keep machinery particularly, and buildings as well, in good repair. To neglect this is not true economy.

Every possible safeguard should be introduced for the prevention of fire. Many times the closing up of an opening in a brick wall, the installation of extinguishers, barrels of water, ladders communicating with roofs, etc., all of comparatively little expense, will bring a reduction in cost of insurance.

The question of the best and safest method of lighting the plant should not be overlooked.

I have a thought or two in connection with what might be termed office management. A sufficient force should be employed to properly care for all details. Due care should be exercised in the selection of these employes, who should be recognized as co-laborers, not as mere machines, thus enabling them to feel that matters affecting their company just as fully affect them individually. They should be given seasons of recreation.

Correspondence should be promptly acknowledged and scrupulous care exercised in making and keeping promises. Judicious advertising is essential.

Never misrepresent your product for the mere purpose of effecting a sale. It may clean out the yard, but will serve as a boomerang should you have further dealings with the same customer. Tell the absolute truth.

Should sales be made through an agency, fortify the agent with such information as will enable him to present fairly your product, as regards quality and facilities for serving the order. Many times controversies in adjustment of accounts are due solely to the lack of observance of this precaution. Know the worth of your product; put a price upon it and maintain it. Allowances and drawbacks can be avoided by having a perfect understanding in the beginning, not alone as regards the character of the material, but all points relating to the transaction, such as terms of payment, times of delivery and other essential matters.

When asking your railroad for assistance or co-operation, first satisfy yourself that the request is reasonable.

Charge against cost of making brick every item of expense which properly belongs there. It is too general a custom to add to construction account or accounts representing plant and equipment, money expended for machinery and appliances or repairs to machinery and buildings, which merely replace or maintain your original investment. Don't deceive yourself in determining the cost of your product.

Proper annual allowance for depreciation and wear and tear of plant should be made. Reduce the possibility of errors or mistakes to a minimum; in other words, know your business, every detail of it.

These suggestions, while made from the standpoint of one engaged in the manufacture of pressed brick, necessarily a business of many details, apply with equal force to every clayworking establishment, no matter how large or small. If this Convention should succeed in awakening an interest in these features of our business a great and lasting good will have been accomplished.

The subjects for discussion are varied and will bring out the best thoughts of the best minds engaged in brickmaking. To these discussions I am sure you will turn gladly, and that from them profit will accrue. Do not neglect, however, the opportunity afforded at this annual meeting for cultivating the acquaintance of your fellow brickmakers. Seek a quiet talk in the lobby. A comparison of business methods, results gained by experiments, details, the exchange of ideas received from personal experience and observation are most valuable features of these annual meetings. In these personal talks our Convention fills a manifest need to us all.

In concluding the work of the year, I desire to say that it has been a very pleasant experience to me to serve the National Association as its President. I hope for my successor the same full measure of co-operation and good-will which have been accorded to me; that our Association may benefit largely from this Convention, that it may go steadily forward to still grander achievements, is my earnest wish. (Loud applause.)

Secretary Randall: The steam maker of the local committee, the man behind the gun, who has worked night and day to complete the arrangements for our entertainment, Mr. Teddie Roberts, secretary of the Builders' Exchange, has an announcement to make. (Loud applause.)

THE PROGRAMME OF ENTERTAINMENT.

E. A. Roberts: I have been asked by the Entertainment Committee to outline the programme for the entertainment of delegates. In the first place, some of you may have objected to being labeled with celluloid buttons and numbers. It is designed during the Convention to issue a brief list or blue book, in which the names and addresses of the delegates to the Convention will be given complete every day. This, it is thought, will promote acquaintanceship. Very often a man meets a person at a convention, and the following year, when they meet again, he cannot recall his name. By means of this little button he can spot the number and then he can look it up in his book, even though he has to go around the corner to do it, and then he can come around and say: "Howdy do, Mr. Eudaly, I am glad to see you." When the committee was talking this matter over there was a question as to whether we should not throw out the number 13. For a number of years Mr. D. V. Purington has always been No. 1 on the register book, and this year he asked that No. 13 be assigned to him. So if anything happens to him, it will be because of his disregard of the superstitious No. 13. The annual banquet occurs this evening in the banquet hall of the hotel. It now looks as though it would tax the capacity of the hotel to take care of those who are here, so those who wish the choice seats should be here promptly at 7 o'clock. To-morrow morning at 9:30 will occur the excursion to the several brickyards. This excursion is being run under the auspices of the Cleveland Hydraulic Press Brick Co. A very nice entertainment has been provided, and it is hoped that every gentleman present will be on hand at the Baltimore & Ohio or Valley depot, from which place the excursion will start. The ladies will assemble in the Colonial Arcade at 9:45, from which place they will be taken around the city in trolley cars, which will take them past all the points of interest in the city, a stop of fifteen minutes or half an hour will be made at Garfield Monument, and after the trolley ride a lunch will be served them at the Colonial Club. The local committee of ladies will meet the visiting ladies in the parlors of the Hollenden at 9:30 and accompany them on the trip. The theater tickets that have been handed to you with your badge are to be exchanged in the lobby of the hotel Thursday afternoon for reserved seat coupons. Between four and five hundred seats have been reserved at the Empire Theater for the members of the Association on Thursday night, and it is to be hoped that all visitors will be on hand. Friday morning, if it is pleasant, a shopping trip is planned for the ladies, for the purpose of viewing the downtown shopping marts, of which Cleveland is very proud. (Applause.)

E. A. ROBERTS, Cleveland, Ohio.

W. A. Eudaly: Gentlemen, this matter which I am about to mention hardly belongs to the Association work, but I have no other way of getting at it. The men who are exhibiting machinery, etc., down in the exhibition room have an organization of their own. We have a President and various committees, and I am chairman of our Executive Committee. I have slipped around over the room the last few minutes and have consulted quite a number whom I have seen, and they deem it advisable for me to say, as chairman of the Executive Committee, that that room will be absolutely closed to-morrow during the time of this excursion. I dislike very much to take this upon myself without having a meeting of our Executive Committee, but I will ask all those who are here who are making exhibits who are in favor of closing the exhibition room to-morrow morning to stand up. (Several responded.) I think that settles it, and we can announce that the room will be closed.

President Hunt: The next in order is the report from our Treasurer, J. W. Sibley:

REPORT OF TREASURER.

The Officers and Members of the National Brick Manufacturers' Association:

Gentlemen—I hand you herewith financial statement for the year 1901. The surplus, which in years gone by was a subject for annual jokes, has come from the pale of insignificance, and with the addition of the handsome net balance of $327.45 for the year 1901 has assumed burdensome proportions for the Treasurer, and we should devise some means for disbursing some of our reserve, even if we have to make Uncle Sam a loan to begin work on the Isthmian canal. If, however, it is to be our policy to hoard our funds for rainy days that may come later when we Democrats get control of the country, then I would advise against placing temptation in the way of the Treasurer by holding any future Conventions so near the Canada line,

> But, while in Cleveland we do roost,
> And the boys their spirits wish to boost,
> Our money will be a good excuse
> For Mayor Johnson to turn us loose.

Trusting that the era of prosperity to our Association may ever continue, respectfully submitted,

JNO. W. SIBLEY,
Treasurer..

RECEIPTS AND DISBURSEMENTS.

ACCOUNT OF THE FIFTEENTH ANNUAL CONVENTION OF NATIONAL BRICK MANUFACTURERS' ASSOCIATION.

RECEIPTS.

Balance in Treasury—Account 1900		$ 490.18
Membership Fees— 68 at $5.00—Account 1901	$340.00	
Membership Fees—323 at $3.00—Account 1901	969.00	
Reports Sold	4.00	
Total Receipts		1,313.00
		$1,803.18

D. V. PURINGTON, Chicago.

DISBURSEMENTS.

Paid for Programmes, mailing, etc.	Per Voucher	$45.40	
Paid for Badges	Per Voucher	120.00	
Paid for Music for Banquet	Per Voucher	8.00	
Paid for Convention Reports	Per Voucher	138.25	
Paid for Committee Reports	Per Voucher	25.90	
Paid for Stationery, etc	Per Voucher	45.00	
Paid for Postage, Expressage, etc.	Per Voucher	55.00	
Paid for Secretary's Traveling Expenses.	Per Voucher	250.00	
Paid Assistant Secretary	Per Voucher	50.00	
Paid Scholarship Ohio State University.	Per Voucher	250.00	
Total Expenditures			985.55
Balance in Treasury—Account 1901			817.63
			$1,803.18

(Great Applause.)

ELECTION OF OFFICERS.

President Hunt: We now come to a very interesting feature of the afternoon programme, and that is the election and installation of officers for the ensuing year.

D. V. Purington: I find in looking over the list of presidents that this Association has had that, as in the case of almost all presidential elections, Ohio stands at the head. It has had four out of fifteen; Illinois, as in a great many cases, stands second to Ohio, having had three; Pennsylvania has had two, New York one, Missouri one, Tennessee one, Georgia one, Indiana one and the District of Columbia one. Now you see the central portion of the country, the Southern portion of the country and the Western portion have been fairly represented, and also the Eastern portion, south of New York. We have had attending these conventions, during almost the entire existence of this Association, a large number of influential brickmakers from New England, and so far they have not been represented at the head of the Executive Committee. It has seemed to a number of gentlemen, in talking this matter over, that it was not only proper, but exceedingly proper, that New England should be represented. It seems to me this is an appropriate time to have that representation. In looking over the list of presidents which we have had, but one native of New England has been on the list since this Association has been organized. I happen to be that one native Yankee, and I certainly think, though a modest man, that it is time we have another. (Laughter.) So, at the request of a number of men of this Association, I take pleasure in placing in nomination for President for this Association for the ensuing year one of the foremost and one of the best of our members, who hails from the hub of the universe. And I know that I voice the sentiments of those who have talked with me when I say that he holds a high place in the esteem and respect and love of many of the members of the Association. It gives me a great pleasure and I deem it an honor to place before this Convention the name of George M. Fiske, of Boston, for President. (Applause.)

C. A. Bloomfield: I second that nomination, and I do so as hailing from the East in the first place, and, second, because it is a great pleasure to have that privilege. It is nearly a quarter of a century since I was introduced to Mr. Fiske, and during that time we have had close business relations, which have grown into close friendship, and I feel that this Convention cannot do better than to honor itself by electing Mr. George M. Fiske, of the city of Boston, Mass., to our highest office.

W. A. Eudaly: According to the laws of our Association the nomination should be by ballot, otherwise I would make a motion that we elect him by acclamation, but as it is, I move that the Secretary of the Association be authorized to cast the unanimous ballot of the Association for Mr. Fiske.

Seconded by Mr. Morse and carried.

President Hunt: The Secretary has cast the ballot, and I declare Mr. Fiske duly elected. The next in order is the election of First Vice President.

W. D. Gates: I suppose you gentlemen have heard something of the modesty of Chicago, and I suppose you have also heard something of the deal that Purington and I always make. I always have to get up in front, so as to get my work in as soon as possible. I got one seat in front of Purington this time, but you see he got there first. I don't think it is necessary for me to add that Chicago reaches often and reaches first, and usually gets there. Chicago is a remarkable city. The owner of that remarkable river which they have turned around and run the other way. I don't believe Chicago wants anything this time, but Chicago has some suburbs —one suburb we have already supplied by sending our river down to them. On the north we have no water, and I desire to place in nomination for First Vice President a gentleman from that waterless region, Mr. Clifford Chase, of Milwaukee, Wis.

George J. Schwartz: Coming from Milwaukee, and knowing Mr. Chase as I do, I heartily indorse his nomination for First Vice President.

Mr. Purington: If there are no other nominations for First Vice President, I move we follow the same course we followed in the case of President and authorize the Secretary to cast the unanimous ballot for Mr. Chase.

The motion was seconded and carried.

President Hunt: The ballot has been cast and Mr. Chase, of Milwaukee, has been elected. Nominations are now in order for Second Vice President.

J. C. Adams: In view of the fact that the sixteenth annual Convention of this body is convened to-day in the city of Cleveland, and with the full knowledge of the earnestness manifested by the local committee for the purpose of advancing the aims and objects of this Association, and with the further knowledge of the work they have done, and will do, that will promote our happiness during our stay, it is certainly fit and proper that we elect an officer from the body of the local brickmakers. In view of all this it gives me much pleasure to place in nomination the name of H. C. Bradley, of Cleveland, for Second Vice President.

H. C. Dunn: I take a great deal of pleasure in seconding that nomination.

T. B. Townsend: I move the same course be followed and the Secretary cast ballot for Mr. Bradley.

Seconded by several and carried.

President Hunt: The ballot has been cast and you have elected Mr. Bradley for your Second Vice President. We will now hear nominations for Third Vice President.

C. H. Yohe: It gives me great leasure to place in nomination for Third Vice President the name of a gentleman who has long been identified with the Association, Mr. John C. Miller, of Washington, D. C.

President Hunt: If there are no objections, we will take it by consent and follow the same course. The Secretary has cast the ballot for Mr. Miller. We now come to the selection of an officer which may require careful consideration, that is, the office of Secretary.

J. Parker B. Fiske, Boston, Mass: I arise to nominate as Secretary of this Association the man who has so long and so successfully filled that office. This Association has had in the last fifteen years a most remarkable growth, considering the very small number it started with. Gathering here to-day about four hundred members, the influence of this Association has extended all over this country. An industry which represents millions of dollars of capital, and we are stronger to-day and doing a better work to-day than ever before. Now the credit for the growth of this Association and the position that it holds in the clayworking world to-day, I believe, is due more to the gentleman who occupies the position of Secretary of this Association than to any other one man. (Applause.) We look upon him also as a friend. No one has ever gone to our Secretary in time of trouble for information without receiving a glad hand and a ready answer, and so we greet him here to-day and we honor him as our Secretary. We love him as a man, and I believe we shall elect him unanimously as Secretary for the coming year—T. A. Randall, of Indianapolis. (Applause.)

D. V. Purington: I desire to second that nomination, and I want to say that I have looked forward to this moment with a great deal of concern. Mr. Randall has been buttonholing a great many of us because he saw he was on thin ice, and I told him if he could get anyone else to make the nomination I would second it. (Laughter and applause.)

M. C. Meigs, Lafayette, Ind.: I am very glad and proud to second Mr. Randall's nomination.

D. V. Purington: I move that the President of the Association be instructed to cast the ballot for Mr. Randall as Secretary.

Motion seconded by several.

President Hunt: Before putting that motion I want to add a word. As is necessarily the case, the President of the National Association and the Secretary must work pretty close together. I did not know Mr. Randall a year ago as I do to-day. In that time I have learned to love him, and I congratulate Mr. Fiske and others who may succeed him in the opportunity they will have of cultivating and knowing a grand, good nature. I take pleasure in putting the motion.

The motion was carried unanimously.

President Hunt: The ballot is cast, and Mr. Randall is Secretary for the ensuing year. Again we have a great duty to perform in providing a proper safeguard for our magnificent fund that has been reported to-day. The next in order is the nomination of Treasurer.

Anthony Ittner: Mr. President and Gentlemen of the Contion—This thing seems to have run into a personal rut, and I want to get out of it if I can. I know it is a good thing, of course, to elect good people from year to year, but I don't like it. It has got a look about it like the politics of St. Louis and Missouri. Of course, there is one person who has served before as an officer of this Association, and I think we can make an exception in this case. I want to place in nomination for Treasurer the gentleman who has held this office for some six or seven years, Mr. John W. Sibley, of Birmingham, Ala., and I want to say everything in his behalf that Mr. Fiske has said of Mr. Randall. I desire to nominate Mr. Sibley for this special reason, that he always gives us a balance and he always gives us a little fun besides, and if there is any man who can appreciate witticisms such as Mr. Sibley puts into his reports it is your honorable servant (laughter), humble servant, I mean. I place in nomination Mr. Sibley, of Birmingham, for Treasurer.

W. H. Hoagland: As a true believer in civil service reform, I second the nomination and move that the Secretary cast the ballot for Mr. Sibley as Treasurer.

J. PARKER FISKE, Boston.

Seconded by several and carried.

D. V. Purington: In looking over the list of officers, you have put a little slight on the Assistant Secretary, who has been left out entirely.

President Hunt: As I understand it, that is not an elective office, but I think it is a foregone conclusion that no change will be made in that office.

D. V. Purington: Not if the present Secretary wants to hold his job.

INSTALLATION OF OFFICERS.

President Hunt: Next is installation of officers, and I want to appoint Charles Shultz, of Rondout; Charles T. Harris, of New York, and W. D. Richardson, of Cleveland, to escort the newly elected officers to the platform.

The above named committee then escorted Mr. Fiske to the platform and introduced him to the President.

President Hunt: Before I introduce Mr. Fiske, I want to say that, following in the footsteps of the noble Gates, I appreciate more than ever the great honor which was conferred upon me more than a year ago. To no one would I rather surrender the gavel than to our newly elected President, George M. Fiske. (Applause.)

President George M. Fiske: Gentlemen, I wish first of all to thank you most sincerely for the honor you have conferred upon me. It is an honor, indeed, to preside over the deliberations of a body of men representing, as you do, and as thoroughly and as well as you do, one of the great industries of this great land. I would thank you for this honor not only for myself, but the section of the country from which I come, which has been referred to in the nominating speech as a section of the country which has always been, I think, well represented in this Association; a section of the country which began making brick a good many years before this great West had been even discovered; a section of the country where, perhaps, the average quantity of brick produced may not be as great, yet produces as good a brick as any section of the country or New Jersey. (Laughter and applause.) I am not very familiar with the duties of President of this Association beyond that of presiding at the Convention, delivering the annual address, etc., but I assure you I will endeavor to make myself acquainted with all of the responsibilities and endeavor to discharge them to the best of my ability, looking out not only for the best interests of this Association, but for the entire clayworking craft in this country. I am not prepared to make anything of a speech, and I am sure in that I will command your gratitude, and, therefore, I will give way to the next in order. (Loud applause.)

W. D. GATES, Chicago.

President Hunt: The next in order is the introduction of the First Vice President, and it gives me pleasure to introduce Mr. Clifford Chase, of Milwaukee.

Vice President Chase: I thank you heartily for this honor, and I will do everything that is possible to show you that I appreciate it fully. (Applause.)

President Hunt: I take no little delight in introducing to you, gentlemen, Mr. H. C. Bradley, of Cleveland, your Second Vice President.

Vice President Bradley: Gentlemen, this was untirely unexpected to me. They telephoned me at the office to come over here, and I came, and have just discovered what I was wanted for. Whatever the duties of the Second Vice President may be, I will endeavor to perform them during the coming year. (Applause.)

President Hunt: It is with the same degree of pleasure that I introduce Mr. John C. Miller, of Washington.

Vice President Miller: I thank you kindly for the honor you have placed upon me, and I will try to fulfill the duties of the office to the best of my ability. (Applause.)

President Hunt: I now desire, so that you may become familiar with his face during the year to come, to introduce our newly elected Secretary, Mr. Theodore Randall. (Applause.)

Secretary Randall: Mr. President and Gentlemen of the Convention—I could not in a month's time scheme up words to express my hearty appreciation of the kindly things said of me here this afternoon. If my efforts meet with anything like the approval which the expressions indicate, I am much rejoiced. It is my ambition to serve you well. The Association is growing and your Secretary is growing, too—I expected to hear Mr. Eudaly say, "Better or worse?" There are a good many tribulations connected with the work of managing and carrying on the work of this Association, but, with the hearty good will and friendship it brings me, I am more than repaid, and I shall go on with the work as in the past, and, I hope, with the same hearty good will and co-operation you have always accorded me. I thank you sincerely. (Applause.)

President Hunt: I should like also to present Mr. John W. Sibley, of Alabama, your newly elected Treasurer. (Applause.)

Treasurer Sibley: Mr. President and Gentlemen—I want to express to you my thanks for this honor of again electing me as your Treasurer. A short while ago there was a brickmaker walking down the streets of Cleveland, and he saw approaching him in the distance a contractor who had been suffering from the high prices charged for brick. When he met him the contractor asked him how he was, and he began to shake and quiver, and he said, "I am all broke up," and the contractor said, "Then you couldn't stand a loan." If any of you get in the position of the contractor, maybe the Treasurer will be able to stand a loan. (Laughter and applause.)

President Hunt: It is with a feeling of some considerable relief, and yet with reflections, however, that are very pleasing, indeed, that I surrender the chair to my successor. I again want to take occasion to thank you for the honors you have conferred upon me during the last year. I have noticed one thing in particular about the men who have been elected to the presidency heretofore, that their interest did not cease with the retirement of the name from the National stationery, and I want to pledge my interest and active co-operation in furthering the welfare of the National Association. (Applause.)

Mr. Gates: I desire to make an announcement, for I am anxious for as many to know this as possible. The American Ceramic Society, as many of you know, have devoted much of their time and money for the translation of Seger's works. They have been working on this for a number of years, and Mr. Burt has asked me to make an announcement here: That any of the members desiring Seger's works can now obtain them from him. The first volume is now ready and the second volume is in the press. The price is $14 for the two volumes. It is the clayworkers' Bible in the German translated into English for our benefit.

Mr. Hunt: I neglected to speak of the excursion to the several brickyards to-morrow, and I want to take occasion personally to extend a cordial invitation to every visiting brickmaker, every visiting machine man, every visiting kiln man and every visiting dryer man, or whatever business you are in, to participate in the excursion, and I promise to take good care of you. (Applause.)

Mr. Purington: I want to offer a resolution. I intended to make it before, but I forgot it, and that is in regard to the appointment of a Resolution Committee, to whom all resolutions offered at this Convention can be referred. I move that a committee of seven be appointed by the Chair, to whom all resolutions shall be referred.

The motion was seconded and carried.

President Fiske: We will appoint the committee a little later. We will now proceed with the regular programme, and I will ask the Secretary to announce the next number.

Secretary Randall: The next number is the first formal paper of the Convention, an address by Mr. Clippert Chase, of Milwaukee, entitled, "A Twentieth Century Retrospect and Prophecy."

A TWENTIETH CENTURY RETROSPECT AND PROPHECY.

By Clifford Chase, Milwaukee, Wis.

Gentlemen of the Convention:

To cast a horoscope for your future one must commence at the beginning and follow down through the ages to the present. Everything connected with the great climatic and geological changes of time has had its influence on your present and prospective welfare. Ours is one of the few industries inseparably linked with the dim and misty past. But, judging from what we may know of that past, as it is revealed to us by the geologist and chemist, combine this with our own and others' experience—the improved and simplified methods of doing business, the mighty progress in arts and sciences, and in our manufactures—and you reflect the greater stability which is brought to the clayworking industries at the opening of the twentieth century.

The revolving wheel, with the slow, plodding horse; the mixer, with wooden paddles and sweep; the automatic machine of the present day, with its clock-like regularity and finely finished product—a transformation which you have witnessed, many of you here present have helped to bring about. What is true as to manufacture is also true as to drying, burning and annealing. From the cased and mud-daubed kiln, with the heat and gases going to waste, we have witnessed the development and perfecting of the closed-top kiln, of the continuous and semi-continuous type. We have the student and chemist, as well as the trained and practical mind, and with this aid the result is no longer a conjecture, but a certainty.

The earning power of our industries invite greater consideration from the investor, which, from more or less of an experimental stage, are down to a solid and more substantial basis. The frontier, as a large area, is no longer an important factor in the progress of American population. The rate of growth of the several great areas of the United States (in ten years: W. 31, S. 22, N. 19) is now nearly the same. This leads to a greater concentration and development—at present great settlements and manufacturing centers. Closely connected with these conditions is the brick manufacturer and the clayworker. With the increased density of population new buildings of a better class will rise. Modern structures will replace those which are not suited to our present and future requirements.

The increasing scarcity of lumber as a convenient building material, and its increasing cost, and the growing demand for better fire protection have already been felt.

The area of farming lands per capita will in the near future be greatly changed, if not cut into, which means nearly double the present number of buildings, and of a more substantial style of architecture.

Better roadways are in demand and their necessity constantly increasing. With the magnitude of our success and power—as a nation yearly increasing; our still vast supply of undeveloped riches in reserve—immigration will continue, and the best element, with its industry and drift, will be readily absorbed. These home builders will add their mite and increase the market for our own products.

For comparison: Take the importing of brick to the colonies, the exporting of brick and brick manufacturing machinery at the present time. Think that our school system was inaugurated within the past century, almost within the memory of man. Note the immense sums of money which are yearly bequeathed to our institutes and colleges; our great public libraries, for the dissemination of knowledge; our great trade schools, and all the other advantages which surround the youth at the beginning of the twentieth century. Compare it with the crude methods and narrow limits which surrounded the youth of the nineteenth century; his brilliant achievements under the most trying and disheartening circumstances. The spark of genius which developed from surroundings of poverty and squalor will surely not fade from view with the passing of a century!

The problems which have been, and are, being solved will encourage us to greater effort in the twentieth century, and that there is room for still greater improvement there can also be no doubt. The working out of problems for the clayworker by the mechanic, founder, kiln builder and student will continue, and in time revolutionize even the present improved methods in vogue. It is right to expect this. It is safe to prophesy it. Why? It is our nature; the tenacity of purpose, the steadfast resolution, the courage which characterized our forefathers in the subduing of the wilderness, in their struggle for right and freedom, and upbuilding of this Nation. It is omnipresent, in the air we breathe, in the blood that courses through our veins. It innoculates the newcomer to our shores. It is coupled with the spirit of improvement and invention. It is, in fact, our inheritance.

If we are to judge by the past, then, there can be no doubt as to our destiny in the twentieth century. We must expect hard times to follow good times, and much as we may dread such a condition, it is not altogether unproductive of good. Good times bring wastefulness, and a continued wastefulness would mean our undoing and our downfall.

We have made great strides in advancement, have taken things by storm, as it were, and through our expansion and increased learning and enlightenment will continue to advance. There is plenty of room at the top for those who honestly strive to excel—no hereditary power or fortune-favored few to impede your way. There is a place in our hall of fame for the humble born, and if our ideals of yesterday fail of realization, and we lack the inspiration of genius, we may at least reach the goal of good citizenship, an honor which we should proudly cherish, to leave as an heritage to our children.

With the past and its experiences before them as an open book, the pitfalls that beset our way exposed to view, the brick manufacturer and clayworker of the twentieth century will round off that which is now but roughly hewn, and we may draw comfort from the knowledge that, as we wish and hope for the foundation principles of our Government, the product of our kilns will not only survive the twentieth century, but the ages to come. (Applause.)

C. H. YOHE, Alexandria, Va.

President Fiske: The general discussion of the paper was to have been led by Samuel Holyoke, of Brewer, Me. I am sorry to say Mr. Holyoke is not here, but he has sent his paper, which will be read by Mr. D. V. Purington.

A TWENTIETH CENTURY RETROSPECT AND PROPHECY.

By Samuel A. Holyoke, Brewer, Maine.

Mr. President and Gentlemen of the Convention:

It is not with the calm assurance of the prophet, nor in the reckless abandon of the average reviewer, that I approach the subject allotted me by the Secretary of the Association. I have rather a strong recurrence of the weakness, or a weakly absence of self-assurance, that always attacks the new boy at school. It is a nerve-trying position, this of the new boy at school, and when the new boy finds himself singled out by the master as a bright and shining mark, he is, indeed, an object of pity. For it is then that he feels his trousers bag at the knees and shrink above his clumsy feet, until he can actually feel the wind fanning his bare legs, and his hands become like unwieldy hams that must seek a hiding place and seek in vain, while his wits are wool gathering amid the wilderness of elusive and delusive thistle tops.

It never before occured to me that I could say or write anything of interest upon the topic of looking backward; and, as for playing the role of prophet, had I dreamed the dreams and gazed upon the visions of the prophets of old, unfolding, as they did, to those good men the hidden mysteries of the future, I should still hesitate to raise my voice in prophecy. Small blame to me, then, if I hesitate now to tackle the role that our Secretary has laid down for me to assume.

Yet, if you be patient and charitable, and promise to be good while I air my speech for the first time before you, it may be of some benefit to you, and will surely be of infinite benefit and relief to me.

To begin with, I shall assure you that my review of the brick business will be confined to my own immediate plodding ground, to the clay that I understand, and the men and conditions that have operated in my own small section of northern Maine, and my voice of prophecy, though it may sound for all the nations, will still be but the thin, small voice from the back lots—I might say the backward lots—trying to tune itself to the mighty chorus of the great prophets of the craft here assembled.

Need I tell you that I am from Maine, from that grand old State whose motto is dirigo, whose sons have carried that motto into every State in this mighty Union, and into every clime; whose manufacturers, in times past, bore it as a palm in the marts of the world, and whose ships and sailormen still bear it aloft in the swelling sail of victory and success in every season.

I am from Maine, which once led the lumber trade of the world, and whose brick manufacturers for years clung to the motto of this State with a fidelity that promised eternal leadership, but over which within my memory has fallen a sudden change.

And keeping now to the subject of brick and the retrospect: I can remember when the industry, not only in my section, but throughout the world, was as primitive as when the forerunners of the Millerites made their attempt to get to Heaven, body and boots, on the plains of Shinar. I have seen the various changes that have taken place in the industry, and now to attempt to give you even the slightest idea of the thoughts that move me as I look back over it all is an utter impossibility.

W. D. RICHARDSON, Cleveland.

I see in the beginning of the brickmaking in Maine (and what I say of Maine here speaks for all sections) a collection of hardy pioneers pushing forward into the wilderness to turn its lumber into wealth, to convert its dark forest aisles into smiling farm sites, and to change its limitless resources of wood, and soil, and clay, and mineral, into the largest and nimblest dollar that could be coined.

They made brick without teachers, they burned them in the light of hard experience, and they sold them at what they could get, and were not over particular about the cull, the count or the contract. They learned after awhile to make a good quality (for their time), and the light of experience began to have less old Medford rum and clinkers and more of a uniform color-producing quality in its glow. The matter of count and contract became regulated before many years, and the matter of cull, which is largely dependent upon a sense of quality and fitness, was last to develop, and the weakest to grow.

Perhaps had the matter of cull received the attention it deserved I would not now be timidly lifting my voice from the depths of an old-fashioned mud yard, here in the midst of a convention composed of men whose modern plants would turn my head, if their modern methods in every other particular didn't addle me completely and unfit me for further use. I say perhaps, but I am not sure if even strict attention to cull and quality would have kept us folks in the inland river parts of Maine abreast of the times, and yet I can't drive out the feeling that there's something in it after all. There comes in the doubt that permeates my strain. It is not the teacher speaking to you, but the humble scholar seeking knowledge.

When transportation of freight by water was cheap and wages were low, and people's tastes were simple and men were reared and trained to be disappointed if they could not do more work in a fifteen-hour day than their neighbors, we mud yard men on the back lots prospered. Because the country hadn't but just begun to grow, and because we gave so much weight for our money and so much work for our dollar, and took so much pains and pride in our work, we held the markets, the leadership and admiration of the particular sections within our influence.

But tempora mutantur, times change. I think that as a reward for the awful sacrifice of the War of Rebellion, and for the magnanimous spirit in which the former antagonists made up and went to the work of bringing back peace and good will, our country was blessed with a spirit of progress such as it never would have experienced. Be that as it may, all of the great changes that have transformed the brick industry—an industry so many ages unchanged in its methods—have occurred since the civil war ended, and have occurred here in our own great land, which leads the world.

I cannot with the closest observation follow, much less trace for you, the changes that a generation has brought about, but we who lag at the tail of the hunt, where our fathers carried the motto, "Dirigo in the van," can feel it.

Everything has changed. You brick men, proud of your well equipped and modern factories, don't take too much credit to yourselves for it. Don't poke the finger of scorn into the eye of the new boy at school and tell me I'm a mud sill and a slow poke, that the squint of the old-fashioned treadle plunger is in my face and I ought to be ashamed for being behind the times. I don't know but I am as far ahead, according to my environments, as I could be expected to be. If I had the price of Purington's or Gates' concerns down in my section, I'd retire and live on it.

You can't operate a 10,000,000 capacity yard with profit where the maximum season's demand is comprised in two chimneys and a cess pool. And I say that the changes and advances made in other lines of trade, in the general business of the country, have to a great degree made your plants what they are—Models! Marvels! Wonders! I don't like to look at them, because covetousness is one of the seven deadly sins, and I don't want to get dissatisfied with my lot.

I used to dream, when I was young, of plants like yours, and the clay banks of my boyhood teemed with just such rigging as you have, but age is cautious, and I say, "Does it pay?" Should we fellows in a 10,000,000 market copy the airs of those in the 200,000,000 markets?

Can we by imitating our Western neighbors and installing modern methods, recover again the markets from Labrador to the gulf of Mexico, where our fathers sold their products and grew rich, and which have been closed to us, lo! these many years? If there is a man here who will answer that question for us poor brickmakers of the under world, send him at once down East, for we have need of him.

The past thirty years or more has been the golden era of inventions, and the era is still era-ing—I might say hurrahing. I would not be a bit surprised to wake up some morning and read that Professor Orton had invented a brick that would burn itself, or stay up, but I haven't begun to prophesy yet. I am coming to it soon.

The world of to-day is no more the world of our fathers than is Darkest Africa like Cleveland. It agrees with the past only in one thing: The brickmakers to-day, as in all times, have given more weight, more thought and more effort, in one small bulk, for the money than any other manufacturer. And I am sure if my grandfather should waken from his sound sleep and see and hear just a few of the inventions down in our back lots he'd never recognize it as the same old Maine of his Puritan love and labors until he looked into some of our brickyards or watched the market price of brick. Either would reconcile him, I guess. It would, at least, help to identify us with the past.

But in all this period of improvement the good old saint would miss one thing. No matter where he traveled—North, South, East or West—he would find the same thing missing. Missing? Nay, lost, gone, vanished—the sight of capable workmen content to toil; glad to earn their wages; satisfied not alone to put in their time, but to do well whatever lay before them. How grievously he would suffer when told that some crews saw fit to drop their tools and go idling until some other dissatisfied or lazy workman, miles distant perhaps, had his grievance smoothed over.

But he would marvel again, and again think himself on some other planet, when he looked into your clay manufactories, your offices and your appliances. You would have hard work to convince him that your brick were made of clay, and that your brick buildings were really brick, and not some fine material not dreamed of in his time. But ever and anon, with increasing force, the loss of the old-time spirit of labor for labor's sake would make itself felt, and he would tell you gentlemen to give some thought to this great subject. You have mastered the intricacies of machinery, you have unlocked the secrets of nature, you have overcome mountainous barriers and have achieved the most wonderful results, but you must turn more and more your attention to the discovery of the secret that produced the willing workers of the olden times; and when you have discovered the secret of its disappearance you have more than half mastered the secret of its reappearance. I do not think that the invention of machinery has had anything to do with this matter. I find that the simplest communities are suffering equally with the great centers of industry—in many cases suffering even worse.

The most pleasing improvement shining out in retrospect is the growth of friendliness among brickmakers, the establishment of system and the tendency to eliminate the ancient "cut throat" methods of the early brick manufacturers. The old rule was to make blocks of clay, put fire to them, and grab the first purchaser for them at any price. The old way was to imitate your granddaddies, and follow in the smooth, well-worn rut cut out by them.

To-day there is unity. To-day there is the understanding that brickmakers are in it for advancement as much as for their health or to find something to keep them from loafing. To-day the rivalry is to excel in quality, or in methods of production, or in finding uses for which brick are more exceptionally fitted. To-day brickmakers try to understand each other, to teach each other and to acquire knowledge, one from the other. No greater stride was ever taken in the history of any industry than when the National Brick Manufacturers' Association was organized.

In the twelve or fourteen years since its birth its influence has been felt throughout the country, from sea to sea and from pole to pole, I can truthfully say. It has even penetrated the polar shades of the historic back lots from which I hail—those dear back lots that were your pioneers in brickmaking; that gave to the West the greatest of its business men, including many brickmakers, but that still persist in clinging, as I do cling, to the simpler methods, the safe and economical devices of the forefathers.

As to the future, I stand as Patrick Henry stood, knowing no light by which to judge of coming events but the lamp of experience, and in that light I see so much greater possibilities, wonders, marvels, that I am overcome. And, like the new boy that I am, I quit lest my reputation as a prophet be met with jeers at my first appearance, and that good old Biblical saying be overturned, "A prophet is not wtihout honor save in his own country."

President Fiske: This subject is now open for discussion. As I look over the Convention, I see many men who watch the times very closely, and we will be very glad to hear from any of them. The hour is growing late, and if there is nothing to be said on this question, a motion to adjourn will be in order. I will announce the Committee on Resolutions to-morrow morning.

A motion to adjourn was made and carried.

SECOND SESSION.

Thursday Afternoon, Feb. 13, 1902.

President Fiske: Gentlemen, the hour has come for us to take up the work of the Convention. I desire, first of all, to announce

THE COMMITTEE ON RESOLUTIONS.

D. V. Purington, Chicago, Ill., Chairman.
L. C. Moore, Memphis, Mo.
J. P. Cahoon, Murray, Utah.
Charles Shultz, Rondout, N. Y.
W. P. Alsip, Grand Forks, N. Dak.
J. R. Copeland, Birmingham, Ala.
W. P. Blair, Terre Haute, Ind.

C. A. Bloomfield: If the Association will bear with me, I would like to introduce a resolution at once to go before this committee. You probably got an inkling from Professor Orton last night that I am interested in the establishment of a department of ceramics in New Jersey, and this resolution is in reference to that. I would like to say that the bill as introduecd is practically a copy of the bill that was passed by the Ohio Legislature, simply such changes being made as is necessary to suit the case.

"Whereas, the National Brick Manufacturers' Association, in keeping with one of the main purposes of its organization, approves of all proper means which aid in the development of the improved manufacture of brick and other clay products, and, believing that the better education of those who are to be engaged in making these products is the surest means of accomplishing this end; and,

"Whereas, a bill introduced in the Senate of New Jersey as No. 12, having for its object the creation and maintenance of the Department of Ceramics at the New Jersey State College for Agriculture and Mechanical Arts at New Brunswick, be it

"Resolved, That the National Brick Manufacturers' Association now in annual session in the city of Cleveland, O., give its hearty support to such legislative action as is typified in this bill, which is for the encouragement of ceramic education. More especially does it do so in this instance, as New Jersey has for over a hundred years been known for its clay beds, from which a more diversified product can be made than from almost any other State in the Union, and, moreover, as clay is the chief natural product of said State, therefore, be it further

"Resolved, That the National Brick Manufacturers' Association formally records its earnest hope that the Governor of New Jersey and its Legislature will enact as law this bill now pending, and the Secretary of this Association is hereby empowered to send a copy of this resolution to the Senate, to the House of Representatives, and to His Excellency, the Governor of said State of New Jersey."

President Fiske: This resolution will be referred to the Committee on Resolutions in regular order, and be reported to the Convention later on. Are there any other resolutions to be presented, or any other miscellaneous business, to come up before we proceed with the regular order? If not, I will ask Secretary Randall to announce the first number on the programme.

C. A. BLOOMFIELD, Brooklyn, N. Y.

Secretary Randall: Before proceeding with the regular business I would like to read a few letters from absent members and a telegram or two. Among the number is a letter from one of the oldest men interested in the industry. He expected to take an active part in the work this week, and was chairman of the Committee on the Exhibition Room, Mr. F. E. Frey, but his health failed him and he had to go to Florida.

—Letters from Absent Members.—

January 30, 1902.

To the Members of The N. B. M. A. Assembled:

While you are gathered here in our yearly assembly, I, who had looked forward to this meeting with longing and pleasant anticipations, am, by inexorable fate, far away from you.

When appointed as chairman of the exhibition committee I determined to bring my will power to bear to overcome the ailment from which I was suffering and come out conquerer. Alas! now I have lost faith in myself and all the new science of healing.

The first attempt I made to fulfill my duties laid me prostrate, and the verdicts of the physicians were: Only a warmer climate can help you. To this I shall now hasten.

While you take in the sights of our beautiful city in your overcoats, I may be sitting under the palms, fighting the mosquitoes and listening to the croakings of the frogs.

Wherever I may be, I will follow your deliberations in spirit, and in the mind's eye in the long familiar faces of our fraternity, as you are gathered together.

I am fully convinced that in this sixteenth anniversary you will have the best meeting we ever had. May you all enjoy yourselves and prosperity go with you all, is the wish of a charter member.

F. E. FREY.

New Whatcom, Wash., Feb. 12, 1902.

T. A. Randall, Secretary, Hollenden Hotel, Cleveland, O.—My greeting, with best wishes for interesting and profitable Conventions.

I. M. JUSTICE.

Columbus, O., Feb. 12, 1902.

Mr. Theo. A. Randall, Secretary N. B. M. A., Cleveland, O.:

Dear Sir—I had hoped to attend the Convention this week, and had made every arrangement to do so, but I caught a severe cold several days ago, and am feeling so badly at this time that I have concluded to forego the pleasure. I am sorry that I cannot be with you, and trust that you will have a successful meeting.

I enclose check for $3.00 for my membership dues.

Yours truly, C. H. DOAN.

Northampton, Mass., Feb. 11, 1902.

T. A. Randall, Secretary, Cleveland, O.:

Dear Sir—Inclosed please find my check for $3.00 for membership in N. B. M. A., as per inclosed receipt, which please return. Mrs. Bailey and I had our plans laid to be with you at Cleveland during this week, and regret that we cannot meet the N. B. M. A. this year, but I have a large contract well under way, for a local concern, and as it requires my personal supervision, it is impossible for us to be with you at this time.

D. C. MORRIS, Detroit, Mich.

With kindest regards, Yours truly,

W. A. BAILEY.

Suffolk, Va., Feb. 7, 1902.

Mr. T. A. Randall:

Dear Secretary N. B. M. A.—I am very sorry that I cannot see you at Cleveland Convention week. My wife and I had planned the trip last summer and looked forward with so much pleasure to our trip to the Convention and our stop off at Pittsburg to visit my relatives in that city, but—

Now all is over! Plans perfected dashed
To pieces on the rocks of circumstances!
The waves that yesterday over the light house splashed,
To-day in softer, fresher swells, perchance,
Are drifting in the ether, far above.
The rocks, the wrecks, the roaring of the sea;
And so with Lizzie—from suffering, by love
Ascendeth to her "Blessed immortality."

I told you, on your visit to my house, of the loss of our darling babe, and now it is my darling wife. I could not go to the Convention this year without her, and it makes me feel sad to read of the Convention week. She died Oct. 10. She thought so much of you and The Clay-Worker, and was heartily interested in the welfare of all clayworkers.

With best wishes and my vote for T. A. Randall for Secretary of the N. B. M. A. for 1902, I am, Sincerely,

H. L. JACOBS.

New Smyrna, Fla., Feb. 8, 1902.

T. A. Randall, Indianapolis, Ind.:

My Dear Randall—Do not think because I am to miss the coming Convention that I have lost interest in it, or its members. Not so, for it is always dear to me. It is too far to go from this land of sunshine and bloom, and the change in atmospheric conditions, I am fearful, would not be conducive to my health.

You might be inquisitive enough to ask how I put in my time away from the hum of business affairs. Well, we fish and boat, gather shells on the most beautiful beach I have ever seen, and when weary of this put in the time breathing the odorous ozone off old ocean's boundless expanse.

You also might ask what we were fishing for and who dug the worms. I would tell you, but you would just call it one of my fish stories, and my modesty prevents my telling of more than one day's experience, and as my memory is short will go no further back than yesterday.

Yesterday three of us caught over 400 fish. Anything below a pound and a half we threw back, and this was done in about five hours. One of our party caught over 200, but this party was not me. But while the other fellow went for numbers, I went for change of fish and size, and captured a sea turtle that old salts claimed would weigh 150 pounds. We have out our line and hook for a shark, but up to date he has simply dined on the bait and left the hook bare. He evidently thinks we forbode evil on his ocean quietude.

But, say, the naptha launch is ready and we are going down the bay. I have diverged from what I started out to say, which is, send me a copy of The Clay-Worker, with Convention proceedings, as soon as issued, and do not forget to keep my name on the roll of (honor) membership.

Extend greetings to all my old friends at the Convention, and if possible try and get my old comrades, Purington and Eudaly, to say something if there is any opportunity. I am,

Yours truly, E. M. PIKE.

I also have a letter from the Builders' Exchange of Cleveland, extending greetings to our members and an invitation to make their place headquarters during our stay.

Theo. A. Randall, Secretary N. B. M. A., Hollenden Hotel, Cleveland, O.:

Dear Sir—The Builders' Exchange of Cleveland extends greetings to the delegates assembled at the sixteenth annual Convention of the National Brick Manufacturers' Association, with the hope expressed that the session may be one of great profit and interest, and that the visit to our city may be pleasant and satisfactory.

The board of directors of this organization cordially invite all the visitors to call at the Exchange, third floor of the Chamber of Commerce building, at their convenience, and make themselves at home. Yours respectfully,

THE BUILDERS' EXCHANGE,
February 10, 1902. EDW. A. ROBERTS, Secretary.

This, Mr. President, brings us to the regular order of business.

Prof. Edward Orton, Columbus, O.: Before proceeding with the regular business, I have a resolution which I would like to read and then have it referred to the Resolution Committee.

"Whereas, It has come to the knowledge of the National Brick Manufacturers' Association that a movement is on foot among certain people, representing some of the denominational schools of the State of Ohio, to defeat the measures now pending before the Legislature of Ohio for the necessary increase of the revenues of the Ohio State University, and

"Whereas, the National Brick Manufacturers' Association has, by its direct financial support of the Ohio State University during the past five years, come into intimate relation with the institution, and acquired a deep and lasting interest in its welfare; therefore, be it

"Resolved, By the members of the National Brick Manufacturers' Association, in Convention assembled, that we are opposed to any movement to defeat the necessary appropriation for the maintenance of the Ohio State University, and regard it as an attempt to dictate an educational policy to the State.

"The Ohio State University is the people's college, designed to promote the liberal education of all classes in the several pursuits and professions of life, and any step which looks like curtailing its resources and lessening its powers is, in our opinion, unwise and illiberal, and should receive the condemnation of all patriotic citizens."

And, now Mr. President, if I may speak to this just one moment, the situation in this State is, that since I have left Columbus and come here, a committee meeting has been held in the Ohio Legislature, in which the President of the Ohio State University has asked for an increase in the revenue of the university. The revenues are derived from the State Board, and it is, of course, a non-sectarian institution. The sectarian schools, of which there are some forty, object to giving the State University the sum. They seem to think it will in some way detract from them, and they are opposing any further increase in our revenue, and they want to pass a law that we shall be restricted from teaching anything that they teach; that our work shall be additional or subsidiary to their work. This resolution is designed as an expression or protest against any such narrow and illiberal policy, and, inasmuch as this Association has for the last five or six years supported by its money and influence one department of the Ohio University, it is fitting that it shall express an opinion against such a policy being carried out.

President Fiske: The resolution will be referred to the Committee on Resolutions and we will proceed with the regular order of business.

Secretary Randall: The first regular number on the programme this morning is a paper entitled, "Clay as a Commercial Commodity," by S. J. Geijsbeek, Golden, Colo. Mr. Geijsbeek was formerly an Ohioan. He expected to make a return visit to his home and intended being with us on this occasion. He has been prevented from doing so, but he has written a paper and sent it to us. My voice is in such a bad condition that I will ask Mr. W. D. Richardson to read it for me.

CLAY AS A COMMERCIAL COMMODITY.

By S. J. Geijsbeek.

Mr. President and Gentlemen of the Convention:

The definition of commodity, explained in a few words, means anything useful. Clay certainly belongs to that class of material found in nature which has its useful application.

History tells us that burnt clay was used long before Christ, not only in its common application, but also as pottery. We feel a certain pride when visiting museums to see ancient pottery ware, and when we can point out the artistic and mechanical finish with which some pieces were made.

We find among the old relics weapons for personal defense made of burnt clay. The most ancient of industries is the making and forming of vessels from baked clay, and it is worthy of note, that, simple as were its original processes and crude its primitive product, no industry has more developed to luxury. Clay has produced the most gorgeous specimens of ornamentation. In no industry does the value of the finished article bear so great a ratio to that of the raw material than in clay, and the clay industry has steadily and continuously advanced and improved with the progress of knowledge, and with the resources and discoveries of science, that we can say that to date the clay industry is keeping even pace with every other industry in the world.

Clay has received at all times the patronage and admiration of all generations, and civilization of nations is often judged by the height of the art their clay industry has attained.

Hieroglyphics inscribed on wet clay slabs, afterwards burnt, have furnished more data to the discovery of ancient history, than any other document found, even if they were written on parchment. Those clay slabs have stood the wear and tear and weather conditions of over 3,000 years, and the honor belongs to clay for having produced a material which is practically indestructible in the burnt state.

In the catacombs of Thebes and Benihassau, which have been proved to have existed nineteen centuries before Christ, and, therefore, 3,800 years from the present time, drawings have been discovered, exhibiting, in a great variety of outlines, the processes of the pottery industry as practiced at that time. They give an idea of the work of the potter, from the wedging of the clay by feet to the drawing of the ware from the kiln, certainly testifying that the handling and use of clay is a very old one.

The Chinese traditions carry back the practice of using clay to a very remote period. It appears from the researches of Stanislaus Julian that from the time of Emperor Hoang Ti, who reigned about 250 before Christ, there already existed a public officer under the title of "Intendant of Clay."

Dr. Drury Fortnum mentions in his work on ancient history that he has found bricks of terra cotta coated with beautiful turquoise blue glaze, and gives as the most recent data that these bricks have been made 522 B. C., when Babylon was destroyed by Darius.

Clay has such a large range of usefulness that a classification will materially help to describe the different classes of clay ware.

The most satisfactory and generally used classification is the one according to Broignart. He divided all clay products into three main classes:

First Class. Articles made from fusible clay, and producing bodies which can be easily scratched with a knife. They contain usually lime and other impurities, and fuse at ordinary high kiln heat.

Second Class. Articles made from refractory clay, producing bodies of non-transparent character, which cannot be scratched with a knife. Such clays do not contain much fluxing impurities, and only melt at very high heat.

Third Class. Articles made from infusible clay. Bodies made from these clays cannot be scratched with a knife, and they are infusible at heat employed in the clayworking industries. These clays do not carry any impurities.

Broignart now takes these three main classes and divides the whole into nine divisions, and classifies each article made from clay accordingly. However, in order to get a clear idea of such classification, we will take all articles and only divide them into their main classes.

Clay ware is then classified as follows:

First Class. In this class belong brick, terra cotta, drain tile and common earthenware pottery.

Second Class. Fire clay goods, faience, glazed tile, stoneware, sewer pipe and paving brick belong in this class.

S. J. GEIJSBEEK, Golden, Colo.

Third Class. Whiteware pottery, porcelain, bone china and vitrified tile.

The classification of Broignart, although of French origin, does give a fairly clear division of American products. However, several American writers have a good American classification, and the one used by Prof. Wheeler seems to cover the field pretty well. He classifies all clays in seven main divisions, and subdivides each class as follows:

1. Whiteware—Kaolin, china clay and ball clay.
2. Refractory—Plastic fire clay, flint clay, refractory shale.
3. Vitrifying—Paving brick clay and shale, sewer pipe clay and shale, roofing tile clay and shale.
4. Potter's—Plastic clay and shale of moderate fusibility.
5. Brick—Common brick clay and shale, terra cotta clay and shale, drain tile clay and shale.
6. Gumbo—Burnt ballast clay.
7. Slip—Clays of very easy fusibility.

A short description of the different clay wares, according to the classification of Broignart, and their usefulness, will show what clay as a commodity can do.

All clays of an impure character belong to the first class. Shales and clays suitable for making common brick, terra cotta, drain tile, flower pots and common pottery. The amount of impurities in such clays puts the limit as to the degree of heat at which they are fired. It is usually very low, so as not to run any danger from fusing the clay products together.

The common brick made from street dirt, as practiced in several parts of the country, is only a tribute to the general resources of clay. The more valuable front and fancy brick belong to a higher class of clays. Their production requires skill, knowledge and observation.

Building and fancy terra cotta is generally made from the clay used in these classes, and a still higher improvement in the use of common clay. Their manufacturing not only requires skill, but also art knowledge.

Flower pots and ordinary common pottery are usually made of clays which in color burn red, and their making is of no high character.

Clays belonging to the second class are free enough of impurities, so as to enable them to resist the high heat. The percentage of impurities, iron, lime, magnesium and possible alkalies are very low. Fire clay, stoneware clay and the high-grade plastic clays come under this head. Fire clay goods are made with a view to resist the action of the heat and the purpose for which they are designed. Fire brick for lining of ordinary flues are quite different from fire brick used for smelting furnaces. Crucibles and muffles are made also from fire clay, and the proper mixtures of fire clays is becoming quite a scientific problem.

The stoneware clays are not quite as refractory as fire clays, but they are quite free from iron, so as to burn to a light yellow body. They are used, washed mostly, for stoneware and faience purposes.

The high-grade plastic clays and shales are used for making paving brick and sewer pipe, and at several places such plastic clays are mixed with the low-grade stoneware clays in order to produce a better body, which will resist more heat, and give more strength to the finished product.

To the third class belong all kaolins, ball clays and white-burning plastic clays. These clays are as a rule never used alone. Their character and nature make them useful for pottery purposes, and as such they are used in addition with some fluxing materials. The combination which is thus produced is able to resist the high heat. Bodies of this style cannot be scratched with a knife and covered with a transparent glaze. They are used for whiteware manufacturing."

W. J. HAYES, Detroit, Mich.

Then, where the proportions of infusible clays and fluxing material are so that the latter are predominating, the result is transparent and vitrified bodies. Porcelain, bone china and vitrified tiles are clayware which are products of such combinations.

In conclusion of this paper, we would say that the importance of clay and its usefulness steadily increases throughout the civilized world. In buildings brick is gradually getting ahead of the lumber, and before long we will see only brick houses built. In the paving line brick is gaining ground, and the time is near when we will see all cities with paved streets, and also roads like we find in Europe. The vitrified block will certainly command the first place among paving materials.

Clay conduits for underground work are used more and more. Terra cotta is able to take care of itself, and, with its more artistic features than stone, it will soon be the main architectural material in use. Roofing tile will play an important part in connection with terra cotta, and residences, dwelling houses and factories will soon follow the sky-scrapers in regard to their building material, and clay and steel will only be used in their construction.

In the pottery line the products are rapidly advancing to the highest standard, and imports grow less every year. It will be only a short time until we will be making porcelain and china equal to that produced by foreign countries. (Applause.)

—General Discussion.—

President Fiske: From the paper I should judge that the writer had in mind burned clay, but there is another side to this question, unburned clay as a commercial commodity, and there are a number of our members who are dealing in clay—unburned clay—and they are clayworkers just as well as they who put the burned material on the market, and I am going to ask Mr. Bloomfield to open this discussion.

C. A. Bloomfield: About an hour and a half ago our President informed me that he intended to call upon me to open this discussion. It is a discussion which requires a great deal of thought, and had I known that I would be called upon to take up this matter, I should before coming here have gone into my library and taken down my books and prepared myself with statistics, which, I think, would have astonished you. I have for years, from my early childhood, been interested in the mining of clay in New Jersey, and it interested me to such an extent that, instead of taking up the practice of law, I became a mud digger. When I first went into it in New Jersey a little hole was dug here and there, a cart or two was employed and the material was carted miles. After being in it a short time and losing about twelve thousand dollars in three years' experience, I came to the conclusion that it needed a little more capital, a great deal more knowledge and more energy, and I went into it right, and I am now only one of several who ship from fifty to sixty thousand tons of clay a year. Twenty-four years ago I was called upon to mine the first clay which was used for the purpose of manufacturing architectural terra cotta in this country—some seventeen tons. Since that time there has developed a demand for thousands of tons. We are transporting from New Jersey to different parts of the Union at the present time from three hundred to five hundred thousand dollars' worth of clay every year. That clay is used for almost every conceivable purpose except common brick. It is used for the finest front brick and architectural terra cotta. The manufacture of stove linings, ship their clay from New Jersey. Locomotive fire boxes are made of clay shipped from New Jersey. This business has developed wonderfully, and we are now employing thousands of men. It may seem strange when I tell you that it has become so important that it almost equals, in the number of men employed and the capital used, the farming interests of the State of New Jersey. So you can realize, you gentlemen here, how important the New Jersey claybeds are as a commercial commodity. In addition to this, there is imported into the United States something like $150,000 worth of clay every year. From my knowledge of the clay banks of the United States, I look upon that as useless. We have clay banks in New Jersey and other parts of the United States from which you can manufacture everything made of clay that is equal, if not superior, to that imported from abroad. In this line, as a rule, the men importing the clay are foreigners; they have had experience with their own clay materials in their own country, and they will not try ours, and it is for that very reason that it is necessary to create and support technical schools, like that which Prof. Orton has in Ohio, to develop our product. The commercial commodity of clay is in its infancy. While I have reached that time where I am supposed to be going down hill, many of you who are here will live to see its full development, and many of you will be surprised at the strides that will be taken in the development of clay as a commercial commodity in the next twenty years.

F. S. Naugle, Warners, N. Y.: If I was a resident of the State of New Jersey I would want to call Mr. Bloomfield off, for they will soon have that little State shipped away from them.

C. A. Bloomfield: That is what we want if we can get enough money for it.

Mr. Meigs: How far is it practical to ship clay for manufacturing purposes?

C. A. Bloomfield: I ship some of it 1,800 miles. I ship thousands of tons seven or eight hundred miles annually. It all depends upon the purpose for which the clay is to be used. If it is to be used in glass factories and for the manufacture of muffles, the distance to which it is shipped is nothing at all.

L. C. Moore, Memphis, Mo.: As I was coming here on the train I read the statement in some Chicago newspaper claiming that some important official had stated that an immense amount of clay was used in the adulteration of sugar and flour, and that the officials of the city were going to take steps to stop it.

C. A. Bloomfield: I would like to answer that question. So far as the adulteration of sugar with clay goes, it is not a fact. They use rock plaster—rock taken from Rockland and New Brunswick. It is taken up the Hudson river and ground into an impalpable powder. It is used especially with powdered sugar to prevent its lumping, and almost any time you can see these little schooners, loaded with this plastic rock, going up the Hudson river; but clay is not used, and cannot be used, for that purpose, on account of its plasticity. As for using it with flour, I do not believe that is possible, for flour is too cheap.

President Fiske: If there is no further discussion of this question we will take up the next number, which is a paper by Mr. Eb Rogers on "Experimental Work in Brickmaking.

EXPERIMENTAL WORK IN BRICKMAKING.

By Eb Rodgers, Alton, Ill.

Mr. President and Gentlemen of the Convention:

Dr. Franklin said, in a letter to a friend in England, written about 1770: "You seem desirous of knowing what progress we make here in improving our government. We are, I think, in the right road of improvement, for we are making experiments." As the result of this experimental work, started under the most trying circumstances, and continued more or less up to the present time, we are to-day living under the most successful form of government in the world. With this great example of continuous progress by continuous experimenting ever before us, should we not all be tempted to use this means to promote our individual success?

No industry can attain any great degree of success by trodding continuously in the old beaten paths, for success is only attained by progress. Progress means the developing of new and correct ideas, and new and correct ideas can only be substantiated by experiments.

Who has a broader field in which to experiment than the brickmaker? With material underlying nearly the whole earth's surface, that is capable of being made into some sort of clay product, why should not experimental work be a very important branch of our business? While it is true that a number of our manufacturers have entered this field with considerable success, are we in general as far advanced in our business as many other industries with which we should, at least, be on a par? I think not. One reason for this is that we have not spent our proportion of energy and capital in perfecting new and better methods. Another reason is that we, as managers, have neglected to supply ourselves with a technical knowledge of our business, and we, as employers, have failed to employ this knowledge. I think it safe to say that our raw material varies more than that used in any other industry, and it is also safe to say that we use less effort than any other industry to discover in advance the effect of these variations on our product.

How many superintendents know how to make a chemical analysis of the clays they are working? How many know when they are making a possible or an impossible mixture; why they make the mixture, and what the result will be? How many burners know why they produce burned brick by setting green brick in a kiln, closing it up, drying it off, burning a number of days and obtaining a certain settle? Would not a technical knowledge of the business, or the presence of some one having that knowledge, be of great assistance to these men and enable them to handle their work with more intelligence. If the enormous amount of capital invested in chemical and testing laboratories, in other industries, has proven a paying experiment, why would not a small investment along this line pay in our business? In following the construction of a large steel plant, for which we were furnishing the material, I was very much taken with the fact that one of the first and most complete buildings erected on the ground was the chemical laboratory. This laboratory, when completed, contained every conceivable appliance for testing the chemical and physical properties of steel castings. A number of chemists were employed to make a chemical analysis of the raw material, of the fuel used and of the gases produced by the fuel, and to test the physical qualities of the steel castings produced. With all this technical information at hand, I note that they sometimes make faulty castings. Is it surprising, then, that we, with little knowledge of the composition of our raw material, knowing little about the causes that produce the effects, should occasionally produce ware that is uneven in color, quality and hardness. Some attribute these irregularities to bad luck, but I think it would be nearer the truth to attribute them to what Sam Jones calls "ignorance." It seems to me that it would be a paying experiment for every manufacturer of clay products to have a laboratory, in proportion to their capacity, and employ the knowledge of a chemist to experiment with the clays and instruct the superintendent as to the proper mixing and handling of his material, and to instruct the burner as to what effect fuel gases, drafts and different degrees of heat will have on these mixtures.

This would prevent us from spending a great deal of capital and energy in attempting to make combinations and produce results entirely at variance with the laws of nature.

I think it would also be a profitable experiment to have complete appliances for testing the physical properties of our finished product. It would be much cheaper and more satisfactory to find out the physical imperfections of our product and remedy them before placing it on the market than to send it out not knowing what satisfaction it will give, and run the risk of having to replace it or have your reputation damaged as a manufacturer of first-class material.

The complete knowledge of the business that this system would give would be of great assistance in all departments, and would enable the working out of experiments along different lines with more intelligence. All experiments should be performed, as far as possible, independently of the regular work. By developing the new ideas and methods in this manner, if they are successful they can be readily applied in the daily practice; if they are not correct, you have been to a small outlay compared to that of involving your whole plant in the experiment. I have in mind a plant, well built, having good material and turning out good brick by ordinary methods. This plant was closed out at an entire loss to the original owners, on account of using their entire plant trying to develop a new idea, instead of having a separate department for this work. Had they been satisfied to go on making good brick at a reasonable cost, while they were experimenting in another department on how to make better brick at a less cost, they would no doubt have a good paying investment to-day.

EB. ROGERS, Alton, Ill.

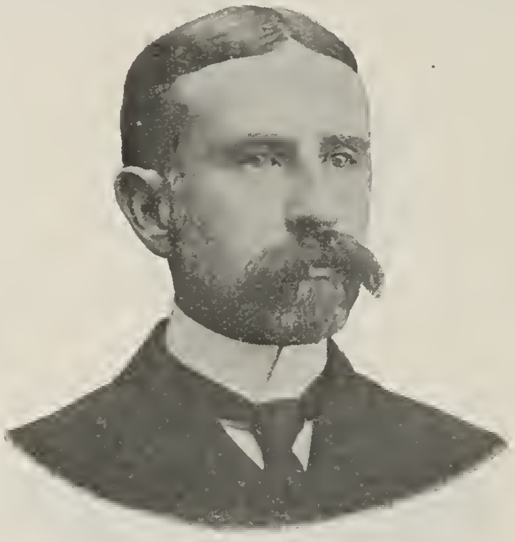
Very few new ideas ever work successfully in practice without first going through the experimental stage, and it is very important that we do not disturb our regular run of work, by continually introducing into it methods that have not been tested for practicability.

The working out of experiments adds a spice to the general business. There is an uncertainty about the success or failure of the experiment that creates an interest, that varies the monotony of the daily grind of routine work. There is room in most every department for the application of some new idea or method, the practical part of which has been tested before being applied.

We should ever be on the watch for new ideas that will help us to operate our plants with more system and economy.

Beginning at the clay bank, experimenting has shown that a steam shovel is the most economical means of excavating where the material is obtained from a face. Steam shovels are now being manufactured in sizes to suit the smallest, as well as the largest, capacity. They are much more reliable than men, as they never strike, are always ready to work in all kinds of weather, and can do a better job of mixing the different strata of clay than it is possible to do by hand. I think a steam shovel of proper capacity would be a paying experiment on any yard working a bank with a face. We expect soon to experiment with a steam shovel for digging surface clay for our dry press department. We are of the opinion that by digging the clay with a steam shovel and drying it in an artificial dryer, we will have a more satisfactory system than that of having acres of sheds, and depending on the weather during the summer months to get them full. The ability to get your full supply of clay daily, regardless of ordinary bad weather, will add more materially to the profit and loss account at the end of the year than one would think without going into details. Another advantage gained in the digging of surface clay with a steam shovel over the old way of ploughing up and bringing in each stratum separately, will be the thorough mixing of all the different strata into a uniform mixture, thus insuring a uniform brick and preventing the continuous changes that are bound to take place in working each stratum separately.

In the machinery department, experiments having in view arrangements for handling material automatically can most always be worked out to advantage. The unnecessary handling of material should be carefully guarded against, as each handling requires either power or labor, and they will both add materially to the expense account at the end of the year, be they ever so small each day.



W. S. RAVENSCROFT, Ridgway, Pa.

In the drying it is necessary to find out by experiment just what treatment your clay will stand, and see to it that it gets this treatment at all times. To experiment on this point it is not necessary to build two or three different kinds of $10,000 dryers.

This brings us to the burning. In this department there has probably been more experimenting done than in any other, and judging from some of the methods used, through ignorance of the nature of the material and lack of knowledge regarding drafts and temperatures, it would be hard to decide whether the object in view was to burn brick or money.

Some of us have been very successful in accomplishing the latter result. In this department our technical knowledge would be most valuable. This is the most expensive department to operate and maintain, and in this department occur also most of our wastes.

Here I would say, again, keep your experiments clear of your main work. The loss of one kiln of brick through experimenting would more than pay for the erection of an experimental kiln, where you could fail to your heart's content without materially injuring your regular output, and if you are successful your idea can be applied more intelligently and with an assurance that your product will not be damaged for marketing. There is so much room for attaining better results at less cost in this department that it is not surprising that we are willing to take such leaps into darkness, trusting to luck that we will land on something better. It is to be hoped that through diligent and scientific experimental work some one will soon produce a kiln in which we can burn all perfect No. 1 brick and utilize all of the heat produced by our fuel.

There is also an unlimited field for experimental work in adapting clay products to new uses, and the more familiar we become with the technical side of our business the more readily will we discover these uses. We must not only satisfy ourselves as to the adaptability of clay products to these uses, but we must demonstrate to the public, to their satisfaction, that they are so adapted before we can expect them to be used. Clayworkers in general are slow to take up the work of demonstrating. Many industries spend fortunes each year in demonstrating to the public that their product is just what they claim for it, with the result that their sales are sufficiently increased to justify the extra expense.

Thus it runs from the clay bank to the market, a vast field in which to work out experiments for our own betterment and profit. Eminent success is in store for the energetic, pushing young men of to-day, who will provide themselves with a technical education and couple it with practical experience in clayworking. (Applause.)

—General Discussion.—

President Fiske: This is a subject which comes pretty close to all of us, and in looking over the Convention I would venture to state that there is not a man here who has not done more or less experimenting. It would be a difficult task to pick out from this body of men the man who has done the most experimenting. I see Mr. Ravenscroft, of Ridgway, here. I know he has done some experimenting, and I will ask him to open this discussion.

W. S. Ravenscroft, Ridgway, Pa.: I think it takes a great deal of assurance to get up in this Convention and undertake to say anything on this subject. My idea about experimental work is to do just as little of it as possible. There is a large percentage of brickmakers to-day who are out of the business, due to the fact that they have experimented, not wisely, but too much. I believe, along certain lines, we can improve our material and keep in touch with modern and improved methods as we go along, but in a general experimental way I am of the opinion that it is not wise to do anything that will put us in an uncertain condition. My experience has been limited to the clays of Pennsylvania, West Virginia and Ohio, and those familiar with them know they are not difficult clays to handle or to understand. Of course, the experimental work is not confined to the clays, but to the manner of manufacturing your goods. Some years ago some one came forward with a new style of fire box, with which he was going to revolutionize the whole business, and you will find that most of those who took it up have gone back to the original method. I think, as a rule, we should get down to one particular line and stick to it. Don't try to make too many kinds of brick in one yard. I believe we will get the best results by being conservative. (Applause.)

Mr. Bloomfield: I noticed one statement in the paper that I do not think ought to be allowed to go out from this Convention, because it might lead somebody astray, and that is in regard to the use of the steam shovel. The use of the steam shovel depends upon circumstances. I have looked into this thing thoroughly, hoping myself to use it. In half the cases it will not pay. It will pay in the case of my friend Purington, where thousands of brick are made every day, but in many cases it will not pay. I was at one yard this morning where I saw a steam shovel at work, and I am satisfied that every day that man uses a steam shovel he is losing money, and I want to sound this keynote of warning.

D. V. Purington: It is a grave question in my mind as to whether the estimate of Mr. Bloomfield is a correct one. I do not think the experience he had this forenoon was sufficient to enable him to make this statement.

Mr. Bloomfield: I sized up the number of kilns, and I have seen these things so often—

Mr. Purington: I say Mr. Bloomfield is not justified in making that statement. It is partly based on the simple fact of mixing the shale from top to bottom of bank, which ofttimes is worth a great deal more than the extra expense of doing the work, if there is any. (Applause.) I want to say that you want to look at both sides of the shield before you say what color it is.

W. D. Richardson: One thing to be taken into consideration is the local conditions—the price of labor, for instance. The gentlemen in Cleveland were forced to put in a steam shovel because the men in the clay bank wanted $2.25 a day, and they got it, too; and they were very particular about their work and how they did it, and that was one thing that forced the people in this vicinity to put in steam shovels. If you can get men to work in the clay bank for $1.25 a day, then you are all right, but when you pay them more than that you had better put in the steam shovel.

Lemon Parker, St. Louis, Mo.: I would like to say that in our factory we have an experimental department, with a small dry pan and a laboratory and a little machine for the mechanical preparation of the clay, and we find it a very valuable addition to our factory. We make our experiments in this department and we know what we are about.

F. S. Naugle, Warners, N. Y.: I want to take a little issue in regard to this experimental work. As a rule, we do not experiment too much. I think we do too little experimenting. I do not think we can afford to stop experimenting. I do not mean by that that our whole plant should be given up to experimenting. Keep your plants going right along and do your experimenting as you go. I want to commend the paper on this point. I think we ought to continue our experimenting. I want to give a little experience we had. When I was young in the brickmaking business we were working a clay that they had been working for a long time. I was a restless sort of a fellow. I did not have much to do just then, and I began to inquire if there was other material close at hand, and they told me it was no good; but I decided to experiment with it. I made just one brick, and there is a gentleman here in this Convention to-day who will bear me out in the statement that that one little experiment—the making of that one brick—changed that whole plant from a clay brick plant to a shale brick plant. We cannot afford to get into an old rut for the sake of a few dollars because our predecessors did so. I say, keep on experimenting; if you see a man has a better fire box than you have, build one fire box like it, and if it is not a success you have not ruined yourself or your firm. You can easily tell whether this new fire box is better than the other. If you can save ten pounds of coal on one fire box in the course of the year, it means a good many dollars on all the fire boxes. If we did not keep right on experimenting each day we would not be the brickmakers we are to-day. (Applause.)

President Fiske: This discussion has been entertaining and instructive, but we must take up the next number of the programme, which is a paper, "Modern Brick Plant Prospecting and Construction," by Frank W. Butterworth, Danville, Ill.

MODERN BRICK PLANT PROSPECTING AND CONSTRUCTION.

By Frank W. Butterworth, Danville, Ill.

Mr. President and Gentlemen of the Convention:

It was the custom some years ago, as you will probably all remember, to celebrate the advent of a new year by making a more or less extensive round of calls. The more or less dependent, to a considerable extent, upon the capacity of the caller, as it was considered only good form to offer all kinds of liquid refreshments. In comment upon this the humorist, Bill Nye, wrote to a friend something like this:

"New York, Jan. 2, 1890.

"I made some New Year's calls yesterday—I am told."

I fear greatly that some such remark as this will be applicable to me after you have all had your fling at this paper, and I will go home and tell the boys at the works that probably the official stenographer has a record of what I said, but surely no one else will remember it, as almost any remarks upon so broad and comprehensive a subject cannot help but produce adverse discussion, and it is with fear and trembling I approach it.

Manufacturing conditions in our glorious country have been changing rapidly during the last decade. Formerly capital was chary of the industrials. Few manufacturing stocks were listed upon the exchanges, and nearly all of the successful concerns grew from small beginnings. Now capital is seeking investment in large chunks. Instead of using last year's earnings to make this year's increase, it is easy to secure new money for projected improvements; and to-day, owing to the opening of new markets, the best financiers of the country are eagerly buying the shares they formerly thought risky. In our business much the same changes are taking place. Owing to the almost exclusive use of the older deposits of shales and clays, which usually occur of great thickness and extent, increased permanency is added to an investment in clayworking industrials. As the surface clays within easy hauling of the cities are rapidly becoming exhausted, more brick each year are transported by large carriers, and, as a natural result, a more extensive business area becomes accessible. Instead, therefore, of being content, as most of us have, with either commencing in a small way with a trifling investment, and from thence, after practically testing material and market, growing into a large works, the time is right here when we are as a beginning, instead of an ending, building extensive plants, representing a substantial investment, without years of preparation in that particular location.

It is because of these conditions that a few remarks upon prospecting—that is, the proving in as conclusive a way as possible to the satisfaction of the practical man, and to capital as well, both the character and extent of a deposit of workable material—seem in order at this stage of our industry's progress.

Bearing in mind that the wrong material means almost total loss to investors (What is a brick plant worth to move?), that as our process of manufacture is an exceedingly long one, and that in a large plant a vital mistake at the beginning means probably a month's product made and spoiled, a year's profits lost before it is discovered, from the very bottom of my heart and for the good of the trade in general, I say: "Let the brick works prospector choose for his watchword 'Caution,' else that awful, harrowing, soul-wrecking first kiln will be a hideous nightmare."

See the red flag of danger everywhere, shut the eyes to the good points—they will force themselves into notice if they are prominent enough—dig, drill, hunt, test for the injurious points in an investigation, whether of material, market or means of reaching it.

LEMON PARKER, St. Louis, Mo.

A man with ample capital at his command, and who has had years of practical experience—none others should apply—is looking for a location for an extensive clayworking industry; his first requisition is for a man showing lines of transportation, his next for a State geological report. Having selected a point with good shipping facilities, preferably in the center of a prosperous and growing comunity or close to an increasing city, and where the stratification, as shown by his State geologist, gives promise of the material he is after, he starts out.

His first tramp is directly along the line of transportation; perhaps a few minutes' walk will bring him to a deep railroad cut, exposing the shale or clay in which he is interested. More often, however, he finds the first indications in the lowest possible levels; that is, the water courses. A sharp bend in the creek or river makes a strong current, which keeps the material clean and free from surface washings. Often he finds in these lower levels, like the mineral prospector, flakes of sandstone, small pieces of partly disintegrated shale, broken concretions of kidneys of iron bursted by the frost or exposure to the weather, and then he knows that somewhere above him, perhaps hundreds of feet, is the stratum he is after, for the maerial follows nature's law and travels downward, never up. It may be, or rather it is very likely, that weeks and months are spent in fruitless search. Then another territory is tried; but, presuming that he is successful at last, a seemingly heavy vein of material is found close to transportation, surface indications are excellent as to its accessibility without burdensome stripping, a level tract is adjacent suitable for a plant, an average sample of the outcrop is submitted to the chemist for analysis, and, nothing injurious found, the property is cautiously optioned for as long a time as possible and the careful, painstaking series of tests begin—one for quantity and one for quality. The former by far the easier, for a few drill holes or a week or two sinking shafts, together with a few days' work of a civil engineer running levels, will enable the prospector to make an accurate chart showing within a very few inches the thickness of the overlaying material, as well as the thickness and extent of the workable straum. In these days of concentration of business into large units the Ohio farmer's suggestion as to the purchase of land is quite apropos. He said: "While you'r gittin', git a plenty"—for the plant ought to grow, and no doubt will.

Then commences the test for quality, and it seems that no matter how carefully this is conducted, if the stratum has never been worked there is always an element of uncertainty present with the conservative man conversant with what may happen. The more knowledge the more caution, and, from the varied experience of several careful investigations, I offer for the consideration of this convention the following practical suggestions:

The outcrop of a vein of workable material having been exposed to the weather, marked physical, if not slight chemical, changes, distinguish it from the solid formation, and as a large plant will exhaust this in a few months, in testing it is always preferable to avoid the exposed portions of the stratum. The method of ultimately procuring the raw material having been decided upon from the surface indications and from drill holes and shafts, the sample taken for test purposes should approach as nearly as possible to the material which will be worked commercially. All strata vary at different depths, to some extent at least. Hence, if it is the intention to work the entire deposit, as, for instance, with a steam shovel, it is advisable, regardless of expense, to take samples from all depths. Nearly all the machine concerns have complete testing rooms. I might add they have experts in the manufacture of samples in charge of them, but, without any disrespect to them, it should be borne in mind that their object is to always make the best ware possible. The prospector should be anxious to bring out the bad points to the material under consideration; hence is should be prepared coarser than ordinary, dried faster than usual, and when burned should be subjected to not only the medium temperature of the kiln, but also to the most and least intense heat, and to the flash of the fire. After having exhausted every known test, and brought a fresh and critical brain to bear upon the samples, everything looks promising, the risk is at a minimum. But yet there is still a risk—a risk of the perfect uniformity of the deposit, much less in the old than in the recent formations; a risk that the ware contiguous to the test samples has influenced them, that the workable conditions have not been strictly adhered to, and so on ad infinitum. The element of uncertainty is always there to the cautious man, although he usually loses sight of it during the construction period, for he needs all his energy in the quick dispatch of the multitudinous details incidental to the prompt erection of the works, and this brings us to what, I think, may be safely stated as the most important branch of the clayworker's education; that is, the cheap and permanent construction of a plant which will manufacture, in the most economical manner possible, the product which will best suit the needs of the available market.

F. W. BUTTERWORTH, Danville, Ill.

In no other industry to-day is there so much diversity of opinion in the general plan, as well as the detail of an extensive brick plant. This is quite natural, because of the great variety in, first, the nature and situation of the raw material to be worked; second, the available space for the plant proper; third, the climate of the location; fourth, the cost of fuel, and, fifth, the demands of the market. Each or any of these may make a radical departure from the general plan of another established plant highly successful, hence any remarks upon this subject must of necessity be very general.

In the planning of a plant the aim obviously is to manufacture the largest percentage of strictly No. 1 ware as economically as possible, and still keep the investment so small as to allow the payment of returns. The time is right here, owing to the increased factor of permanency in our plants, when it is good business in a clay industry to seriously consider any device which will annually save by its installation anything over the customary interest rate of 6 per cent., and, under such conditions, it becomes necessary for the brickmaker to look around for those improvements which ten years ago he would scornfully have turned down as "frills." With the prevalence of such ideas comes the possibility of solid fireproof construction, embodying the best engineering skill of the country, and it is upon such ground as this that "modern brick plant construction" must be discussed.

The brickmaker's raw material costs him usually so little that we may say it is free. The process of manufacture is complete in itself. The two elements in economy of operation to be considered are labor and fuel. Labor consists of the handling and rehandling of the material in one form or another by human hands, hence the highest economy is obtained when the number of these reaches the minimum, which is usually accomplished by the substitution of machinery as nearly automatic as possible. Supposing 100,000 brick daily are to be manufactured, weighing 6 pounds each, the average number of times they are to be handled is about thirteen. This means that 3,900 tons of material daily must be lifted from one place and deposited in another. One handling saved means nearly 8 per cent. increased earnings. The crude raw material, by the use of steam shovels and the most improved conveying apparatus, can be dug, no matter how hard, and carried with but little labor, and when possible it is advisable to make but two elevations—one of the raw material by means of the incline from the clay bank, in order to automatically feed the grinding apparatus, and one after pulverizing by means of elevators, in order to feed with a minimum expense the molding machinery. Up to this point in the manufacture it seems that the substitution of mechanisms for human labor has about reached the limit. In comparison with that formerly employed, the saving is enormous. From this on the builder's chief study should be to handle the product, which has now taken the form of finished ware, not only the least number of times, but also in large units, and to take advantage in so much as possible of the great force of nature so freely bestowed, that is, gravitation. A few moments thought convinces any one of the economy of arranging the dryers, kilns and final carriers in such a way that each shall be contiguous to the other, and so that the enormous daily weight to be transported shall all go down a gentle incline from the machine to the point of delivery of the finished product. It seems to me that the very acme of perfection in brickmaking will be attained when this entire process becomes a continuous one; that is, when the green brick leave the molding machinery and pass through an increasing temperature, coming out close to their final point of delivery as cool finished product, without having been touched by hand. This, at present, is a long way off, yet the nearer it can be approached in the construction of a plant the more economical will be that plant's operation.

The majority of discussions among brickmakers are devoted to the second element of expense in manufacture—fuel. For convenience we will subdivide this important subject into "Fuel for Generation of Power" and "Fuel for Burning and Drying Ware." To the first the best engineers of the country are, and have been for years, devoting their best efforts. Endless opinions have been promulgated, and we brickmakers can well afford to let them thresh this out on their own floor, satisfied to take and use the results of their exhaustive experiments. The second division, however, belongs exclusively to the clayworking fraternity, and we must find out for ourselves the best appliances for the economical generation of heat from fuel and its utilization in the most economical manner consistent with the production of the largest percentage of first-class ware.

To the uninitiated it seems as though the mechanical appliances in use in other industries for securing the most perfect combustion could be utilized in clay works, but the conditions are peculiar. The changes must be brought about very slowly. First, the physically combined water, then the water in chemical combination must be driven off before the temperature can be brought to the degree necessary to change the various ingredients to such an extent as to produce a knitting together sufficient to stand the destroying action of the weather or the abrasive effect of the heaviest traffic. It must not only be a gradually increasing heat, from perhaps 100 to 1,800 or 2,000 degrees, but also a gradually decreasing one. For that reason alone the question of mechanical stokers, use of powdered coal and the other scientific means of burning fuel must be discarded. The aim of the brickmaker, for use in his kilns, must be for a simple device to secure perfect combustion; cheap, because of the large number required and because they are in use but a small fraction of the time. Any kiln, whether up or down-draft, properly constructed, with due regard to the dimensions of flues and stacks, is a smoke consumer at one stage of the firing. When the ware is at its maximum temperature the products of unfinished combustion at the furnace undergo a second combustion, as it were, when coming in contact with the almost incandescent ware. It seems, therefore, that in the construction of kilns due regard should be paid to good combustion in the early stage of the burn, and to the size of the furnace, in order that no more heat can be generated than can be used; also to the size of the escapement ducts, in order that the gases of combustion should not be set free until the greatest amount of heat should be extracted therefrom. It is very obvious that the ideal conditions are attained when heat is generated economically and all used up; that is, when none of it is allowed to escape at a temperature above that of the outside air. Surely these conditions are most closely approached in the continuous kiln. It has seemed to date, however, that the last proviso has not been complied with; that is, the production of the greatest percentage of first-class ware. As a sort of compromise has come the successful use of waste heat for drying; that is, the heat remaining in the ware after firing has ceased. This is surely a great step toward continuity in the process of manufacture, and, under favorable conditions in raw material, product required, etc., should be carefully investigated by the prospective builder.

In the planning of a plant it is always well to make a careful and adequate provision for a substantial increase in capacity. The power unit can be 35 or 40 per cent. larger than necessary without any sacrifice in economy of operation, and the added interest upon the investment will be more than compensated in the lack of repairs owing to its easy work. The average brickyard insurance rate is too high and the permanent feature so important that the premium saved by using fireproof construction will usually pay a good return upon the investment, and the very best machinery, kilns and equipment generally are none too good, provided commensurate returns can be guaranteed.

The careful selection of machinery, dryers and kilns best adapted to the material to be worked and needs of the available market; substantial settings and convenient placing, together with permanent buildings, make the modern brick plant one of the most marvelous of this later day's achievements, and it is, indeed, with great satisfaction the man who has planned it all wanders over the works in the waning twilight, after a good day's work is over, and says, "Well done, O good and faithful servant." (Loud applause.)

—General Discussion.—

Secretary Randall: I want it distinctly understood that the credit for this very able paper belongs to Indiana. Mr. Butterworth made his money in Indiana, and has gone over the line and built a brick plant in Illinois; but he is a Hoosier, not a Sucker, and if any of you take him for one you will get left. (Laughter.) Likewise, the credit for that sage remark, "While you are gittin', git a plenty," belongs to a Hoosier.

Mr. Purington: Mr. President, I supposed this was a National Association. (Laughter.)

President Fiske: It may seem at first glance that this question of prospecting for a new supply of material or a new location to construct a new plant would not be of special interest to members of this Association, but I happen to know that it is. It is only by chance that I happen to know that there are quite a number of the members who have been running their present plants a great many years who are now looking about for other locations, for various reasons, and it would seem that this paper is of more general interest than almost any other. There are a number of men here to-day who, during the past year, have built new plants. I believe among this number is Mr. Will Purington, and I am going to ask him to start the discussion of this paper.

Mr. Will S. Purington: I do not think much more can be said on this question than Mr. Butterworth has said in his paper. My experience in prospecting for clay has been limited. We have not done anything of the sort for ten or twelve years. I thoroughly agree with what Mr. Butterworth has said in regard to the construction of plants. The steam shovel question is a matter that is worthy of serious consideration. I believe a steam shovel can be used on any plant where they are manufacturing 75,000 or even 50,000 brick a day, and that they will make more money with it than without it. We have had some little experience in trying to take clay out by hand, and I am satisfied that we would not have made as much money as we have had we used the steam shovel altogether. So far as prospecting for clay is concerned, I have not had a great deal of experience. Some years ago I had not had much experience with clays in general, but I thought I knew something about shale. A party of gentlemen came up from a small neighboring town and stated that they had a shale bank similar to ours, and wanted me to go and look at it, and, from the appearance, the shale was exactly the same as ours. I advised them to send up a few barrels and let me try it. They did so, and we tried it, and, after the clay was made up and burned, we had a brick just as white as chalk and of no more account; so you can't tell much by the appearance of clays.

J. Fred Smith, Omaha, Neb.: A man comes a thousand miles to a Convention and gets his mind all made up to buy a steam shovel, and another man gets up and knocks it all out of his head, and it is a bad state of affairs. (Laughter.) We visited a yard this morning where they were making 60,000 brick a day, and they were using a steam shovel. Now, the clay bank is a pretty hot place in hot weather, especially if the bank faces the south and the sun beats down on the men. It has been a great question with us about getting our clay in the carts, and I thought I would be a pretty good victim for the steam shovel man; but I would like to know if it would pay me to put in a steam shovel for 60,000 brick a day. Where we are we have a man to cave the bank and a boy to soak the bank, and six shovelers at $1.65 a day—eight men altogether. The bank averages from fifteen to thirty feet high, and there is no stone or rock in it.

C. A. Bloomfield: I would like to say to the gentleman from Omaha that if he is going to mine anywhere from 80,000 to 150,000 tons of clay a day, it would pay him to use a steam shovel, if there is to be no sorting of the clay.

W. S. PURINGTON, Galesburg, Ill.

W. S. Purington: The advantages of the steam shovel in the summertime are best appreciated, when we want to make all the brick we can. We are usually pretty busy at that time of the year. Last summer it would have been an actual impossibility for us to have made brick without the steam shovel, and in the wet weather, with a steam shovel, you can run continuously. With a few rubber suits for the men who are exposed to the weather we run along all right. Another advantage in using the steam shovel is that the shale is mixed so much better.

C. A. Bloomfield: The gentleman said the place was so hot for the men to work in the clay bank. He can easily protect his men. We are farther south and we put awnings up over the men, and it is cooler there than in any other place. There is always a light breeze stirring, no matter how hot, and all the work is done by hand.

Jno. Miller, Washington, D. C.: I have a steam shovel, and I think it the best investment I ever made in my life. But if I could get eight men to dig and land the clay for $60,000 brick a day, at $1.65 each, I would not need a steam shovel; but it takes about sixteen men like the kind I have to dig and load that much clay. I use four men on the shovel, but it would take sixteen or eighteen men to do the work by hand.

A. D. Keyser, Philadelphia, Pa.: Of course, one must judge of one's own bank. Our clay bank is from fifteen to thirty feet deep. I use one man to throw clay for 30,000 brick a day, and pay him $1.80 a day, and a man to undermine the clay. The latter I pay $1.60. We make 32,000 brick a day on one machine. On one side of the bank it is very thin, and he can only throw 8,000 or 10,000, but on the other side it is pretty easy digging clay, and I have seen him throw a day's work in one fall. He will throw as far as five feet, and from eighteen to twenty feet deep and thirty feet long.

Mr. Parker: I would like to ask, as a fire brick man, whether it would pay to handle one hundred tons of clay daily with a steam shovel. I believe it would pay the manufacturers to experiment with the fuel they use. We find that by taking a certain number of cars of coal and weighing them as the coal goes to the kiln, and then weighing the ashes and cinders, and making a comparison, there is quite a difference in the different grades of coal, and we have found this to be very valuable to us.

J. Parker B. Fiske, Boston, Mass.: I want to pay my tribute to the gentleman who has read this paper. I think it is one of the ablest and most comprehensive papers we have ever had presented to this Association. It is so full of meat that it is exceedingly difficult to discuss it, unless we specialize on one or two points. This paper has appealed to me particularly because I have been following that line of thought for some time, and the conclusions I have come to are largely the conclusions that Mr. Butterworth has presented to you. There are one or two points that I want to bring out. The machinery for handling the raw material and molding the brick in the green state has been brought very nearly to a point of perfection. You can buy to-day, from half a dozen manufacturers, perfected machinery which, with an exceedingly small amount of labor, will take your raw material and will mold your brick. Up to the present time, however, very little attention has been given toward the elimination of the labor which occurs in the handling of the brick after it has been molded; and it is a significant fact that, particularly on the common-brick yards in the East, where the open system of drying is used, notwithstanding all the improved molding machinery driven by steam, in place of the old-fashioned way of preparing the clay by horse power and the molding by hand, it is costing the Eastern brickmakers as much to make his brick and put them on the cars as it did his father and his grandfather. A year or two ago I made quite an extensive trip through different parts of New England and up and down the Hudson river, examining the present method of making brick. Mr. Butterworth has spoken about the amount of handling which is necessary at the present time after the brick are molded. I presume he speaks from a Western standpoint, where the stiff mud process is in use. I believe he said it averages thirteen times that the brick are handled. In the Eastern yards, where the open system of drying is almost exclusively in use, the number of hand operations after your product is completed, so far as form is concerned, would vary from fifteen to twenty. So that we handle the brick over and over again, and at the same time we do not change the shape or form. We are simply putting it into such a physical relation with the sun and the wind that they may do their work and the fuel may burn it. In visiting one of the largest yards on the Hudson river, the owner, a man about sixty years old, told me it was costing him more to make his brick on the rack and pallet yard, with improved machinery, driven by first-class engines, than it had his father. His father made by hand, prepared his clay with the old tempering wheel, operated by horse power, and molded by hand. Now it is a sad state of affairs if, with all the improvements in the way of machinery, we cannot make brick—and we are not making brick—any cheaper than they were made fifty years ago. It seems to me the reason why our brickmakers in the East have not made brick cheaper is because they are adhering to the open-yard system. All of you receive reports during the year from Mr. Middleton, and in looking these reports over one is impressed with the idea that the common brick industry has not the high place that other lines of industry hold. I think it figures up that from 1895 to 1900 the clay products of the United States increased in value from $65,000,000 to $95,000,000—that is, about 50 per cent.—while the common brick increased in value in those five years from $31,000,000 to only $38,000,000, an increase of about 20 per cent. It seems to me that if substantial progress is to be made in the saving of cost of manufacture we must adopt the plan which has been used so successfully in other branches of clay work. I do not mean to say that we must adopt the same machinery or the same dryers or kilns, but we must get on to some plan; we must take the common brick industry out of the realm of the temporary makeshift enterprises, which operate only a small portion of the year, and we must put it on to a plane with well-constructed plants, well-designed and well-constructed machinery, with ample power to operate, and every facility for the saving of labor and fuel. I believe the reason why the common-brick maker has made so little progress, at least in the Eastern part of the country, is because he has adhered to the summer yard. I know the many advocates claim for the summer yards that they can dry brick cheaper by the sun and wind than by the artificial heat. We all know that when the sun and wind work they do it cheaply and well; but we cannot depend upon them, and we cannot afford to construct a factory as a cotton mill or as a shoe factory would be constructed, unless we can be sure of operating that factory in a continuous manner. In the United States the average number of days that it would be possible to make brick on open yards rarely exceeds 125 days in the year, and often not more than 100, and so we cannot afford to install the same type of machinery and appliances which the people install to run their yards continuously. So I believe we must put the common brick manufacture on a different plane from what it is at the present time, and when we do that we can afford to have these labor-saving and fuel-saving devices, because they are in continuous operation, and therefore earn a good return on the investment. The investments in the older branches of manufacture, such as the cotton and woolen industries, represent a very large sum for the purchase of machinery. The cotton mills at Fall River have, in the last few years, thrown out machinery valued at nearly a million dollars, that was in good repair, because they could install new machinery which would save 6 per cent. of the labor, and I have been told on good authority that the cotton mills will invest from $5,000 to $10,000 in improved machinery that will save the labor of one man; not, perhaps, that they can actually make the cost any cheaper, nor because they obviate the difficulties of labor troubles, but they can turn out better goods. And I believe the time is not far distant when the brick manufacturing business—the common brick business, which has the cheapest finished product in the world, bringing, when all completed and put on the cars, only about $2 per ton—shall have plants designed and constructed by competent engineers, and when that time comes we shall see the common brick industry take the place it deserves with the other branches of the industry, and will see common brick used in place of stone more than at present, and see the industry take a front place in many ways. (Applause.)

C. B. STOWE, Cleveland, Ohio.

President Fiske: If there is no further discussion on this paper, we will pass on to the next number, "Is It Good or Bad Economy to Use Cheap or Low Grade Fire Brick in Building or Repairing Permanent Kilns?" The general discussion of this subject is to be led by Mr. C. B. Stowe.

C. B. Stowe, Cleveland, O.: This question is one of Mr. Randall's, and it came on me very suddenly. It is a question that to me, as a fire brick manufacturer, does not need any discussion. There is no argument to it. It is bad economy to use a low grade brick for any purpose. There are different grades and different qualities of fire brick made, which may seem more desirable for some parts of the kiln, and I have jotted down some items of interest that you may be glad to hear.

ECONOMY IN BUILDING AND REPAIRING PERMANENT KILNS.

By C. B. Stowe, Cleveland, Ohio.

Temporary kilns are now a thing of the past, and brickmakers consider only permanent kilns. There are many styles of these kilns, both patented and unpatented, and each have their advocates, but whether down-draft or up-draft, continuous or otherwise, the cost of repairs is a large item of expense, and the question of the kind of fire brick and the quality of same should be considered by all brickmakers who are desirous of reducing the cost of their brick.

There are several processes in the manufacture of fire brick—the hand-made wet pan process, hand-made pug mill process, semi-dry pressed process, soft mud process and stiff mud wire-cut process. All are used to-day in the building of kilns. I put these down in the order of their value for kiln burning, as the process of manufacture has considerable to do with the quality of the brick for kiln work, and their values are considered on brick made from the same fire clay.

If we had all of the above kinds of brick to choose from in building kilns, as we do in the fire brick business at our own works, where we make different brick for all different uses, we would put in the fire holes and bag walls our best hand-made brick, made of flint and plastic clay of an open tough nature, to withstand the changes of temperature, intense heat and clinkering—the inside lining of soft mud or dry press brick, the bottoms of tough soft mud brick and the crowns of either soft mud or dry pressed brick, as the crown, especially on large kilns, has considerable span, and semi-dry pressed brick being much more even and regular, will make much better work for this purpose.

The only place where we can use a wire-cut brick is for the outside of the kiln, and they must be hard and vitrified to stand the elements, and for outside I would prefer a shale brick, unless the fire brick were thoroughly burned. To get the best results from kilns the best grades of brick are the cheapest in the end. I mean by this, fire brick made from first-class fire clay and the proper mixture of same without regard to the process of manufacture. You cannot get a first-class fire brick when made from a low grade of clay. Some people seem to think that any clay that burns white is a fire clay, without regard to its fire qualities. No clay that can be vitrified naturally under 2,000 degrees of heat should be called a fire clay, and no brick made from such a clay, no matter how it is made, should be termed a fire brick. No fire clay brick made on a stiff mud process should be called a fire brick, as the laminations, no matter what the clay is from which it is made, make it liable to crack and spald under changes of temperature.

We get the best results in kiln repairs, and the kilns should be constructed with fire mouths, so that one rowlock can be taken out and replaced without injury to the balance of the kiln. In fact, all parts of the kiln subject to intense heat should be so constructed. Then if you will build these parts of your kilns and get for your repairs a high grade hand-made brick you will find that they will outlast No. 2 brick several times over, and as it requires a mason to put them in, the difference will be more than made up in the labor and repairs, not to say anything about the loss of the kilns. We cannot make too good a brick for fire holes of fire brick, terra cotta and pottery kilns, and in pottery work, where kilns are watched with more care than they are in the brick business, they use nothing but the highest grade of fire brick in this work.

The cost of repairs on kilns has not been given much attention by brickmakers, and any old brick that they could buy cheap has generally been good enough for this work. If brickmakers would pay as much attention to their kilns and the cost of repairs on same as they do to their machines, they would get better results, as it costs as much to lay a poor fire brick as it does a good one, and the burning out of fire holes and bag walls means a loss of time as well as output, and as every works is figured on its kiln capacity and no works has too many kilns, the keeping of them in repair is the most important point in the brick manufacture today.

A kiln properly constructed of fire brick will, under ordinary conditions, last about ten years. The life of this kiln could be made twenty years or more by the use of first-class fire brick for all wearing parts, and the repairs reduced over one-half by their use. The repairs must, however, be made before the fire has damaged the kiln proper.

It has not been the custom of brick manufacturers in the past to use even good fire brick for their kilns, but I am glad to see that there is a decided improvement along this line, and some of the best manufacturers are now asking for a better article for this purpose.

D. V. Purington: A resolution has been handed me. I don't know who furnished it, but I am going to read it.

"Resolved, That in the judgment of the members of this Association the interests of both manufacturer and user of paving brick would be promoted by the inspection of the same by competent and disinterested experts at maker's works, and to this end that a committee of three be appointed at this Convention by the President of this Association to confer with the proper city authorities, or societies of city engineers, so that, as far as possible, all specifications shall provide for such an inspection.

President Fiske: This will be referred to the Committee on Resolutions.

Secretary Randall: I wish to bring up a little matter here which was neglected yesterday. We have a Committee on Technical Investigation, and the term of one member expires this year. We must elect some one to fill the place.

C. A. Bloomfield: I move that the retiring member, Mr. D. V. Purington, be re-elected for another term, and that the Secretary be instructed to cast the unanimous ballot of those present for him.

Seconded by Mr. Townsend and carried.

Secretary Randall: The ballot has been cast, Mr. President, and the secretary of the Committee on Technical Investigation, Prof. Edward Orton, has a report to make.

—Report of Committee on Technical Investigation.—

Prof. Edward Orton: Mr. President and Gentlemen of the Convention—The affairs of this committee are in rather a peculiar condition just at this time, and I have been advised by the members of the committee to present the facts to the Association for its judgment. I think perhaps I can state the facts more clearly by referring back to the history of the organization of this committee. About five years ago this Association appointed a Committee on Technical Investigation and at the same time created a scholarship in the Ohio State University by appropriating $250 a year for its maintenance, tho university agreeing at the same time to set aside the sum of $100 a year for this purpose. It was further agreed to provide for the selection of a scholar by annual competitive examination, and also for the selection of the topic for investigation by a written ballot of the Association. This scheme was designed to give the members of this Association an opportunity to select some topic in which they were particularly interested, and about which they desired information, and then to have the scholar, who should win his place by competitive examination, investigate this topic during the year under my direction for the benefit of the Association. The report of his work was to be read at the annual Convention and published in the official journal of the Association or by separate pamphlet.

PROF. EDWARD ORTON, JR., Columbus, O.

This scheme was not proposed directly by myself, but was proposed with my knowledge, and partly at my suggestion. On that basis we organized the scholarship, elected a student, carried on the work and reported to this body for three consecutive years.

At that time we had finished some work on paving brick testing and were busy on certain other investigations. A committee of paving brick makers now undertook to go further with this matter of paving brick testing, but after doing a good deal of work and spending a good deal of money, they abandoned the matter without bringing their work to a conclusion. This was not done by this Association, but by a body of men who were members of this Association.

I deemed it necessary to take up this work of the paving brick test and complete it, or else see much of the good work already accomplished by the Association go to waste, and, therefore, after obtaining consent from the committee, I abandoned the work then on hand and took up the paving brick test once more, and finished it.

The standard method of testing paving brick has been now agreed upon. It has been considered most carefully; has been referred by the Association to the committee with power to act. The committee brought together at Columbus this summer a number of engineers, representing the best knowledge in this line in the United States and representing a number of States in the Union, and after an exhaustive consideration of the subject, the different phases of the investigation were reviewed and a decision made. That decision the committee had the right to promulgate, since the Convention had given them the power, and it has been published in The Clay-Worker as the official action of this Association, and has been sent to the different engineering papers of the country.

Thus you see that the Committee on Technical Investigation has undertaken to develop a standard rattler test for paving brick that, in one form or another, this committee has been working on for five years, and that they have now succeeded in removing practically all opposition to the standard test which they have proposed. It is the only complete and satisfactory piece of investigation which the Association has so far carried out, and I think we have, all of us, reasons to feel proud of the part the Association has had in this important matter.

At the conclusion of this investigation, which occurred last April or May, it was too late to undertake another investigation that year, and there remains about $100 of last year's appropriation untouched in the treasury. At the beginning of the present school year we received our check for $250 from Secretary Randall, as heretofore. There is now about $350 in the treasury. No investigation has been begun yet this year, and I desire to explain to you now the reason for this delay.

Several years ago, when this matter was first taken up, I had about ten students in my department and no other duties than the organization and management of that department. Since that time more duties have come upon me. The school has grown to about three times its original size, I have been appointed State Geologist of Ohio, and I am engaged in directing the work of that organization, as well as writing certain parts of the reports myself, and I no longer have the time and ability to devote to the work of this Association in the way that it was originally carried out. I find that it will be necessary for me to give up this work for the National Brick Manufacturers' Association, unless certain modifications can be made in the way in which the work is to be carried on. There are many problems coming to me for investigation from brickmakers from all parts of the United States, which, if I could give them attention, would be very useful to the entire industry, but which I cannot now undertake, because my time is mortgaged for the benefit of the public, as teacher in the State University and as State Geologist. I feel my duty is with my employers, and I cannot well undertake private investigations, and I am, therefore, obliged to turn these applications down. There are a great many investigations coming up, sometimes proposed by members of this Association and sometimes proposed in other ways. The benefits accruing from the investigation of these problems would accrue to the whole brickmaking fraternity. If this Association is willing to continue the financial support which it has so generously extended to me in the past years, and is willing, in addition, to permit me to use my own discretion as to what investigation shall be made, and to use my own judgment in selecting such men to carry out these investigations as may be available from the many students and instructors in the university, both in my department and out of it, I believe I can expend this sum which you have given more wisely and more beneficially than would be possible under the present scheme. But unless it can be managed in some such way, I fear I must reluctantly ask you to relieve me from the carrying on of this work. I can take into my hands certain investigations, with the assistants in my department, as well as a number of students in other departments, and, with a few hundred dollars a year to spend, I can look into the investigation of many problems, but if I must at the beginning of the year select one man and with him prosecute one particular problem, it makes the work too heavy for me to carry on. If you are willing to continue the financial support you have been giving, and trust me to get your money's worth, I will give you my word that I will use my best endeavors to make the expenditure valuable to you.

R. C. BURTON, Zanesville, O.

Mr. D. V. Purington: I want to say that Prof. Orton went over this ground with the committee at considerable length, and he desired some one of the committee to do what he has done. That would have been to impose upon the committee to come before this Convention and make the statement he made to us. We gave him our word as individuals and as a committee to stand by him in the recommendation he has made. We believe he knows his business, and I want to give you one little illustration he gave us. He said at the present time he had a request from a certain locality in regard to the swelling of brick in the kiln, and that he could not, under the existing circumstances, spend the time and money to investigate the matter, and yet it was something that would benefit every member of this Association. I want to make a motion that this Association annually appropriate the sum of $250, to be expended in scientific research and investigation under the direction of Prof. Orton. I want to say one word about this scholarship. I think Prof. Orton understands that if at any time he finds a deserving young man anxious to acquire a technical education at the Ceramic Department of the University of the State of Ohio, the means will be furnished to give that young man the education.

Vice President Miller, who had been called to the chair by President Fiske, then put the motion to the Convention. It was seconded by C. A. Bloomfield and carried unanimously.

Vice President Miller: I will ask Secretary Randall to announce the next order of business.

Secretary Randall: This brings us to the first of the questions for general discussion. I am going to suggest that Mr. Rufus Burton give us his views on the matter.

"IS THERE NOT MORE DANGER OF FIRE FROM THE HOT AIR, DIRECT HEAT DRYER THAN FROM THE STEAM-HEATED DRYER?"

Rufus C. Burton, Zanesville, O.: This is a little bit different from the member of Parliament who had his papers all prepared for his speech, and he lost them at the outside door. Some one found the papers, and they started thus, "The farthest thing from my mind was to be called upon to address Parliament to-day," and the papers were handed him after he had gone in. I am pretty nearly in the same fix. I should judge from the experience I have had in the drying of brick that there is a great deal more danger from the direct heat dryer than from the heat radiation. Personally, I am not acquainted with the different degrees of heat we would get from the direct heat dryer. The fire is probably engendered by allowing the slats of the cars to come in contact with the heat of a high degree, while with the steam heat I should think there would be no danger whatever from that source, and I believe it has been clearly demonstrated time and again that most of the fires that have originated in the dryer have been caused from the direct heat dryer. I am not here to advocate any particular dryer when I say that, but I judge from what I know about the two dryers that such is the case. I am here to-day to learn a great deal more about dryers than I now know, because in the construction of a new plant which we are now considering we are looking into the dryer question more keenly than we ever have before. From my present observations I will be in favor of adopting the direct heat dryer, if I cannot find something better than the radiating steam dryer.

Mr. D. V. Purington: This question read thus, "Is there not more danger from the hot air direct heat dryer than from the steam heated dryer?" I say, yes, as they are constructed. As they should be constructed, there is no more danger from one than the other. The modern brickmaker should never construct a dryer, either for steam or hot air, without making it fireproof. We all know that some of the most disastrous fires have come from steam dryers, and we all know how they are built, usually by building the partitions four or six inches apart and the space between filled in with sawdust, and the floor or chamber of wood, on which the rails rest that the cars run upon over the steam pipes. Now, if every steam dryer was built as the modern hot air dryer is built, there would be no more danger from one than from the other. And my answer is, if dryers are constructed fireproof there will be no need of this question.

Vice President Miller: We would like to hear from Mr. Cahoon, of Murray, Utah, on this question.

J. P. Cahoon: In the first place, I may say, in relation to the matter of brick dryers, we have one (that is, the Salt Lake Pressed Brick Co., of Utah) that we operate from the waste heat from kilns being burned, also the waste heat from the cooling brick. By the way, I will say here that we operate our plant with electricity, using a number of motors to operate our fans as well as the other machinery. The dryer consists of two brick arch tunnels, with three tracks in each tunnel. Now, in using the heat from the burning kilns, we have two flues. One of them is connected to a brick stack; this is used in watersmoking the kiln. After the moisture is taken out of the brick, as we begin to raise the heat, we close the dampers to the stack and open the ones that connect to the flue leading to the dryer. As this flue reaches the dryer it divides into six flues, a flue under each of the six dryer tracks. These flues are covered with sheet steel and act as a radiator. The fan that operates this heat is at the farther end of the dryer, and answers the same purpose as the stack, giving sufficient draft for the fires of the kilns. The fan that we use for drawing the heat from the cooling brick is placed between the kilns and dryer. This heat is drawn in flues also, and exhausted directly among brick in the dryer. Then we also use a fan to draw off the steam from the drying brick. While we have had some changes made in our system, I feel safe in saying that it is a success.

L. C. Moore: I move that the remainder of the programme be taken up at to-morrow morning's session, and that we now adjourn.

Motion seconded and carried.

THIRD SESSION.

Friday Morning, Feb. 14, 1902.

President Fiske: We have come up into this hall, which, though it is smaller than the one we have been occupying, will be much more comfortable, and I think, by crowding in and filling all the chairs, we can all get in. Some one remarked that this long table here was prepared for the purpose of laying out the President, and I want to say you will have a good time doing it. (Laughter.) We will take up the programme where we left off yesterday evening. We have a good deal of business to attend to, and we must move along quickly in order to get through, and in speaking I will ask the members to confine their remarks as nearly as possible to the question under consideration.

Secretary Randall: There is a resolution to be offered by Mr. Middleton, and, if he has it ready, now is a good time to present it.

—Proposed Exhibit of Clay Products at St. Louis Exposition.—

Mr. Jefferson Middleton, Washington, D. C.: I have a resolution in regard to an exhibit of the clayworking industries at the St. Louis Exposition

> "Whereas, the great clayworking industries of the United States have never been adequately represented at international expositions held in this country, and
>
> "Whereas, this Association is extremely desirous to see these industries creditably represented at the Louisiana Purchase Exposition, to be held at St. Louis, Mo., in 1903; therefore, be it
>
> "Resolved, That it is the sense of the National Brick Manufacturers' Association, in Convention assembled, that these great industries should be fully represented at that exposition, and that, for the purpose of securing the recognition which these industries deserve, the President of this Association is authorized and directed to appoint a committee of five members to confer with Dr. David T. Day, Chief of the Department of Mines and Metallurgy of said exposition, as to the best method to be adopted to secure this end; that this committee be empowered to confer in the name of this Association with kindred organizations and with manufacturers, urging their co-operation in securing this end."

Mr. Middleton: I do not think it is necessary for me to say anything in regard to this matter. I think, however, that we can get the best attention to our exhibit if we put it in the Department of Mines and Metallurgy, as Dr. Day is familiar with the industry and can give us all the information necessary in regard to it.

Mr. Ittner: I want to say in connection with this resolution that I am glad this matter has been taken up. I am also glad it has been taken up by the department at Washington.

President Fiske: This resolution will be referred to the Committee on Resolutions. There was some discussion yesterday afternoon on question No. 6, but if any one else has anything to say in regard to whether there is not more danger of fire from the hot air direct heat dryer than from the steam heated dryer, we would like to hear from them.

M. E. Gregory, Corning, N. Y.: In reference to this question, I would say there is not as much danger in a hot air dryer, if properly constructed, as from a steam dryer. As some of you are aware, we put in a hot air system last spring. We had to put it in to get our insurance rate lowered. I believe it is safer than the other kind.

President Fiske: The insurance agent evidently so considered it.

H. C. Bradley, Cleveland: What kind of brick do you make and how do you dry them?

M. E. Gregory: I make stiff mud paving brick and I make architectural terra cotta.

H. C. Bradley: Do you set the brick on the car without pallet?

M. E. Gregory: Without pallet.

W. P. Blair, Terre Haute, Ind.: Are your tunnels constructed of wood or brick?

M. E. Gregory: Of brick, with ceilings of wood. We have never had a fire in the dryer, and we consider it much safer than a steam dryer.

H. C. Bradley: We use a hot air dryer, and about a year ago it was very hot, indeed, and burned us out. The dryer was hot both inside and out. The fire did not originate in the dryer. I had about 100,000 brick in the dryer on iron cars, with wooden pallets. The doors, burning off from the outside, fired the inside, and the fire got into the dryer where the wooden pallets were, and, naturally being dry and warm in there, they burned quickly, and the question was what to do with them. I simply shut the doors as tight as I possibly could, and we kept them shut, and we had a good hot fire in our dryer for a week, and then we went in and shoveled out the clay. The dryer was intact. I would advise a man, if he was going to use a hot air system—of course, in stiff mud brick you do not use the pallet system—but if you make soft mud brick I would advise you to use a metal pallet or to watch your engineer closely.

J. P. CAHOON, Murray, Utah.

W. P. Blair: Did you have a wooden roof?

H. C. Bradley: Our tunnels are constructed of brick, partitioned with iron doors and a brick pavement at the bottom, and iron over the top to cover the brick. The tunnel is perfectly safe, and I am not afraid of any fire from it.

W. P. Blair: You did not have anything inside to burn, besides your pallets, except the brick?

H. C. Bradley: No, sir.

Anthony Ittner: As the gentleman has a fireproof dryer, I would suggest that he get fireproof doors. I understood him to say that it caught fire through the wooden doors burning, which set fire to the pallets. Now, if he will get iron doors he will never have this trouble again.

H. C. Bradley: The gentleman anticipates; we had iron doors, but if you pile a lot of timbers against iron doors and set fire to them, I will guarantee that it will warp those iron doors enough to let the heat in, and there is where we got into trouble.

F. S. Naugle, Warners, N. Y.: I would like to have this question put differently. What is meant by the term "hot air, direct heat dryer?"

President Fiske: There is a question for you. Is anyone prepared to answer that. What is meant by "hot air, direct heat dryer"?

W. P. Blair: I do not know that I can answer it correctly, but as I understand it, a direct heat dryer is a dryer from which the heat radiates through one single partition, supposed to be a layer of sheet steel or iron over the furnace, and the radiation comes direct from the furnace below, through this sheet steel. An indirect heat would be heat that was taken from some place away from the tunnel and conveyed into the tunnels. That is the difference, as I understand it.

—Drying Problems. General Discussion.—

F. S. Naugle: We visited a plant yesterday and saw what struck me as being a direct hot air dryer, where the heat was driven through the brick work. I think we are talking about something that we hardly know anything about.

W. P. Blair: Is the plant you refer to as having visited yesterday that of Mr. Eggers?

F. S. Naugle: No, sir.

L. C. Moore: I sent this question to Mr. Randall. I meant by this to distinguish between the common tunnel hot air dryer and the radiating steam dryer, and I wanted to know whether or not there was great danger from fire. Are these dryers heated by hot air more liable to take fire than a steam-heated dryer? I am pretty well satisfied with the answer to the question, if the rest of you are. I think the gentleman here who built his dryer fireproof has the nearest to a perfect dryer that anything of fireproof construction can be.

President Fiske—Does anyone here know of a steam-heated dryer that caught fire? (Laughter.) From method of heating, I mean. Have you ever heard of a hot air dryer taking fire? I have heard of quite a number.

W. P. Blair: There is just one suggestion more. This subject is a very interesting one to me and to a great many people here. We happen to have an insurance rate in our State, and by reason of the fact that the steam pipe came within less than one inch of the wood, anywhere in the dryer, they put on 25 cents, and in the construction of a fireproof dryer with direct radiation, they put on a dollar for that. The excuse for that was that, with the steam dryer, if the steam pipes came within less than one inch of the wood, anywhere within the dryer, there was great danger from fire, and it was liable to burn out at any time after being in use a short length of time. I could not see it that way myself, but I found when I looked up the old rule that no matter how you constructed your dryer, no matter how fireproof it was, that the very fact that you got direct heat, they put on a dollar, and they worked that rule everywhere throughout the country.

M. E. GREGORY, Corning, N. Y.

M. E. Gregory: I do not wish to be misunderstood. The dryer I spoke of is an indirect heat. I utilize the waste heat from the cooling kiln, but it makes a difference how the heat is distributed in the dryer. If we hold the heat to distribute in large bodies or quantities, we will have trouble. If we distribute the heat gradually in small openings, or open spaces, we will not have trouble. I would like to hear from our friend Mr. Eisenhart.

R. G. Eisenhart, Horseheads, N. Y.: I am using heat right from the cooling kiln (a continuous kiln), and we aim to get a temperature of 250 degrees in our dryer. We have never had any trouble with our dryer. We could raise it, of course, considerably higher, but we have a pyrometer, whereby we measure this heat, and by using reasonable care we do not have any trouble. Of course, at first, we had to keep close watch, and so we got accustomed to it, but we have never had any difficulty. We have never raised the temperature over 275 degrees.

W. A. Eudaly: What is the temperature at which uncharred wood will take fire, and also the temperature at which wood that is charred, as by a steam pipe, will take fire? I do not mean direct. I mean by hot air. I think if we can get at this, it will help the matter a little.

Robert Elliott, Indianapolis: Six hundred degrees is, I believe, the temperature at which wood will ignite, not under that.

President Fiske: I suppose we will have to pass along to the next question, No. 7—

"Where there is only one boiler, and that of sufficient size to furnish power for the plant, is it practical to use exhaust steam during the day and live steam at night? Or, would it be better to put in an extra boiler, and use live steam altogether?"

T. B. Townsend, Zanesville: I can tell you something about that. We use steam, but we have two boilers. We use the waste steam in the daytime and at night we use live steam, and we get very satisfactory results. We have done this for several years.

C. A. Bloomfield: We are doing the very same thing at Taunton, Mass. We use exhaust steam during the day for drying and at night we use a very small amount of live steam.

C. C. Barr, Streator, Ill.: We use exhaust steam during the daytime while we are running and live steam at night. We do not get our brick as dry as if we used live steam and carried heavy pressure all day. That is our trouble. We do not get our brick as dry in twenty-four hours as we should if we used our live steam.

H. P. Curtis, Detroit, Mich.: Has the gentleman anything with which to carry off the the moisture?

C. C. Barr: We have a Bucyrus dryer.

President Fiske: It would seem that that would be the proper way.

Alfred Yates, Johnsonburg, Pa.: Is your exhaust steam pipe smaller than your live steam pipe?

C. C. Barr: No, sir, it is not. We have an 8-inch exhaust from our engine and 3-inch to our live steam, but we carry eighty pounds of pressure to our dryer while we are using live steam, while, of course, with the exhaust steam, we have very little pressure.

Alfred Yates: The principal thing is to have a capacity for the exhaust steam, to take the back pressure off the engine and get a thorough circulation.

W. McCredie, Lyons, Ont.: There are a couple of questions on this line that I would like to ask. I would like to ask how much inch pipe I would have to put into my dryer to condense one-horse-power steam?

W. A. Eudaly: I hardly think that can be answered. It would take very many less feet in Canada, with the temperature 40 degrees below zero, than it would in the tropics. There are many questions that are difficult to figure out, because of varying conditions.

President Fiske: It would seem well to refer our Canadian friend to the dryer men. I think they could give him some information which would be practical. We will pass on to Question No. 8—

"Is it best to take steam from brick dryers from up draft or from down draft?"

Robert Twells, Elyria, O.: We expected to discuss this question this afternoon, and I think it would be well to pass it by now and take it up later in the day, so we won't have to go over the same ground twice.

President Fiske: That is a very good suggestion, and we will pass on to the next question—

"Is a tunnel dryer practical for drain tiles?"

Fawcett Plumb, Streator: We have not used the tunnel for drain tile, but I think it is practical for small sizes.

D. Child, Findlay, O.: I have had a good deal of experience with a very tender clay, and we dry successfully three and four-inch tile, but larger sizes give us trouble. We have a ten-tunnel dryer, 80 feet long, and we use it successfully for three and four-inch tile.

F. S. Naugle: Circumstances alter cases. We have been doing the reverse for ten years. We have been drying very successfully large drain tile in a tunnel dryer, but it is not so with small tile.

D. Child: Well, we will pay a bonus to learn how to dry large tile.

F. S. Naugle: We will trade horses with you.

W. A. Eudaly: I think it will be just as well for these two gentlemen to get together and swap experiences. (Laughter.)

President Fiske: This brings us to Question No. 10—

"Can artificial dryers be made so convenient in handling brick that the manufacturers may save in labor more than the extra expense for fuel, taking into account interest on capital invested?"

L. C. Moore: This question is a very interesting one to me; not because I know very much about it, but because of what I want to know. It is a matter I really want to talk on first, because I wanted to bring up some points for you to answer. Do not look to me for information, but for problems. The question has been pretty well answered for some people, I believe, by a gentleman (Mr. Fiske) who spoke yesterday afternoon. But I speak from the standpoint of the man with a small yard. Throughout the middle West a large number of small plants are going up. Talk with the machine men and they will tell you that they are shipping a great many small outfits, of from 20,000 to 50,000 per day capacity. The question is in regard to the practicability of handling the brick in the dryer. I know all about the expense of the other kind of dryer, that is, the natural air dryer, and I don't believe you want to know much about it, but I do know what Mr. Fiske said yesterday, as applying to the men in the far East, applies to us in the middle West. He stated here on this floor that in the far East they were not making brick much cheaper, if any, than their fathers had made them. Our machinery system is good, but when it comes to the natural air dryer and handling the brick over and over, I declare the expense is great. The gentleman who told you he could handle the brick thirteen times and get them ready for the market has a great advantage over me. We visited three brick plants yesterday, and I saw that an immense amount of money was invested. Interest in the middle West is a little more than it is here. You may count money there worth about 7 per cent. I saw yesterday not only a great outlay of money—I saw troubles. I saw men handling brick in a way that would not do for me to handle brick. The cars would stick, and it would take three or four of those big fellows to get them started, and in the struggle many brick were overturned and ruined. Can these tunnel dryers be built so that the cars will move along just as though they were lubricated? There are so many problems of rusting cars, leaky steam pipes and great expenses of fuel that I am afraid that if I put them in I will find, that I have an elephant on my hands. Can I save enough labor that I can afford to put in a dryer of some kind? If you want to discuss this question to my advantage, you need not state what kind of a dryer you put in, but can it be made practical and cheap enough for 20,000 daily capacity. I know in drying I am behind the times. I don't know that I can better illustrate that than to tell you a story. A few days ago an old gentleman came into our town. He stepped into our book store, and wanted to know if he could get one of those old song books with figures, one, two, three, four, for notes. No, they told him, they did not have anything of the sort. He said: "Well, when I was courting Mary we had one apiece, but I always left mine at home, so we could sing out of the same book when we got to the meeting house. But now they have got these new-fangled books. Tho children have torn up Mary's old book and the grandchildren have torn up mine, and now we haven't got any singing books. I guess I am behind in some things. Why, they have got a thing they hook up on the wall and talk to people all over the country." Now, what can you do for me? Some one says, "Refer him to the dryer men," and another back there says, "They will skin you." (Laughter.) Maybe I am here for that purpose. But I want to state that I do value the advice of the machinery men and the dryer men in all these matters, but, above all, I enjoy hearing you men tell what you are doing and your business experience, and that is what I am here for. (Applause.)

W. S. Purington: Is your market such that you can afford to double your capacity?

L. C. Moore: Twenty thousand a day is all that I can sell. I can only run eight months in the year in my latitude.

W. S. Purington: Unless there is a market that will pay him to double his capacity, I think he had better use the natural heat.

W. A. Eudaly: You mean the sun?

W. S. Purington: Yes, sir.

Alfred Yates: I think the first question is the cost of fuel. It depends upon the price for coal.

L. C. Moore: We pay $2.40 on the cars at the yard.

Alfred Yates: How much will it cost per ton? That is the best way to look at it.

President Fiske: I think if Mr. Moore will have a little talk with Mr. W. D. Richardson he will get a good deal of information. I think Mr. Richardson can tell him a good deal about dryers.

J. P. Connell, Muskegon, Mich.: Why would it not be a good thing for Mr. Richardson to tell all of us what he knows about drying? We are all here for information.

President Fiske: I was in the ceramic meeting the other day, and Mr. Richardson had full drawings of what seemed to me to be a very practical dryer.

W. D. Richardson: There seems to be a wrong impression. I did not think while Mr. Moore was speaking that I was competent to give him any help. The drawings which Mr. Fiske saw in the ceramic meeting I did not think would be applicable at all to Mr. Moore's needs. There is one point, however, in regard to whether it would be practical for him to put in an artificial dryer. What advantage would it be to him to work more days in the year than he now needs to work in Missouri? It would seem to me that if the heat and the air is provided, and he has no trouble in the checking of the brick, or anything of that kind from the sun or wind, that it is the very best dryer he can have for 20,000 daily capacity. But if the conditions are such that he finds he would like to run more steadily, the year through, then that is another question. That is one reason, I think, why a great many have put in artificial dryers. I have seen people drying brick in the sun, making their 20,000 a day, but they only run so many months, and that was sufficient. When a man builds a brick plant and puts in all these improvements he has made so large an investment that it hardly pays him to run the plant so short a time, and he must run during the bad weather. As to the form of dryer best for him to build, that would take too much time to discuss. I hold this position in regard to dryers and kilns, and everything else about a brick plant. I can give the gentleman some advice from my own experience, but I must know all the conditions under which he expects to operate. Many men have asked me about the plans for the dryer or brick kiln. Yes, I have plans, but the plans I would make for a dryer or brick kiln would vary with the conditions. That is the fault I have to find with the patent dryers and kilns. The man introducing them declares that for everybody he has the very best dryer, and the very best kiln. I would not build the same dryer or the same kiln under different conditions. I try to get all the information possible on the subject, and my experience has taught me that for every new situation you have a different problem, and your machinery and kilns and dryers should be different. Buttonhole somebody at the Convention when you come here, and tell the man all these conditions, and he can perhaps give you some advice, but to attempt to tell anybody here at the Convention that what you have is the best dryer for your purpose, or for this man's purpose, would take too much time, at least for me. I came into this session this morning wanting to hear this paper by Architect Dyer, and I don't want to take up the time of the Convention discussing a question on which I can give but very little help. (Applause.)

L. C. MOORE, Memphis, Mo.

W. A. Eudaly: As many of you know, it has been my good fortune to see a great many brick plants in this part of the country, small ones and large ones. If I were going to build a brick plant of any capacity, to be a permanent plant, to run continuously as a business, not simply to make brick to build a certain structure, but as a permanent business, of any capacity from 10,000 to 15,000 per day, or more, I would put in an artificial dryer. I haven't the least doubt about it in my own mind.

L. C. Moore: Can they be made so convenient in handling brick?

W. A. Eudaly: The very fact that I have said that I would put in an artificial dryer is an answer to that question. I would not do it if I did not think it practical. I can conceive that, perhaps, way down South, where they have long days and little rain, or, perhaps, on the Pacific coast, where they have long and dry seasons, where they can reasonably calculate on the weather, it might be well to dry the brick on an open yard, but all through this section of the country, where we hardly know what week it will rain and when it will not, I would certainly put in an artificial dryer of some kind. There are a few men who make a specialty of anything who are ready to say that they have just the right thing for all conditions. I was just a little surprised that Mr. Richardson should make this remark. It may seem a strange thing that I make this statement, but it is a fact that I have never arrived at a point where I am able to hear in a few words what a man says about his affairs and then be able to tell him exactly what to do.

President Fiske: All of this discussion really belongs to yesterday's session. We have not yet touched upon the programme of to-day. I would like to say that Mr. Eudaly has been a close observer of the brickmaking business for a great many years, and the opinion that he has expressed so positively in regard to this question ought to have very great weight. We will now take up the regular order of the programme of to-day. We are very fortunate in having with us this morning one of the prominent architects of Cleveland, who has consented to favor us with a paper upon "Brick in Architecture." I have great pleasure in introducing to you Mr. J. Milton Dyer, of Cleveland. (Applause.)

J. Milton Dyer: I thank you most heartily for having conferred this honor upon me, and it is with some misgiving that I take up the subject which Mr. Blackhall handled so admirably last year.

J. C. BOSS, Elkhart, Ind.

BRICK IN ARCHITECTURE.

By J. Milton Dyer, Cleveland, Ohio.

Mr. President and Gentlemen of the Convention:

In his most scholarly address of last year Mr. Blackall pointed out to this body "How to Reach the Architects," and I thoroughly indorse all he said.

I do not know that it is expected of me, nor that it is desirable, that I express myself as to the selection of a particular brick for the accomplishment of a given construction or color combination, and should I perchance do so, I assure you that it is not because some especially attractive briquette in form or color has found its way to my heart.

The subject of my paper, "Brick in Architecture," is necessarily a misnomer, for to tell the story of brick is to rewrite the larger part of the history of architecture. Nor should I attempt, even were I capable, to touch upon the development of that class of products known under the general term ceramics.

Those of you who have kept yourselves informed upon the development of ceramics in France and Germany and their extensive introduction into architectural construction, both in exterior and interior decoration, especially since the growth of the movement known as the "new art" movement, and have made yourselves familiar with the Paris Exposition of 1900, will recognize the enormous possibilities of ceramics.

My purpose is merely to try to point out the position burnt clay products occupy at present, touch lightly upon their past and indicate some of the possibilities of their future development, a development which is destined to be most important and far-reaching, affecting as it does the very face of our civilization, and which development is due in the largest measure to the National Brick Manufacturers' Association.

The subjects that interest most in this paper are decorative resources of ordinary brick, i. e., brick in its simplest form without moldings, employed either alone in construction or in association with stone, wood, iron or other burnt clay products, and its rational employ in conformity with structural principles.

Believing that a good story never grows old, I shall in the fewest words say something of its past.

Brick is the oldest of the artificial materials used in the building arts. Prehistoric archaeology shows the existence in Gaul, even before the bronze age, of well-developed furnaces for burning pottery. The step from pottery to burnt clay as an industrial material resulted from the abandonment of caves, huts and tents for more pretentious abodes when man came to recognize the family and society, which implies an already advanced state of civilization.

He probably made his brick of slimy clay, taken from the edge of some watercourse or of the oily clay found in the valleys. The peoples living in the fertile valleys of the Tiger and Euphrates, those in Asia Minor, Syria, Egypt, and even China, not having a good natural building material at command, learned the art of making brick twenty or thirty centuries before our epoch.

It is said the Tower of Babylon was constructed of brick. Niniveh and Babylon were built of brick, and from the ruins of the latter city were taken brick covered with enamel, as well as burnt brick from the interior walls, but sun-burnt bricks were far more general in these Oriental countries so frequently visited by the sun.

In Egypt bricks were employed in the construction of the pyramids, and it was here that brick was said to have been made, mixed with straw, this mixture being necessary to prevent crumbling upon drying.

The unburnt bricks of Babylon and of Egypt were large and heavy, and those found are remarkable for the state of preservation in which they are found after more than three thousand years and in spite of their friability. And there can still be distinguished the remains of vegetable matter introduced into them.

Certain temples in Persia were constructed of unburnt brick of very large dimensions, and the great wall of China is for the largest part constructed of burnt brick, that is to say, the interior walls are of brick and faced with stone. The same is true of the famous Pagoda of Chalembron in Hindostan. The Greeks were acquainted with brick from the earliest times, the walls of Mantinee and a part of those of Athens, as well as several temples, among which is the temple of Apollo, were built of brick, some of it hard-burnt red brick. Several of the Greek temples had marble facings, but for the most part the brick was covered with a bed of stucco.

The Romans employed brick to a great extent in their construction. They made not only walls, but pavements, in which the bricks were laid in what is known as the herring-bone pattern. The streets of Siena and several other Italian cities are paved in this same manner.

It seems certain that Rome during its first centuries was only an unformed mass of unburnt brick and mud walls. Later, however, in order to economize space, laws were introduced prohibiting walls of more than a foot and a half in thickness, which forced constructors to make use of materials of more resistance, and as a result brick almost disappeared from Rome.

The Pantheon of Agrippa is the oldest Roman edifice constructed entirely of brick. Roman monuments before the reign of the emperors were built of tile rather than brick, properly speaking.

Under Gallien walls were formed alternately of brick and soft stone courses, but after the ninth century the employment of brick, together with or in association of other materials, generally ceased.

In Spain the Moors employed brick in the construction of the walls of the Alhambra and the Mosque of Cordova.

In England the fabrication of brick was introduced in the ninth century by King Alfred, but the first important work was the palace of the Archbishop of Canterbury, at Croydon. During the last three centuries brick has been so common in England as in many places to almost completely displace stone.

In France the earliest employ of brick was to serve as a filling in, while projecting features, such as casings, cornices, etc., were of stone.

Dating from the fifteenth century usage was made of brick in civil construction. The architects of the renaissance were very fond of them, either as panel wall spaces, for ornamenting or united with stone, as for example, in the Chateau de Blois, certain parts of Fontainebleau, and the Chateau de Madrid near Paris, built by Francis I, of which latter the bricks are enameled.

In the north of France the use of brick as a wall space in a half timber construction gave rise to many varied and interesting designs. Over the greater part of France molded brick was employed only rarely in the middle ages, while, on the contrary, they found great favor in Italy, Belgium, Holland and Germany. Most brick constructions in Germany are of Gothic architecture.

Modern brick construction, constructively as well as from a decorative point of view, has undergone a considerable development. This may be explained by the refinement of public taste and by the incessant progress of ceramic industry.

Within the space of a very few years there has been brought about a change in the aspect of our American cities, as well as the greater part of European cities, and many monumental features have been executed, not attempted since the Roman era.

The logical employ of brick in modern architectural composition is certainly more general in Europe than with us. They have sought to understand brick from a constructive sense and to combine it constructively with other materials, and in a degree they have been successful in expressing this construction in color.

In certain instances brick forms the entire structural framework and leaves the eye in no doubt of its precise role in the construction scheme, while some other material, or a different colored brick, makes up the intervening wall space. At other times stone or iron is called upon to carry and do the work, while brick, in her rosy garb, has but to lie at ease and look handsome.

One has, however, merely to follow the Brick Builder, which so ably champions clay products, to realize that our best architects consider your material worthy of introduction into truly monumental constructions, and the result has expressed itself in some most creditable buildings.

The English and Norman manor houses, the French chateaux and the modern baux arts treatment are furnishing good examples and fruitful inspirations to our architects, and evidences are beginning to show of a distinct class of American country homes in brick.

In the selection of a building material, the decision rests in most cases with the architect. Each building, properly studied, presents, or should present, to the architect its own particular point of interest. In some it is an economical consideration, where the aim has been to bring the material chosen and the construction followed in complete harmony with the intended utilitarian use of the building, and the architect is judged, and properly so, after the manner in which he has accomplished these ends. In certain other architectural productions, it is the decorative qualities that decide the material and form the point of interest.

When in the choice of a material brick is permissible, there can be no question that brick, in almost all cases, presents an unquestioned economical advantage, and this consideration alone, were there no others, has made it necessary for the architect, even he who believes only in eternal stone, as exemplified in "Rock of Ages," to study brick for itself and in its combination with other materials.

But there are other considerations than the one of economy, for it has been abundantly demonstrated that it is possible to accomplish buildings of brick construction; both monumental and modest, of undisputed architectural value, and fortune awaits the architect who learns to use brick.

My friends, the architect's success means your success. With the assurance that every successful design in which brick is wisely and judiciously used adds dignity to your material and to your profession, you may well afford to be patient with the architect, who is perhaps too exigent in his insistence upon certain color and texture, and you may be sure that when you succeed in aiding him to realize his ideal, you have added a joy to his life, a friend to yours, and incidentally broadened your field.

For the most part, architects are sincere in their desire after happy results, and architecture being a creative art, the architect feels toward his production something of the affection of a mother for her child; so, again, be patient with him.

The architect often selects stone for his materials, or even wood, by reason of the great number of good examples at his command, which serve as a precedent to aid him in his designs and prevent him from going far wrong.

In using brick he must have a color sense, and more skill is required in the design of a brick building or of brick in combination. His unfamiliarity with the medium at his disposal often decides him for the material with which he is better acquainted. And in composing a brick building the architect is drawn upon for more cleverness in detail structural design. In the spacing of brick for extended, as well as limited, wall spaces, knowledge of the different bonds and of the value and direction of joints in design is required. Often when special brick are required his ignorance of the possibilities of brick causes him to hesitate where you, with your knowledge, could easily solve the problem and make the required brick. He, not being able to do so, selects another material.

The execution of projections in brick necessitates certain modifications in the construction of the courses adopted, but the principle which dominates their composition is to subordinate the decorative effect of projection to the solidity of their construction.

The small dimensions of brick form at once its charm and its limitation; its charm in giving color, texture and interest to wall spaces; its limitations in the difficulty of producing by simple methods horizontal shadows by means of projecting horizontal courses and cornices, and it is in attempting such cornices and projecting parts that brick has suffered the greatest misuse. The play of light and shade is very important, and the architect uses all the possible resources at his command to produce shadow, and so avoid the cardboard appearance to his elevation.

In reading over the report of last year's Convention, I got the impression (perhaps wrongly) that there was a disposition to look with disfavor upon the association in design, of brick with any other material. I thoroughly believe that with brick alone, in its most simple form, without recourse to moldings or color schemes of any sort, buildings satisfactory in every sense can be designed and built; while the brick types are fixed, an infinite variety of taste and phantasy can be introduced without effacing them.

With the introduction of moldings and color, naturally more varied designs can be produced. But I am also convinced that brick with wood, brick with stone, and brick with iron can be employed with mutual advantage, and that, constructively, one may supply the limitations of the other, and that every recognized good design in which any two of these materials are used together cannot help but be advantageous to both.

Constructively, stone supplies the projecting cornices and courses so hard to obtain by brick alone. From a constructive point of view also iron enables brick to span distances it would otherwise be unfitted for. In both cases each material should be used honestly and each find expression on elevation. To illustrate this, it has always seemed to me bad art to construct brick stretching courses over very wide spans and thereby conceal the iron lintel which supports them. The eye is not satisfied, and that the span holds up is a most perplexing puzzle to the laymen. How much better it would be to honestly show the iron beam conscientiously doing its work, make it a part of the design and at the same time set brick right in the eye of the world.

JOHN A. KLING, Cleveland, O.

It seems to me you may well afford to give stone the opportunity to stand side by side with brick, for brick has faithfully backed up stone for many a century.

In terra cotta you have a burnt clay product that is capable of replacing stone and to a large extent perform its functions.

There can be no question of the ever increasing value of brick as a constructive as well as a decorative material, and it seems equally as sure that the burnt clay industry is coming to assume such importance and dignity as to assure its marching hand in hand with steel in the van of the world's industries. (Loud applause.)

President Fiske: I am sure I shall express the unanimous voice of this Convention when I extend to Mr. Dyer our sincere thanks for his very interesting and useful paper. We have here represented, we might say, three classes of men especially interested in brick. The brick manufacturers, those who make the brick; the builders, those who use the brick, and then we have another class, those who illustrate the brick. There are not very many of us who have not heard of the editor of the Brick Builder, the publication referred to in the paper, and while I did not promise not to call on him, he asked me not to. But I feel sure that we will all be glad to hear from him, and I am going to ask Mr. Arthur D. Rogers to talk to us.

Arthur D. Rogers, Boston, Mass.: Mr. President and Gentlemen of the Convention—I did not come here especially prepared to discuss this question; nevertheless I will embrace this opportunity to commend, as I know you all will, the committee for having again given us the privilege of listening to a paper, which bears upon a vital part of the clayworking industry, by a prominent architect. It is, I believe, for the good of all concerned that the manufacturer and the user of a product should get together at least once a year for a comparison of ideas. When architects of marked ability, like Mr. Blackall, who addressed you last year, and Mr. Dyer, who has just favored us, will give of their valuable time to meet you in a discussion of those questions, which are, perhaps, of as great importance as the mixing, the drying and the burning of the clay, it argues well for the future welfare of your chosen industry. For I believe that the clayworking industry does not differ from others, and that the market end of your business requires equally as much of your thought and attention as does the manufacturing end.

There is no doubt that this has been an exceptionally good year in the clayworking business, for, as a more or less interested observer, I see evidences of this on every hand. A little girl, the daughter of an undertaker, once said that she could tell when her father's business was good, for then they had flowers on the table and ice on the butter. At the banquet last night I saw these evidences of your prosperity in abundance.

In your efforts to create a greater use of brick in building there is a work which can be done not only with the architects of your locality, but with your acquaintances among your neighbors and fellow-business men. It is by bringing their attention to the desirability of building with a material which lends itself readily not only to the creation of beautiful forms, but to the making of homes and business places perfectly indestructible by fire. I received, not long ago, a letter from a gentleman who lives in Texas. He wrote me that within the past year some three or four towns in his State had been almost entirely wiped out by fire; that these towns were built largely of wood, and he said that it was the desire of the authorities to frame a set of laws that would prohibit the use of anything but brick or masonry of some form in the future. He requested me to secure copies of some of the laws of the towns in Massachusetts, as he thought they would serve as models. As you are probably well aware, those of us who hail from Massachusetts have a pretty well-developed idea that we have things just about right; but upon investigation I found it to be a fact that most of the large towns of our State have absolutely no laws that govern the class of materials which are to be used in building.

S. S. KIMBELL, Chicago, Ill.

This condition prevails in Massachusetts, even, notwithstanding the fact that the total loss by fire in the United States in the year 1901 amounted to nearly $160,000,000, and this amount does not include the losses which have been sustained within the past few days at Norfolk, Va., Waterbury, Conn., and Paterson, N. J., where nearly all the business sections have been wiped out by fire, owing almost solely to the fact that the buildings destroyed were not built of burned clay materials, And so I say your efforts should be directed to the convincing of every man with whom you have an acquaintance, who contemplates the erection of a building of any sort, that the only safe way he can build for himself a home or a business block is to build of burned clay in some of its various forms. You can well afford to leave the question of aesthetic treatment to the architect; they are abundantly able to execute that part of the commission, and you will find that they are in full sympathy with the materials which you produce.

We have listened with much appreciation to the very able address by Mr. Dyer, and I am sure we shall largely benefit as a result of his remarks. Unquestionably the appearance of a brick structure, whether it be good or bad, depends in a large measure upon the ability of the architect to properly design it. Nevertheless, there is a demand upon you, as manufacturers, which should be met. Mr. Dyer has explained to you some of the things that he requires and has asked your co-operation, and there can be no doubt but that you will do all that lies in your power to help him create an art for himself and a business for you.

President Fiske: We have present with us a gentleman from Chicago, who was not born yesterday, as the saying is, and he has seen in the past great developments in the way of architecture. We would like to have a word from S. S. Kimbell.

S. S. Kimbell: I think I am the youngest man here, even though the President says that I was not born yesterday. I have had a great deal of experience, both in common and pressed brick. I have constantly been in the business for the past twenty-three years, though I do not look it. I think I know something about brick in architecture. I know when I first started in the pressed brick business, if the architect wanted an octagon brick for a bay window, and a little molded brick to go around the edges, the manufacturers would have a hard time to make them. Shape brick in those days were made by taking the brick green and sawing out the mold in a mitre box; they were not made on the press. One trouble the brickmaker has is that the architect will draw a beautiful design for a beautiful building, and then want a lot of ornamental brick that do not show in our catalogue, and the brickmaker has to make new molds, and they cost money. The ornamental brick question has developed from a few molded brick to an endless variety, so the manufacturer has to show a catalogue with from two to three hundred different designs in molded brick. We all want to accommodate the architect. The architect is very nice, and he draws plans for a building and makes a picture of a brick, just like he wants it, and turns it over to the brickmaker to make the brick, and then the trouble gets interesting. We never see a building burn down but we see that if it were built entirely of brick a large percentage of the old building could go back into the new building. It don't hurt the brick at all to burn them over. A great many brick, after they come out of a fire, when the building burns, are better than when they were first laid in the building. It helps them along. (Laughter and applause.) I want to say that this great State of Ohio has, I think, produced the best pressed brick in the world—more beautiful designs and more beautiful colors. When I first went into the brick business it was a good deal like the firemen who had a new engine, and they held a meeting to see what color they should paint it, and they decided they didn't care a damn what color they painted it, just so that it was red. (Laughter.) Red brick was the only thing that was used, and everybody was satisfied, but when these new colors came in, the architects saw what beautiful buildings they could make with these beautiful colors, and consequently they called upon the brickmaker to produce them, and the brick men have had all kinds of trouble ever since. But they get there, just the same, and give the architects what they want. This great State can produce almost anything in shape or color that an architect can ask for.

At this point President Fiske called Vice President Chase to the chair.

Vice President Chase: We will now take up the next number on the programme.

W. D. Gates: Before leaving this subject I want to say a few words if the Chair will pardon me for speaking further on this matter. I told the President I would not speak on this subject, but I have had some very pleasant relations with you men, and I feel that I ought to say this to you. I have always been very much interested in this subject of getting at the architect and getting at the man who is using our material. You and I make the ware to go into the buildings and make it as good as we can, but the question is as to selling the ware. We want to make all we can and sell it to the architect and the owner. In nine cases out of ten the architect selects the material, and I don't believe you and I are giving the attention we should to that end of the business. We come into this Convention and try to learn all we can about manufacturing our ware, but we neglect the market end of the business. In trying to do something in this line, some years ago I drew up a resolution, and I made it just as strong as I knew how, and when I saw how strong it was I wound up by putting all the responsibility on the chairman, and I specified in the resolution that Mr. Arthur D. Rogers should be chairman of the committee. It was almost useless for me to do this, because he had been doing this very thing for us for years before. While that committee was in action I met Mr. Rogers in Washington, and imperiled our pocketbooks and our domestic affairs as well, and we labored for two weeks in trying to get our material specified for the public buildings of our country. We found very good conditions there, at the national capital, and I want to tell you men that whenever you find out that there is going to be a public building in your locality, you don't have to poke up your Congressman to stick up for your material. We have a man in the Architectural Department at Washington who commends the use of brick and terra cotta for small buildings. But when it comes to the large public buildings, we have got to do some work in this line, and see that brick and terra cotta are specified instead of stone. Plans are now under way for a great many public buildings, and there is going to be an era in ublic building such as we have never seen before, ere this era of prosperity through which we are passing is over. We have passed through times which tried men's souls, an era when we changed our socks, we did it by putting our feet in the other end of them. When we looked over the bill of fare we skipped everything down to the toothpick. When I changed my cuffs by putting them on inside out and upside down. When Mrs. Gates made over her winter bonnet in the spring by wearing it wrongside before. (Laughter.) This may be a laughing matter now, but it was not then. It was stern reality. Now, during all that time there has been one man (and I have got up here every year and sounded his praises until you may think I have an interest in his paper), there was one man who stood up and worked for your interests and my interests, and this quiet, modest man, who stood up here a while ago and talked to you, and then skipped out when I stood up, because he knew I was in the habit of talking about him, has been working for us all this time. During that era of depression, to which I have just referred, when we were cutting every expense possible in our office, the question came up of an advertisement in the Brick Builder, and we decided that we could not afford to take it out, and it was the only one we had in all that time. But we stood by, to a limited extent, the man who was pushing our ware on the market for us. I think we should stand by Mr. Rogers and his paper, and help him along all we can. I am going to draw up a resolution before I leave here and see if we can't appropriate a small amount of the surplus we have on hand for the purpose of providing for a series of competitive brick designs or offer prizes for architectural designs. I think we ought to help Mr. Rogers in every way we can in the circulation of his paper. I think we ought to see to it that the public buildings which are to be constructed in our respective localities shall be of brick and terra cotta instead of stone.

C. A. Bloomfield: Two years ago at the Convention Mr. Gates got up and made a talk on this same subject, and his earnest, forceful manner impressed me that I had a duty to perform. We were about to have a public building erected at New Brunswick, and after I got home I went to Washington and I met the Supervising Architect, and the result is that we are having a public building put up of brick and terra cotta. And I want to tell you that if any of you go to Washington to see the Supervising Architect you will meet a gentleman who is not only glad to talk to you, but if you can bring some influence to bear on your Congressman, you will get a building of brick and terra cotta. It rests entirely with yourselves. If you don't think your Congressman is doing what he should, you have got to go after him and make him do it.

J. C. Adams: Suffering as I am with a cold, which I acquired at the Convention hall yesterday, I am afraid I can hardly make myself heard, but I want to take issue with the gentleman, so far as his statement goes, that by going to Washington you can have a change made in any kind of a building. There seems to be a very close corporation around the Supervising Architect in the city of Washington, almost impossible to puncture. Indianapolis is about to erect a public structure at the cost of $2,000,000. Now, we have in the confines of the State of Indiana, as most of you gentlemen know, and as most of the world knows, the finest natural building material in the world—oolitic limestone—from which some of the most magnificent buildings in the world are built. Many of the public buildings in the United States are built of this Indiana limestone. The Capitol of Minnesota is built of it, and many other States have buildings constructed of it, and yet the specifications for the building at Indianapolis call for granite. They turn our statesmen down, and the little matter of influence or effort on the part of our officials comes to naught. My friend Bloomfield is mistaken. We have made this a personal matter. I was President of the Board of Trade, a member of the Commercial Club, and all the civic organizations of Indianapolis have taken up the matter, but we can't even make an impression, so that we can offer you no encouragement in your efforts to change anything that comes from the Supervising Architect's office.

W. D. Gates: I have investigated this very thoroughly, and every large building in every large city, all over the United States, is specified to be built of granite. The idea prevails that granite makes a more magnificent building, more imposing. But these small buildings, scattered all over the country, to which I have referred, so many of which are to be built in the very near future, are planned in brick and terra cotta, unless the stone men are to get in their work first. It is necessary to use what influence we can in this matter. We cannot get the large buildings of brick and terra cotta, but we can get the small buildings, and we will have to be content with that for a while, and later on the large buildings will follow.

C. A. Bloomfield: Mr. Adams is right. The Supervising Architect told me that in the large cities the imposing appearance of the buildings demanded granite.

W. P. Blair: Granite is used in the large and permanent buildings of this country, in spite of the fact that the cross-breaking strength of nearly every vitrified brick in this country is 33 per cent. better than granite—the very best granite to be found in any part of the world—and yet we cannot make an impression in that direction. And the suggestion made by Mr. Adams that the Department of Architecture in the city of Washington is such that you can no more make an impression than you can make an impression on vitrified brick. There are to be a few changes made, and for a few places brick are specified for small buildings. Possibly they do that to keep us away from the Supervising Architect, and to keep us from insisting on something better. To keep us from insisting, if you please, from getting from that department what we deserve.

GEORGE S. COX, East Liverpool, O.

D. V. Purington: I have not been in here much this morning, because I have been busy at work with other things, but I notice that it is almost 12 o'clock, and we are not past the first number of the morning's session, and neither Mr. Eudaly nor myself have had anything to say. (Laughter.) I suggest that the old rule we have adopted with such success, in Mr. Eudaly's case, be applied now, that no speech be more than five minutes in length and that no man be allowed to speak twice on the same subject without the consent of the Convention.

Vice President Chase: This ought to be a standing rule, and we will be governed by it in the rest of our sessions. We will pass to the next number on the programme, which is a paper, "Burning Brick with Oil," by Mr. George Drew.

BURNING BRICK WITH OIL.

By George H. Drew.

Mr. President and Gentlemen of the Convention:

I have attended these annual gatherings of the brickmakers for the past ten years, and have enjoyed myself, and believe I have profited by such attendance. In listening to the papers read before these conventions I have felt under great obligations to the writers for their presentation of a practical subject, and am sure that I have been the gainer in the amount of information conveyed in these papers, and the discussions which followed them. Sometimes I have gone home with an uncomfortable feeling that I have received something for which I had given no equivalent. But pay day has come, as it always does.

On a beautiful December day your Secretary appeared at Yard 23 of the Illinois Brick Company with his camera and proceeded to take pictures of everything in sight. He adjusted his camera so that it covered almost every part of the yard, asked me lots of questions, which, with their answers, went into his editorial notebook, and then, with a smile not excelled by Bret Harte's heathen Chinee, confessed that all his photographing and questioning, and his show of interest in the methods of manufacturing brick by the Illinois Brick Company was simply a bluff; that he had come with but one object in view, and that was to ask me to write a paper for this Convention on burning brick with oil, and that I could now repay some of the debts I had admitted owing.

The idea at first seemed so absurd that I could hardly believe him in earnest, but his arguments were so forcible, and determination so great, that, to get rid of him, I promised to try. It is simply because I made that promise that I am making the greatest effort of my life. That promise has haunted me for weeks, and during that time I have really been in the condition of the farmer who had given his note for a worthless churn. I promise that it will take very little of your time to listen to what I know of my subject.

—Burning Brick with Oil.—

The first use of oil as a fuel for burning brick was by Mr. F. H. Eggers, of Cleveland, O., a former President of your Association. This was in the summer of 1888, and was followed a few weeks later by the May, Purington & Bonner Brick Co. and the Purington-Kimbell Brick Co., of Chicago. As I was with the latter company during the seventeen years of its existence, it naturally follows that it was with that company that what experience I have had was obtained.

GEORGE H. DREW, Blue Island, Ill.

In five years from the date of Mr. Eggers' first experiment the use of oil as a fuel for burning brick had increased to such an extent that in 1893 the Standard Oil Co. sold more than 400,000 barrels in Chicago alone. At this point the philanthropic zeal of the Standard Oil Co. seemed to wane, and its desire to benefit mankind, and especially that portion of it engaged in making brick, received a serious set-back. The quality grew poorer, the price increased, with the result that in 1901 less than 50,000 barrels were used in burning brick.

Next to gas, oil is the ideal fuel for burning brick. Nearly all the potteries and terra cotta works use it. Not altogether because of its cheapness, but largely because the quality of all clay products is greatly improved by this method of burning. The principal reason for this improvement lies in the fact that from the time the kiln, or furnace, is lighted until the burning is finished, no cold air is admitted, and the damage done to ware by changing fires, when coal is used, is entirely overcome.

To make a success of burning oil it is necessary that the burner should know the proper quantity of oil, air or steam, or air and steam, and how to mix it. The average brickmaker finds this out by practical experiments. The scientist might get at the same more quickly and perhaps more definitely, but the practical burner would produce the best results.

The first kiln I burned with oil was an old-fashioned clamp kiln of ten arches at the plant of the Purington-Kimbell Brick Co., at Purington Station, near Blue Island, Ill. This kiln contained 350,000 common brick, and was burned in ninety-eight hours, using 8,750 gallons crude oil. The burner was a patent affair from Haverstraw, N. Y. I have tried nearly every style of burner I could get hold of, and finally came to the conclusion that the old-fashioned Canada burner, with some slight changes, was the best adapted to our use, and for years have made all the burners that we used and many used by others. It is very simple in construction, and is made of gas pipe, using ¾-inch pipe for the steam, and ¼-inch pipe for the oil. We have burned many millions of brick. Our average time during the past season was eighty-two hours, and average amount of oil per thousand brick 22½ gallons.

Our oil is stored in a brick cistern, and pumped to a stand-pipe 35 feet high, with an overflow to the cistern. This gives us an even pressure of oil at the burners, which is very necessary. The steam is taken from the boiler plant, 250 feet from the kiln shed. It goes without saying that the value of the steam is not increased in traveling from 250 to 800 feet, and to remedy this we run a 2-inch pipe to the center of the kiln, in the second arch from the end. This acts as superheater, and is the simplest and most efficient of any I have tried. The economy of burning oil is greatly increased by the superheating of the steam used to spray the oil. At the present price of oil brick can be burned much cheaper in Chicago with coal, so far as fuel is concerned, but on some of the yards owned by this company the additional cost of fuel, when using oil, is more than overcome by the reduced cost of labor and quality of burned material.

I hardly think that I shall be criticised by the practical men of this Convention for saying that clays differ greatly, and that there are many things to be considered in figuring the cost of burning. I am sure that with the clay I have used for the last sixteen years brick can be burned with oil to produce a much better quality, and with much less waste, than with wood or coal, and yet this is not true of all the Chicago clays. Some of them can be burned with coal at a little more than half the cost of burning ours with oil, and their equal in quality. There is less danger of a poor burn with oil than with coal in burning such clay as I am used to, and there is certainly much less anxiety for the burner and superintendent, and more certainty of good results.

Many have asked me about the danger in using oil as a fuel. In reply I can say that in the thirteen years we have used it we have never had an accident. With ordinary care, oil is as safe a fuel as wood.

I did not expect, when I began, to write one-fourth as much as I have. Like the fuel I advocate, my efforts to explain its use are crude. If those who have listened, and are interested in this subject, will spend a day with me at the works, I will try to explain more fully than I can here the practical workings of our system of burning brick with oil. (Applause.)

—General Discussion.—

Vice President Chase: We have listened to this very interesting paper by Mr. Drew, and it is now open for discussion. I understand that Mr. Gates has something to say on the burning question.

W. D. Gates: I think I have said all you want to hear from me. Mr. Fiske spoke to me about the other matter, and I declined to speak on it, and then he said something about my talking on burning with oil, and so I guess I've got to talk. There is very little I can say to you about burning with oil, following Mr. Drew, the man who is a pioneer, burning brick in such immense quantities, and the only reason they think I know anything about it is that Brother Randall coaxed me into writing an article for The Clay-Worker, and I told you in the January issue more than I knew. Our ware is ware of which we have to be very careful. The requirements for burning are different from those required for brickyard burning. We are still burning with oil. We were forced out of the use of it at one time, but came back when the prices came down. It is an expensive fuel, and yet we are almost forced to use it. We gave an illustration of a burner we made ourselves, as everyone does who burns with oil. It is not a patented burner, but one we made for own use. My son figured out for me the number of heat units, but I was afraid someone would ask me what a heat unit was, and I thought I had better leave that alone. (Laughter.) Our oil figured out approximately at about the same basis as $4.00 a ton for coal. We use eighteen tons of coal for burning a kiln. Of course, we save a great deal in the wear and tear on the kiln by using oil, and we get a better burn, and we save the handling of the coal, and the labor required is much less.

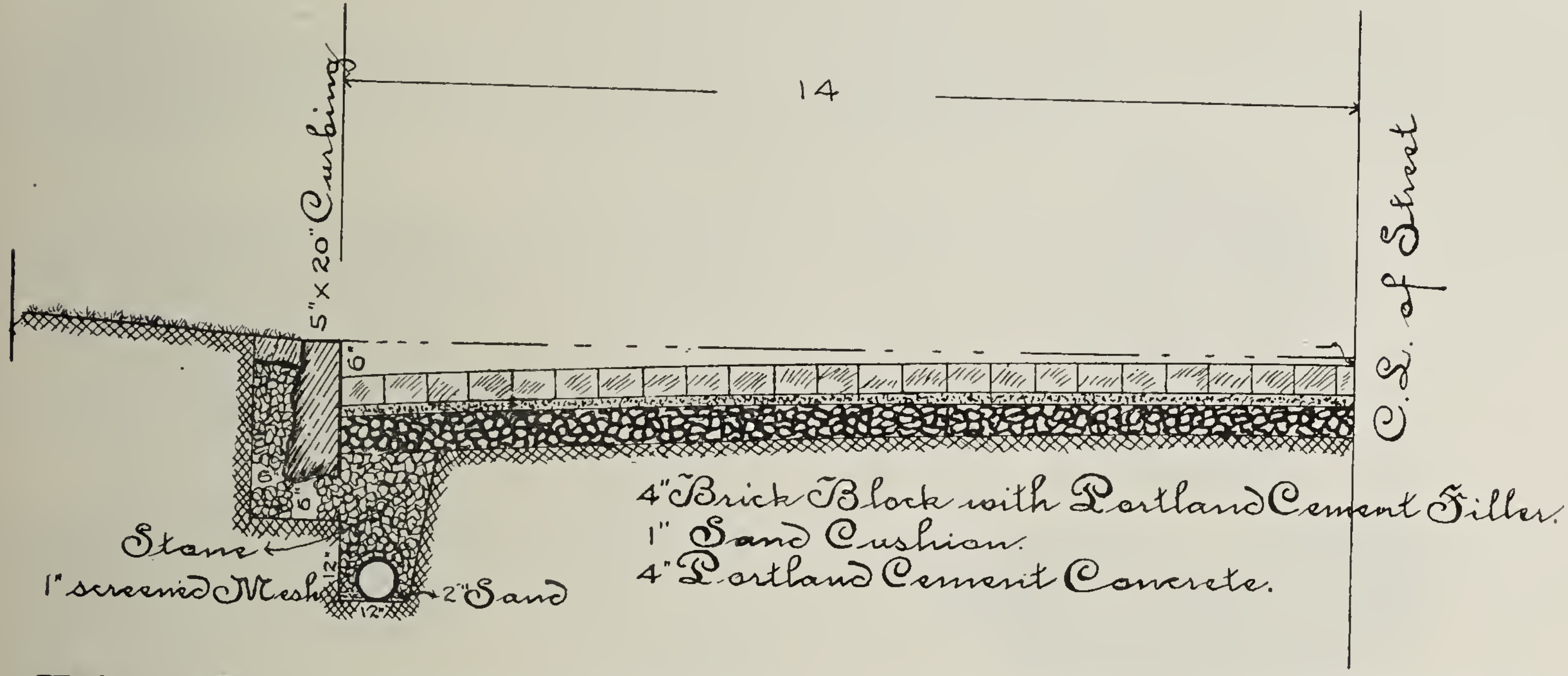
Mr. L. J. Howard: How do you figure that basis of $4.00 a ton?

Mr. Gates: We use eighteen tons of coal to a kiln, and we use 2,500 gallons of oil in burning the same kiln. The oil costs us nearly 3 cents a gallon, and the oil is figured as to the corresponding cost of coal.

Vice President Chase: We will pass on to the next number, which I will ask Secretary Randall to announce.

Secretary Randall: The next number is a paper, entitled, "Brick Roadways and the Improvement of Public Highways," by Mr. W. H. Evers, the county surveyor. Mr. Evers has prepared a very complete paper, which I am going to ask Mr. Blair to read for us. Mr. Evers has done a great deal of good work in the improvement of public highways, and I am sorry he cannot be here. Cuyahoga county has more brick roadways, I think, than any other county in the United States, and these brick-paved highways have been built under the supervision of Mr. Evers. It is a pity that those interested in brick pavements cannot go out and see these brick-paved roadways. They have been down for a number of years and are in just as good condition to-day as when first put down. Mr. Evers tells me that what this county has done every other county in the State may do, as the work is done under a State law.

W. P. Blair: I only hope that I shall be able to read this paper plainly and distinctly, so that you may be able to take in the whole of it, for I am sure that it is of very decided interest to the manufacturers of paving brick in this country, and not much less so to every one of you, because everyone is certainly interested in the improvement of our roadways, both in the cities and towns and throughout the entire breadth and length of the land.



Plan for Brick Paving Cuyahoga County Roads.

THE PERMANENT IMPROVEMENT OF PUBLIC HIGHWAYS

By William H. Evers, C. E., Cleveland, O.

Mr. President and Gentlemen of the Convention:

The selection of Cleveland, O., as the Convention City, for the annual meeting of the National Brick Manufacturers' Association, not only extends to your delegates the well-known hospitality of our progressive business men, but is also a fitting tribute on the part of your growing industry to this, the largest brick paving center in the world. Within Cuyahoga and its adjoining counties the clayworker will find establishments, the largest and most perfect in equipment in the country, turning out immense quantities of shale and clay pavers, the finest building and glazed brick, tile, vitrified sewer pipe and pottery.

The competition between the various kinds of pavements has forced the manufacturer of brick paving block to improve the composition, burning and vitrification of block, to such a degree of perfection that the wearing surface of the brick pavement of today is on a par, if not superior, to the wearing qualities of asphalt, bituminous macadam or the most expensive Telford macadam.

To you brickmakers, who have so well perfected a material providing the main essential to good road construction, a clean, hard, impervious wearing surface, may possibly fall the necessity of advocating and insisting that all authorities superintending brick pavements observe the other essentials to permanent construction.

Our city brick pavements, although laid according to inferior plans as to foundation and drainage, have given very fair satisfaction, and are considered a success. Our city authorities demand good surface drainage, but usually provide an inferior foundation, consisting generally of a six-inch sand cushion, with no subsoil drainage whatever.

Asphalt representatives insist upon a solid foundation, usually of concrete, and good surface drainage, and in macadam roads we find all the essentials to permanent construction carried out, in providing a solid foundation, hard wearing surface, and both surface and subsoil drainage.

I am confident that if the brick manufacturer, with his superior wearing surface, would take the same stand, and recommend the same foundation and drainage, without which asphalt or macadam roads would be worthless, his pavement would surely supplant asphalt or macadam construction on resident or business streets, and may even take the place of stone pavements on heavy traffic streets.

And yet, gentleman, you would still have the cheaper pavement; for, with the cost of foundation, surface and subsoil drainage as a constant, the comparative cost would be in the wearing surface only, which in Cleveland in the year 1901 was as follows:

$1.00 per square yard for brick (4-inch block).
$1.25 per square yard for bituminous macadam (3-inch).
$1.50 per square yard for asphalt (3-inch).

I would consider the following, a plan incorporating all essentials of good road construction, in such a manner as not only to make the very best modern road, but would be more durable, economic and sanitary than either asphalt or macadam.

This plan would also require, in addition to the subsoil drain indicated, a catch basin every 300 to 400 feet, depending upon the gradient of the street.

What has experience proved as to the comparative merits of 4-inch and 5-inch block?

Cleveland was one of the first cities in the country to demand the manufacture of 5-inch block, evidently in the hope that in having a heavier wearing surface the foundation and drainage plans in use need not be further perfected. The experiment has not given the anticipated results, as the same defects which destroyed the 4-inch brick paving also appear in 5-inch brick pavements. An examination of the surface of any brick paving laid with a Portland cement filler demonstrates that there is no perceptible wear to the surface only at such spots, where the foundation has settled, or where an imperfect setting of the grout has not filled all the voids. With proper drainage and good foundation, a 4-inch block is not only ample, but would be indestructible under the heaviest traffic.

Hoping that an understanding of Cuyahoga county methods of building roads may lead other counties to take steps to improve their highways along similar lines, I attach herewith general specifications controling brick construction in our county for the year 1902; together with a brief outline of our law for special road improvement.

Not only are our county authorities trying to take the lead, in durability of construction, by insisting upon the essentials herein set forth being incorporated in all plans, but we feel that, after years of legislation, we have secured a law which will improve all of our highways on a basis levying equitable taxes and special assessments according to benefits only.

After Section 4637 of the Revised Statutes of Ohio was supplemented (see Ohio Laws, 94-366), our Citizens' Protective Association, desiring a clear elucidation of the law, made a test case of some technical phase of the bill, carried it to the Circuit Court of Cuyahoga county to get a full interpretation.

Our County Commissioners, being so fortified, levied a general tax of ½ mill, providing a fund approximating $90,000 per year.

With this fund as a nucleus, we have under way the following improvements, the work of one year. All work is done on petition, signed by at least a majority of the foot frontage on any county or State road, and the commissioners may do any one or all of the following:

First. Cause the county surveyor to establish a grade along said road.

Second. Cause said road to be widened or altered to a width not exceeding 100 feet, as recommended by duly appointed viewers.

Third. Grade, drain, curb, pave or macademize said road.

The County Commissioners are constituted an assessing board and have levied on the adjoining property of our various improvements from 30 to 60 per cent. of the total cost of the same, according to benefits, paying the balance of the cost of the work out of the county treasury.

Notice of assessments must be published three consecutive weeks, and all written objections are equalized by three disinterested property holders, appointed by the County Commissioners.

When the assessment is confirmed by the County Commissioners, the same is complete and final, and the County Auditor shall place the same on the tax duplicate, payable in ten annual installments, as other taxes.

When the amount of the first installment is paid in the Commissioners are authorized to issue notes of the county for the balance of the expense of said improvement, and can then proceed to contract the work as may be subscribed by law.

—Schedule of Road Improvements in Cuyahoga County for Year 1902.—

	Length of Improvement In Miles.	Kind of Improvement	Engineers Estimate	Taxable to Property	Payable by County
Detroit St	3	Grading, Draining, Curbing, Brick Paving or Asphalt	$116 600	$69,071 33	$47,528 67
Miles Ave.	1½	Grading, Draining, Curbing and Brick Paving.	51 000	34,937 75	17,062 25
Noble Road	2½	Grading, Draining, Curbing and Brick Paving.	51 450	30,943 62	20,506 38
N.Woo'l'nd Rd	7	Grading and Planking.	36 428	22,802 70	13,625 30
State Road	3½	Grading, Draining, and Bituminous Macadam.	76 460	34,535 67	41,924 33
Euclid Road	2¼	Grading, Draining.	77 500	65,507 42	11,992 58
Kraft Hill	¼	Grading.	1 510	380 00	1,130 00
TOTALS	20		$410 948	$257,178 49	$153,769 51

These improvements also demand, in addition, that the street railway companies along these thoroughfares also brick pave a 15-foot strip for double tracks a distance of 4½ miles.

Cuyahoga county will annually improve about ten miles of roads, at an expense approximating $20,000 per mile. With this continual amount of work, in surfacing our highways, Cuyahoga county will soon have every main thoroughfare paved, and will endeavor to construct the same to conform to theoretical principles and the best practical experiences, so that the National Brick Manufacturers' Association cannot only look to Cuyahoga county as the brick-paving center, but will be able to point to our methods of building roads as giving the best, most permanent and popular improved highways.

—General Specifications.—

Grading and Subgrading—

The streets, including roadway, intersections, approaches and drains, shall be graded to such grades as shall be given by the engineer in charge and according to the cross sections on file at the office of the Board of Commissioners. All excess of excavation not needed in adjoining embankments must be hauled by the contractor to such points as directed by the engineer, within one thousand (1,000) feet of the limits of said excavation.

Before laying the foundation, and after the curbstone has been set, the subgrade shall be well rolled with a roller, weighing not less than seven (7) tons, until the subgrade conforms to the finished crown of the pavement.

After rolling and before placing any material on the roadway, the grade shall be tested by the engineer, and if any places are found higher than the subgrade line, such places shall be brought to the true grade, and if any places are found to be lower than the subgrade line, the depressions shall be filled with gravel at the contractor's expense, unless where spongy or soft material is encountered in the subgrade, the contractor shall remove the same upon the order of the engineer, and such space shall be filled with gravel or broken stone for the price bid per cubic yard of broken stone furnished and laid.

The price bid per cubic yard of excavation in grading and subgrading shall include the excavation and removal of all earth of every kind, and all rock, shale, cinders or bowlders, as no classification will be allowed under this contract; also the removal of all stumps and the grubbing out and removal of all underbrush and all trees three inches or less in diameter one foot above the ground.

Excavation in Trenches—

The contractor shall open trenches of such depth, width and cross section as indicated on plans, and no allowance will be made for additional widths, unless where ordered by the engineer. Such surplus material excavated from trenches, as indicated by the eningeer as not needed in back filling, shall be removed by the contractor to such points as may be directed by the engineer, within one thousand (1,000) feet of the place of excavation.

The price paid per cubic yard of excavation in trenches shall include the cost of all excavating and removal of surplus material, as specified above.

Embankments—

All embankments required within the limits of the improvement shall be made with soil free from shale or other objectionable material. All embankments must be thoroughly compacted by rolling in six-inch courses, and must be built up at least one foot above the finished grade of the road. All adjoining slope rights must be made 1½ to 1.

The price bid per cubic yard of embankment in grading shall be the entire cost to the county of furnishing all material, rolling and labor required to make the necessary fills and protecting slope rights.

Drains and Sewer Pipe—

After trenches have been opened, as above specified, the contractor shall place the drain tile or sewer pipe, of the size ordered by the engineer, with open joints, upon two (2) inches of coarse, acceptable sand or gravel for French drains. He shall then completely fill said trenches with screened slag or stone, free from all dust and of a one (1) inch mesh, and carefully compact the same by hand tamping with a paver's rammer to the satisfaction of the engineer in charge. All pipe must be equal to the first quality of Akron vitrified sewer pipe and must be laid to the lines and grades given by the engineer. The price bid per lineal foot of sewer pipe and specials furnished and laid shall include the cost of laying the same on a bed of sand or gravel as above, but all stone laid in French drain will be paid for according to the price bid per cubic yard.

Catch Basins—

Catch basins shall be built where directed, according to the attached plan. They must be built of hard sewer brick and mortar, composed of one part of Saylor's or Sandusky Portland cement and two parts of clean, sharp sand. The price bid for each catch basin complete shall include the cost of all excavation and back filling and disposal of surplus material and the furnishing of all necessary labor, brick, mortar, cover and traps as indicated on plan.

Concrete for Foundation—

The concrete for foundation shall be either four (4) inches of Portland cement concrete, or six (6) inches of natural cement concrete, at the option of the Board of Commissioners.

—Preparation of Concrete.—

Natural Cement Concrete—

Cement.

All cement must stand tests as follows:

Specific gravity, not less than 2.7, and shall leave a residue—

On a No. 50 sieve	Not over 5 per cent.
On a No. 100 sieve	Not over 15 per cent.
On a No. 200 sieve	Not over 35 per cent.

Briquettes shall have 1 square inch of breaking section, and must develop the following breaking strengths:

Sand Briquettes (1 of Cement to 2 of Sand by Weight).

Age.	Strength.
7 days (1 day in air and 6 days in water)	75 pounds
28 days (1 day in air and 27 days in water)	125 pounds

Neat Briquettes.

Age.	Strength.
24 hours (in water after hard set)	70 pounds
7 days (1 day in air and 6 days in water)	130 pounds
28 days (1 day in air and 27 days in water)	200 pounds

Sand—

All sand shall be course, sharp, silicious sand, free from loam, organic matter and other impurities. It shall pass a No. 10 standard testing sieve (10 meshes per lineal inch), and not less than 30 per cent. shall be retained upon a No. 30 sieve (30 meshes per lineal inch). It shall be stored upon the work upon suitable wooden platforms.

Stone or Slag—

All material for concrete shall be hard limestone or machine crushed slag, acceptable to the engineer. All stone or slag used for concrete shall be of a 1½-inch mesh, free from all dust and fine material. All stone or slag must be wetted before being mixed with the mortar.

Water—

All water used in the construction of this contract, or for the cement filling, concrete, or for keeping the same wet, must be obtained at the contractor's expense.

Portland Cement Concrete—

Cement.

All cement must stand tests as follows:

Specific gravity, not less than 3, and shall leave a residue by weight—

On a No. 50 sieve	Not over 1 per cent.
On a No. 100 sieve	Not over 10 per cent.
On a No. 200 sieve	Not over 30 per cent.

It shall not contain over 4 per cent. magnesia (Mg. 0), and it shall not contain over 1.15 per cent. of surphuric anhydride (S. 03.).

Briquettes shall have 1 square inch of breaking section, and must develop the following breaking strengths:

Neat Briquettes.

Age.	Strength.
24 hours (in water after hard set)	125 pounds
7 days (1 day in air and 6 days in water)	400 pounds
28 days (1 day in air and 27 days in water)	550 pounds

Sand Briquettes (1 of Cement to 3 of Sand).

Age.	Strength.
7 days (1 day in air and 6 days in water)	125 pounds
28 days (1 day in air and 27 days in water)	200 pounds

Natural cement concrete shall be composed of 1 part of natural cement, sand 2 parts and 4½ parts stone, and Portland cement concrete shall be composed of 1 part of cement, sand 3 parts and 6 parts of stone. All concrete may be machine mixed, but the method used for determining the volumes of the various ingredients therefor must be approved by the engineer, and the concrete must be deposited in the work in such a manner as not to cause a separation of the stone from the mortar. Should such separation take place the concrete must be turned by hand in the subgrade upon a tight platform, until the mortar is evenly incorporated with the stone, and then shoveled directly to the points of final deposit and thoroughly rammed in place. Between the 1st of June and the 15th of September all concrete laid shall be kept thoroughly wetted between 10 a. m. and 4 p. m. of each day until the engineer declares it in condition to receive the sand cushion or binder course.

Brick Culverts—Excavations—

The contractor shall excavate the trench a uniform width at least two feet wider than the outer diameter of the sewer. The excavation made must be protected where necessary by suitable sheet piling and bracing, in a manner satisfactory to the engineer. All sheeting and bracing to be furnished by the contractor and paid for per cubic yard of excavation in trenches and subgrades, which price will also include the removal of all surface and storm water that may be encountered, so that all brick masonry can be laid in air, and all water kept from same until the mortar has sufficiently hardened, so as not to be injured by running or standing water.

Back Filling—

Before removing the centers of the newly built arch, the contractor shall fill and thoroughly compact earth over the same to a depth of at least two feet above the crown of the arch. All back filling to be thoroughly compacted in one-foot courses, all to be done at the price bid per cubic yard of back filling over culverts.

Shale Brick Masonry—

The inner ring of the culvert shall be lined with shale brick, vitrified all the way through, of an absorption not to exceed 6 per cent. by weight, laid in full beds and joints of mortar, composed of two parts of clean, sharp, acceptable sand and one part of Saylor's or Sandusky Portland cement, the beds and joints to be made in one operation as the bricks are laid, face joints not to exceed one-quarter inch.

The price bid per cubic yard of shale brick masonry shall include the cost of all labor, brick and mortar required to lay the inner ring, as specified above.

Sewer Brick Masonry—

The wing walls and outer rings of the culvert shall be built of hard burned sewer brick of standard size, of an absorption of water not to exceed 15 per cent. by weight, laid with full beds and joints of mortar composed as specified above for the concrete. The price bid per cubic yard of sewer brick masonry shall include the cost of all brick, mortar, inverts and centers required to build the culvert according to plan.

Manholes—

All manholes shall be built of the design as indicated on plan, of hard burned sewer brick of standard size, and mortar as specified for shale brick masonry.

The price bid for each manhole complete shall include the cost of all brick, mortar, iron steps, iron cover and labor required.

W. H. EVERS, C. E., Clevelaud, Ohio.

Trees—

All trees more than three inches in diameter, measured one foot above the ground, ordered removed and destroyed, shall be paid for at the price bid per tree grubbed out and destroyed.

Curbing—

All old curbing found within the limits of the work shall be taken up and removed to such points as the engineer shall direct.

Curbing to be set wherever ordered and to be of the best quality of Berea, Amherst or East Cleveland white sandstone, 5 inches thick and not less than 20 inches deep, or less than 4 feet long; stones to be flat tool or crandle dressed to a straight line, and a ¼-inch bevel in five inches, and to a uniform thickness of 5 inches, and brought to a straight line on top and face by the use of a straightedge. Stones to be taken out of wind and to be cut with a ¾-inch flat tool, draught on upper edge of face; stones to be set with close joints, at least 10 inches on ends and face, not more than 1½ inches slack at the bottom on each end, to the true line and grade of the street and settled into place with a paver's rammer, and the earth in front and rear tamped with a heavy hand tamper to the full depth of the stones. Medina curbing to be jointed and set as directed around curves and corners at same price as for straight work. Curb to be dropped 4 inches at all driveways, unless otherwise ordered.

All stone must be set with closed joints upon four inches of slag or limestone, as specified above for French drains, to the true line and grade of the street with six inches of slag or limestone, as specified for French drains, behind the curb and settled into place with a heavy paver's rammer up to within four inches of the top of the curb. Curb to be set and jointed around curves at same price as for straight work.

The price bid per lineal foot of 5 inches by 20 inches curbing set, shall be the entire cost of all trenching, back filling, dressing and setting of curbing as specified above.

Brick Paving—

The street, including all intersections and approaches, shall be paved with acceptable brick of a uniform size, at least 3½ inches by 8½ inches by 4 inches. Brick must be made with slight projections on the sides and shall be laid on edge, in courses as directed by the engineer in charge, upon a sand cushion at least one inch in thickness. Adjoining courses must break joints at least three inches, and every fifth course must be straightened by using a wooden bar and sledge hammer. After the paving has been laid, it shall be rolled by a roller weighing at least seven tons, and then rammed with the hand tamper, as specified above, and brought to the true crown and grade of the road by the use of a straight-edge.

Cement Filling—

All joints must be filled to their full depth by a mixture composed of one part either Saylor's or Sandusky Portland cement, and one part clean, sharp lake sand of an improved quality, the cement and sand to be thoroughly mixed dry, in a proper box, and then only enough water shall be added to make the grout of a fluidity when thoroughly stirred satisfactory to the engineer. After the pavement has been thoroughly wet, it shall receive at least two separate applications of the mixture, quickly swept into the joints of the pavement, until the joints shall remain full to the top. Two hours after the grout filling the pavement shall be covered with a light dressing of clean sand, which, with all other accumulations, shall be removed by the contractor at his own expense at such time as the county shall direct. The contractor is to be liable for all damages which may be incurred by wagon traffic or in any other way.

L. J. HOWARD, St. Louis, Mo.

Guarantee Fund—

All work done under this contract shall be guaranteed by the contractor, and there will be retained by the county, from the amount due upon the final or from any previous estimate, at the option of the county, a sum of money equal to ten (10) per cent. of the total amount of work done under this contract, which amount shall be retained as a guarantee upon the part of the contractor that the workmanship and materials furnished under these specifications are in all respects as herein provided and that the improvement will remain in good and perfect condition for and during the period of five years from and after the day of the payment of the final estimate under these specifications. The contractor shall also preserve the wearing surface in good condition, acceptable to the Board of Commissioners, during a period of five years, beginning at the expiration of the above guarantee and covering a period of five years thereafter, at the price bid per square yard per year.

Where Deposited—

Said amount retained shall be deposited by and in the name of ....together with a statement of the intent and purpose thereof, with such bank as the.................... may by resolution declare, and all interest and dividends accruing thereon shall be considered as a part thereof, all of which shall be used in the manner hereinafter set forth.

Failure to Make Repairs—

If at any time said contractor shall, within five days after receiving notice from the.. so to do, fail or neglect to make repairs to the improvement, or any part thereof, as herein provided, then said.. may, without further notice, proceed to make such repairs, or cause the same to be done, and the cost of this work, together with the cost of all inspection that....................................deem necessary in connection therewith, shall be charged to and deducted from the guarantee fund.

Return of Guarantee Fund—

In case the contractor shall make all repairs and renewals which may become necessary under this contract and guarantee, and leave said improvement in good and perfect condition, acceptable to the....................................at the expiration of said guarantee, then upon the expiration of the term of guarantee said amount or deposit, with all accrued interest thereon, less any expenses which the county may have incurred in connection therewith, shall be paid to said contractor as full payment of any balance due on said contract and improvement, as herein provided. (Applause.)

—General Discussion.—

L. J. Howard: I am more than pleased to have heard this paper, and am much interested, because in the city of St. Louis they claim that the people should pay the total expense, that is, 100 per cent., and it seems by this that the property owner pays but 60 per cent. and the municipality pays 40 per cent. I think the municipality should pay something, and I think this is a movement in the right direction in the construction of public highways. It looks as though we in Missouri need a leader like Mr. Evers, and while it may be outside of the line of the work of this Association, I think it is a fit subject for discussion, because we are all property owners and we are all interested in this subject. It seems to me that the municipality or county should not pay less than 25 per cent. to 40 per cent. of the cost of these permanent improvements.

D. V. Purington: There are none of us here interested in paving brick who have not been greatly interested in the reading of this paper. This is a very meaty paper; there is a great deal in it for us, and I move, and I trust it will meet with the approval of the members of this Association, that this paper shall be published in pamphlet form and be sent, not only to the members of the Association, but to the county engineers as well in the sections represented by our members.

W. P. Blair: I second this motion, and before the motion is put I want to say a few words. I am so interested myself in this paper, and I really believe, in the first place, that it should be published and circulated as provided for by Mr. Purington's motion. I concur with everything suggested in that paper, in the general lines as laid down by Mr. Evers. It is certainly one of the best papers for the advancement of economic ideas in highway construction, and of interest to every citizen and taxpayer, and I would like to see it promulgated in every county in this country. It is a paper that you cannot gather all that is in it by mere casual reading. It is a paper to be studied and thought over; but there are a few things I want to bring out in regard to it, and that is, that the writer of this paper has said that the brick pavements in the city of Cleveland, O., have given fair satisfaction. But it is also said that in the wear and tear of the brick streets of the city of Cleveland, there has been put in the mind of the people of Cleveland a doubt as to the durability of the brick pavements under heavy traffic. I think the trouble with us brick manufacturers has been that we have not impressed upon the people that full faith and full confidence which we manufacturers have as we should. I believe a brick pavement can be so laid that it will withstand the very heaviest traffic that can be put upon it, not alone in Cleveland, but even that of the city of St. Louis, where the heaviest traffic exists of any city in the world. Chicago, even, isn't in it when it comes to traffic. The writer's specifications differ at points from the specifications which will be here reported and sustained unanimously by your committee, who have sought to attain the very best, to the minutest detail. Thus he provides for one inch of sand cushion. I want to insist that there is no possibility of a good brick street being constructed to give the highest satisfaction possible, when one inch of sand cushion is used, for the reason that the deflection is so very slight with a one-inch sand cushion the brick will chip, no matter what brick it is or by whom manufactured. This is the experience and observation of your committee. It is likewise as clear as the light of day, that if you put a two-inch cushion under the brick and you compact that cushion, the brick will last and never chip. Again, the writer specifies a roller for compacting the brick, which renders it impossible to properly roll and compact a brick street—it must not be greater than five tons—and your committee's report in this respect is the result of the most rigid scrutiny. Again, there is the expansion cushion that must not be neglected. But, upon the whole, this paper and these specifications are in the right direction; they justly reflect, in a proper measure, upon us as manufacturers, and likewise upon engineers. The durability of brick streets has been regarded by all of us as depending almost wholly upon the quality of the brick. We want good brick, we make a good brick, and we furnish a good brick; we now want and demand good construction, enabling us to promulgate the fact that a brick street can be made just as desirable, and is more durable, than an asphalt or wooden block pavement. Securing good construction, we have achieved a victory that will put the asphalt people begging for favors at the hands of the public; we can build a brick street so that the wear and tear is reduced to a minimum. There is no necessity for any of the brick being chipped under any condition of travel. It can be made so there will be nothing but just the grinding wear, as upon a stone, and this does not amount to anything. It will be grinding in the same spot a generation hence. This idea that the larger cities have condemned the five-inch block meets with very decided approval in the minds of every brickmaker. It is foolish to make a five-inch block for a brick street construction, because if you construct a street right you will not need more than a four-inch block. There are so many things that come up in my mind that I would like to speak about, but time is short and I will not. I hope that Mr. Purington's motion will prevail, and that this Association will prosecute this method of educating the public. (Applause.)

Anthony Ittner: I simply desire to ask a question of Mr. Blair. He states that a two-inch cushion of sand should be used, and the paper recommends one inch, and I wish to ask Mr. Blair if you get a two-inch cushion if there is not a possibility of a displacement, which should be guarded against?

W. P. Blair: No, sir.

D. V. Purington: I wish to amend my motion so that the remarks of Mr. Blair, just made, be included in the publication of this paper.

The motion was then put to the Convention and carried.

Vice President Chase: I think, since we have ordered this paper and the remarks following it printed in pamphlet form, and the hour is growing late, we had best pass any further discussion on the subject. And this brings us to the report of the Committee on Specifications for the Construction of Brick Pavements, by the chairman, Mr. D. V. Purington, Chicago.

REPORT OF COMMITTEE ON SPECIFICATIONS FOR THE CONSTRUCTION OF BRICK PAVEMENTS.

Mr. President and Gentlemen of the Convention:

Your Committee on Specifications for Construction of Brick Pavements beg leave to report that they have had several meetings during the year and have used their best endeavors to secure the co-operation of the American Society of Municipal Improvements, but with limited success. They, therefore, beg to submit the results of their deliberations for the approval of the Convention. They believe that the recommendations herewith submitted afford the best direction for building the highest and best grade of brick streets.

—Substructure or Grading.—

Earth in excavation to be removed with plow and scraper, or other device, to within two (2) inches of subgrade, then brought to true grade with the roller, the weight of which should not be less than five (5) nor more than eight (8) tons. If the earth is too hard to receive compression through the weight of the roller, then loosen the remaining two (2) inches with a pick and cart away.

Earth in embankment must be applied in layers of eight (8) inches in thickness and each layer thoroughly rolled, and in both excavation and embankment the subgrade must have a uniform density.

If the ground is a spouty clay, tile drainage should be provided to carry off this accumulation of wet.

—Curbing.—

If cement is used it should be completed; if stone, all should be hauled and distributed and set before the grading is finished, and may then be used as a guide to finish the subgrade.

It should range in thickness from four (4) to six (6) inches, twenty (20) to twenty-four (24) inches wide, the business and street traffic governing the same, and lengths not shorter than five (5) feet, except at closures. Neatly dressed on top with a square or rounded outer edge and four (4) inches down on the inside. The outer surface to be tool dressed to the depth of the face exposed and to the depth of the thickness of the brick and sand cushion. The intersection at street corners and alleys should be circular, with radius of four (4) and three (3) feet respectively.

—Marginal Curbs—

Should always be of a hard and durable character of stone and from fourteen (14) to eighteen (18) inches deep, dressed on top and five (5) inches down on the face next to the brick.

Set to accurately fit the curvature of the cross-section of the street, on six (6) inches of concrete and backed up with the same within six (6) inches of the top.

—Concrete Foundation—Crushed Stone.—

Should be of approved quality of hard rock, with no fragment larger than will pass through a two (2) inch ring and none smaller than will pass through a one (1) inch ring in their longest dimensions, free from all refuse and foreign matter.

—Sand—

Must be clean, sharp and dry and thoroughly mixed in its dry state until the whole mass shows an even shade, with an approved brand of either hydraulic or Portland cement. If of hydraulic, the proportion of mixture should be one part of cement and two parts of sand; if of Portland cement, one part of cement and three parts of sand.

To the above mixture should be added sufficient clean water to mix to a plastic mass, fluid enough to rapidly subside when attempting to heap to a cone shape. To this mixture add four (4) and five (5) parts, respectively, of damp, crushed stone or clean screened gravel, and turn the whole mass over not less than three (3) times, or until every fragment is thoroughly coated with the cement mixture. For the reception of this mixture the grade should be set off in five (5) foot squares, with a stake at each corner. Tops of each should be at the surface of concrete, which must be tamped until free mortar appears at the surface. Occasional sprinkling in extreme hot, dry weather is beneficial. After thirty-six hours the cushion sand may be spread.

W. P. BLAIR, Terre Haute, Ind.

—Sand Cushion.—

Sand should be clean and free from foreign or loomy matter. It need not necessarily be sharp. It should be two (2) inches thick before the compression of the brick by rolling. The sand should be spread, by the aid of a template, the whole or one-half the width of the street, made to conform with the true curvature of the street cross section.

—Brick.—

The brick should all be hauled and neatly piled inside of the curb line before the grading is finished, or, if allowed by the engineer, delivered on the street in wagons and carried from the pile or wagon on pallets or with clamps, and not wheeled with barrows. They should be first-class and thoroughly vitrified, showing at least one fairly straight face, with rounded edges, with no greater radius than 3-16 of an inch. They should not be less than 2½x4x8, or more than 3¼x4x9 inches, free from cracks, with but slight lamination and at least one edge with but slight kiln marks allowed.

Such brick or blocks shall be submitted to a test of one hour in the National Brick Manufacturers' Association standard rattler, and under the conditions prescribed by that Association, and if the loss by abrasion during such test exceeds ·20 per cent. of the original weight of the brick tested, then such brick or blocks shall be rejected.

—Brick Laying.—

Brick should be laid perpendicular to the curb. Broken brick or block can only be used to break joints in starting courses or in making closures. The brick shall be laid on edge, close together, in straight lines across the roadway between gutters. Gutters shall be constructed as directed by the engineer. After the brick are laid they shall be thoroughly inspected, and all warped, spalled and soft brick removed and replaced by more perfect ones, and those found with the bad face up should be turned down.

—Tamping and Rolling.—

After the inspection is thus completed the edge of the pavement shall be tamped to grade next to the curb, to the width of six (6) or eight (8) inches out from the curb, with a hand tamper. The entire pavement shall then be rolled with a five (5) ton steam roller until all brick are thoroughly bedded and the whole surface assumes a practical plane.

—Expansion Cushion.—

An expansion cushion must be provided for, one inch thickness next to the curb, filled 2-3 its depth with pitch, the top 1-3 being filled with sand, and a like cushion at right angles with the street at intervals of fifty feet.

—The Filler.—

The filler shall be composed of one part each of clean, sharp sand and Portland cement. The sand should be dry. The mixture, not exceeding one-third bushel of the sand, together with a like amount of cement, shall be placed in the box and mixed dry, until the mass assumes an even and unbroken shade. Then water shall be added, forming a liquid mixture of the consistency of thin cream.

From the time the water is applied until the last drop is removed and floated into the joints of the brick pavement, the same must be kept in constant motion.

FAWCETT PLUMB, Streator, Ill.

The mixture shall be removed from the box to the street surface with a scoop shovel, all the while being stirred in the box as the same is being thus emptied. The box for this purpose shall be 3½ to 4 feet long, 27 to 30 inches wide and 14 inches deep, resting on legs of different lengths, so that the mixture will readily float to the lower corner of the box, which should be from 8 to 10 inches above the pavement.

This mixture, from the moment it touches the brick, shall be thoroughly swept into all the joints. Two such boxes shall be provided in case the street is twenty feet or less in width; exceeding twenty feet in width, three boxes should be used.

The work of filling should be thus carried forward in line until an advance of from fifteen to twenty yards has been made, when the same force and appliances shall be turned back and cover the same space again in like manner, except that the mixture for the second coating may be slightly thicker than the first.

To avoid a possibility of the great thickening at any point, there should be a man with a large sprinkling can, the head perforated with small holes, sprinkling gently the surface ahead of the sweepers. This should be done in the application of each course here specified.

After the joints are thus filled flush with the top of the bricks and sufficient time for evaporation has taken place, so that the coating of sand will not absorb any of the mixture, one-half inch of sand shall be spread over the whole surface, and in case the work is subjected to a hot summer sun an occasional sprinkling, sufficient to dampen the sand, should be followed for two or three days.

The grouting thus finished must remain absolutely free from disturbance or traffic of any kind for a period of ten days.

D. V. PURINGTON,
Chairman;
T. B. TOWNSEND,
WILL P. BLAIR,
Committee.

Vice President Chase: You have heard the report of the committee, what will you do with it?

R. J. Connell: I move that this report be printed in connection with the paper and the remarks following. I believe it is very essential to do this. We will in our city lay something like sixteen miles of brick pavements this coming year. It is in the nature of an experiment with us, on which we will expend a great deal of money. Our engineer does not understand the matter, and I can see how the streets can be improved a great deal with these specifications, in our own city alone. To make myself clear, I move the adoption of the report and that it be printed and distributed in connection with the paper by Mr. Evers and the remarks following by Mr. Blair.

Seconded by Mr. Gregory and carried.

By motion of Mr. Bloomfield, the Convention adjourned.

FOURTH SESSION.

Friday Afternoon, Feb. 14, 1902.

President Fiske: Unless there is some general business to come before us, we will take up the questions for general discussion left over from this morning's session. First is—

Does the process of repressing paving brick really tend to strengthen or weaken the brick?

Fawcett Plumb: As I came in a moment ago, this question was asked of Mr. Blair, and I inadvertently answered it, that sometimes it did and sometimes it did not. This body, some two or three years ago, took this subject up, and after a series of investigations, conducted by a committee, at which Prof. Orton was at the head, they made a report. I think I have a copy of that report and maybe some of you have it, and as I now remember it, the conclusions arrived at by the committee were: That an end-cut brick was benefited by repressing and a side-cut brick was not. They made a series of experiments, and arrived at a certain percentage, as I now remember it. The conclusion was about like this: That the repressing of an end-cut brick increased its value. They found this out somehow by the rattler process and by some other experiments. In the case of the side-cut brick, there was a corresponding decrease of 10 or 15 per cent. in the strength of the repressed brick. The theory was that there was a certain lamination produced by the auger machine in pushing the mud out of the machine, in the one case, and you take an end-cut brick, for instance, and you bring a pressure down on it and you squeeze it together and get rid of a certain per cent. of lamination. You take a side-cut brick and you put it through the repress and there is a pulling apart of the particles or a reforming of the clay, which destroys or weakens the original bond of the brick or body of clay. I have always felt that this was a sensible report, and I have gone so far as to recommend it in the purchase of brick in my town for street paving. If the brick is a side-cut brick, don't repress it. They insisted upon our repressing the brick, but we charged them a dollar more for that work, believing all the time it an injury to the brick. Now, I don't know but that some one else may have had some experiences that will make a difference in the conclusion. You help your end-cut brick by repressing. There is one thing, however, that I feel inclined to admit. If the clay is very plastic, very soft when it is worked, some of these objections cannot be claimed.

President Fiske: I think Mr. Plumb has covered this subject very thoroughly, and we will pass on to our next question, No. 16, which reads—

What is the chief advantage or disadvantage of round down-draft kilns, compared with square down-draft kilns, for burning paving brick? (1) Economy in construction. (2) Length of life. (3) Economy in fuel. (4) Economy in labor. (5) Results obtained.

D. V. Purington: I think I will voice the sentiments of this Convention when I suggest that the last four words of that question—"for burning paving brick"—be left off. There are people here, who are interested in down-draft kilns, who make other than paving brick, and it seems to me that very many of the reasons would be equally applicable for burning pressed or any other kind of brick, and I think we will get a more intelligent idea of the situation if we eliminate the last four words.

President Fiske: Then the question will read—

What is the chief advantage or disadvantage of round down-draft kilns, compared with square down-draft kilns?

D. V. Purington: I don't want to discuss this question myself, but it seems to me that Mr. Eudaly has probably had as much experience building round and square down-draft kilns as any man here. Many of us have used round kilns and many of us square kilns, but he has built both of them, and I really think he is as competent, if not more so, to answer this question as any other man in the Convention.

—Round Vs. Square Kilns—General Discussion.

Mr. Eudaly: I thank Mr. Purington very much for his frankness in the matter. I do not mean in regard to my competency and all that, but to take the chance of asking me to discuss this question. There are a number of points which come out of this question. I have no partiality for one kiln over the other. The same patents cover both, so I make this statement to you not as an advertiser in any sense, but that you may know where I stand. My experience leads me to believe that if you were building a plant of kilns to manufacture —I will say paving brick first, and come to pressed brick next —to make from 20,000 paving brick per day up, you can build a plant of square down-draft kilns for some less money—not a great deal, but some less than round down-draft kilns. When it comes to the question of operating the kiln, I can only repeat what a large number of my customers and others who have written me on this subject have to say in regard to it. Some time since, I took the trouble of writing manufacturers who had used both kinds of kilns, of my kilns and other kilns, as to the difference in handling the brick in the round and square down-draft kilns, to say nothing of the fuel, and in the list of replies they varied from five cents per thousand, in the lowest estimate in favor of square kilns, to the highest estimate, which, I believe, the gentleman claimed was 20 per cent. in favor of square kilns. This is a plain statement of the matter, so far as paving brick go. I want to speak just a word as to dry press brick. In burning dry press brick, I do not think any one can afford, if they have a capacity that will justify the business at all, to build a round kiln. I do not like to make that statement, because I can sell round kilns to a number of people who can build a small round kiln for less money than a large square kiln, still I do not believe a man manufacturing dry press high grade brick can afford to burn them in any but square kilns. Now, as to length of life. I have no doubt in my mind at all but that I can build a square down-draft kiln more durable and that will last longer than I can build a round kiln after the diameter of the round kiln passes twenty-two feet. You can build small round down-draft kilns very strong, but when you build a large round down-draft kiln it cannot be built so strong as a large square down-draft kiln. These are statements without proof. Any one is at liberty to ask a question; I do not want you to swallow what I am saying if you do not believe it. The crown is the thing which disturbs the mind of most people in a square down-draft kiln. The thing that disturbs the crown of any kiln is the contraction and expansion in the burning. You cannot figure the strength of the crown of the kiln by comparing it with the strength of other arch construction, because in other arch construction you build a construction that is supposed to stand without any contraction or expansion, comparatively. Perhaps iron work would have a little of this, and you built it to have a certain weight. In the round kiln, when the span is very great, the contraction and expansion is proportionately great, and naturally the latter won't stand and the crown will sink, because of the unequal weight. At first the difference is not perceptible, but in time it will give way with the expansion. If you could have a nice, smooth, even fire in your kiln all the time, so you could keep the same degree of heat, it would be different, and it would last a great many years. Much depends on the construction of the crown of any kiln. The crown depends very much upon the arch. Many kiln builders say if the chamber of the kiln is twenty-four feet the arch of the circle, from the arch to the ground, should also be twenty-four feet. This is a mistake, in my judgment. I do not take the same arch for all crowns. The arch I would take for a 20-foot kiln would not be the same as for a 24-foot kiln, because we must take into account the contraction and expansion and the weight of the arch of every crown. Expansion and contraction cut a great figure, because if you have a brick which expands a great deal, its relative position will change when the brick is hot and the crown is hot. One of the things you have to do as a kiln builder is to try to strike a happy medium.

Now, as to economy of fuel. The square kiln has the advantage in this, that you have a larger body of brick. The square kiln has somewhat the advantage as to the material produced. It has decidedly the advantage in pressed brick, in paving brick not much, because the discoloration is not taken into account.

A Member: How about the cost of repairs, between the round kiln and the square?

W. A. Eudaly: The repairs of the square kiln are less than for a round kiln. Very much less for paving brick manufacturers. When you build a round kiln, say up to twenty-six feet, the repairs are very much greater.

A Member: It has not been my experience.

W. A. Eudaly: Economy in labor; I suppose this means as to working the kiln. As I stated a moment ago, that to all the gentlemen to whom I had written on the subject, five cents per thousand was the lowest in favor of the square kiln, and some were as high as twenty cents per thousand. I think the average is about ten cents per thousand.

Results obtained: The results in pressed brick are decidedly in favor of the square kiln. In common building brick, if you do not care anything for the color, you can use the round kiln; it depends on what you want to sell your brick for. The round kiln will discolor more brick than the square kiln; you can burn a better per cent. of nice, clean face brick in the square kiln than in the round. You get less work in the square kiln than in the round, especially if you build bag walls. A square down-draft kiln will give you less discoloration than any kind of a kiln that I know anything about, and will give you more good, straight brick. I believe I have made a lot of statements that seem rather egotistical, but I have not stopped to give the reasons for all these things, but I will be willing to give you reasons if you want me to.

ANTHONY ITTNER, St. Louis, Mo.

Fawcett Plumb: I have listened to this discussion very closely, and in the question of economy of construction I would like to say that the square kilns cost more money. We have seventeen or eighteen kilns, and we have square kilns and round kilns, but my judgment is that we can build, at our place, the round kiln of, say, 200,000 capacity for less money than the square kiln. Our bookkeeping shows that.

W. A. Eudaly: I believe that Mr. Plumb is correct, but be it known that the character of the round kiln he built is not the same as the square kiln he built, and there is a very great difference in the foundation or the bottom of the kiln, size of walls, etc.

Fawcett Plumb: The only apology I can make in regard to the round kiln, the results were more satisfactory. The results were satisfactory in both cases, and if we can get a good kiln for the same money, that will do as good work, that is what we are after.

C. A. Bloomfield: I must beg to differ with Mr. Eudaly. Both from my personal observations and the interest which I have in two or three plants, I have come to the conclusion that the square kiln is no good. It is impossible to keep them tight; that is, it is impossible to control the contraction and expansion so as to keep them tight. We find that the round kiln is cheaper to build, does its work better than the square kiln. We are building our kilns thirty feet clear on the inside, and I find that we are able to control them and burn them a great deal cheaper and they do their work better. Now, anyone who knows anything about heat and air, knows that they will go wherever there is a little flurry, and they will go round and round, and wherever there happens to be four corners of the kiln the brick will not be as well burned in some parts of the kiln as in others.

T. B. Townsend: I have been in the brick business a great many years; I have been using both square and round kilns. I like the square kiln the best. In our new yard we are building—we expect to build—ten square kilns. I would not build a round kiln.

F. W. Butterworth: That is a pretty hard thing to get over. Our experience has been the reverse. After rather a disastrous experience with as good a square kiln as I knew how to build, in building our new plant, we put up twenty-six round down-draft kilns, thirty feet in diameter, and we found that the cost of construction, which, I think, is universally considered to be the case, is less than a square kiln. This is acknowledged everywhere. (Laughter.) That disposed of that part of the question. (Laughter.)

W. A. Eudaly: I should think so, too. (More laughter.)

F. W. Butterworth: As to economy of operation, a fair indication of the amount of fuel consumed is the amount of grate surface, and this, in almost every instance, is less in the round than in the square kiln. As to the results obtained, there are certainly elegant results obtained both ways, and the question, so far as that goes, seems to be more a question of material and the way the clay is handled.

D. V. Purington: Can you get, in burning a fine grade of press brick, as good results in the quality of the ware in the round kiln as in the square?

F. W. Butterworth: I have never made any press brick.

W. A. Eudaly: Do you mean to say that you can determine the amount of fuel a kiln would require by the grate surface?

F. H. EGGERS, St. Louis, Mo.

F. W. Butterworth: I said it was a fair indication of the amount of fuel that would be consumed.

W. S. Purington: Several years ago I heard a story of an old gentleman of Philadelphia who was very eccentric. Among other things, he built a round house, and some one asked him why he did it, and he said it was because he didn't want to heat the corners. That is one reason I can see for building a round kiln. We have two plants, with a kiln capacity of about 40,000 brick in each plant, and I have just figured out that with a 50,000 capacity kiln it would require about a mile of round kilns on each yard, and land is somewhat valuable in our section of the country. One of the worst places to keep men satisfied is on the transfer cars. It is hard work, and the more kilns you have the more transfer cars you have, of course. I have had no experience with round kilns, but we have just bought a yard on which there are round kilns, and other kilns will have to be built, and we will be able to decide for ourselves which is the best. But I do not see how a round kiln can be as economical as a square kiln.

During Mr. Purington's talk ex-President Eggers entered the room. He was greeted with loud applause, many of the members rising to greet him.

F. H. Eggers: Mr. President and Gentlemen of the Convention—I am very sorry, indeed, that on account of the illness of my oldest son, I could not be here with you, but I felt that I just had to come down here for a few moments and show my interest, anyway, for I have always had a great interest in this Association. I am sorry I could not be personally with you, and enjoy your meetings and your pleasures, but I am sure that the Cleveland brickmakers have done their duty in entertaining you and given you a royal good time. I hope they have, anyway. (Applause.) I want to thank you, one and all, very kindly for the sympathy you have shown toward my family and myself, and we have hopes that God may spare our son to us. I thank you, gentlemen.

F. W. Butterworth: I think Mr. Purington supposed there would be only one row of kilns; it is quite possible to have two rows.

W. A. Eudaly: What would be the difference between two rows of kilns, half a mile long, or one row a mile long?

F. W. Butterworth: A thirty-foot round kiln, with proper distance between, takes about forty-five feet of space, and a capacity of 100,000 daily takes twenty kilns. Arranging these in two rows, the total amount of yard room is only 450 feet. In loading out, it takes about twelve railroad cars to handle 100,000 brick a day. A railroad car is thirty-five feet long, and it don't allow you very much more room than you need for your railroad car, and I suppose it is much cheaper to handle the brick on transfer cars, in units of four or six hundred, than it is to handle them on wheelbarrows in units of sixty to one hundred.

D. V. Purington: I expected him to say that ten feet was ample room between the kilns. Do you contemplate in that a transfer track between the kilns?

F. W. Butterworth: A transfer track will run between the two rows of kilns.

D. V. Purington: Well, I want to say that you won't want to stay there very much in warm weather.

F. W. Butterworth: Well, we are doing it, and distributing our coal by wagons without any inconvenience whatever.

L. C. Moore: You, gentlemen, do not probably remember that in building the round kiln he will not allow his furnaces to be opposite one another. We have some arranged that way. Where there is quite a distance between the kilns, we put the furnaces so they hit and miss, as it were, so that in firing the furnace of No. 1 the man is not subject to the heat of furnace No. 2.

F. W. Butterworth: These kilns are ten feet apart at the nearest point, from which they are gradually diverging.

President Fiske: I am going to ask Vice President Bradley to take the chair for a while.

Vice President Bradley: We will be glad to hear from anyone further on this subject of round and square down-draft kilns. But if there is no further discussion we will pass on to the next subject.

W. A. Eudaly: I would like to hear from Mr. Sibley on this question.

John W. Sibley: We have two round kilns, the first we built. Those built subsequently are square kilns. The round kilns are more economical in first cost of construction, but I find that the life of a square kiln is better with us than with the round kiln. We get far better results in burning paving brick than in the round kiln, and we burn less fuel.

Mr. Brown, Canton, O.: Mr. Eudaly brought up a subject in which we are very much interested at this time. He said that a square kiln will not discolor fine brick in burning so much as a round kiln. I would like to have him explain the matter.

Mr. W. A. Eudaly: The discoloration of the ware comes next to the fire box. In a square kiln you can protect the brick in the setting a great deal better and easier than you can in a round kiln. You have a relatively less number of these fire holes in a square kiln than in a round kiln. You will burn a greater number of brick per fire hole or furnace in the square than in the round kiln. Mr. Townsend here says three times as many, which I believe is true, and you can set your brick so as to protect them from discoloration. If you want to go to the expense, you can have fire clay slabs to throw out on the ends of these grates, near the top of the bag wall. You cannot do this nearly so well in a round kiln. I have found that to be the actual experience in any number of cases. Now, just a word as to this grate bar business. I do not believe the amount of fuel used in burning a kiln of brick decreases in proportion as the number of square feet of grate bar surface used on the kiln decreases. I do not think the question would hardly be worth our while to argue. With an exceedingly small grate bar proportion we would certainly use more fuel than with a large grate bar surface in proper proportion. You could get a grate bar surface too large for the amount of heat you want to produce, but when you undertake to save heat by getting too small a grate bar surface, you make a very great mistake, and will not be anything like so successful in the burning of your kiln. I believe everyone is agreed as to that.

A. J. Kautz, Chicago: My experience in burning press brick all over the country, and the building of kilns, is that the square down-draft kiln is the best. My reason for this is that I have better control of the fires. I believe that every burner should be able to see the top of his kiln, so that he knows what heat he has there. I have never seen a round down-draft kiln that you could see the top without taking off the crown, or covers. In a square down-draft kiln you have peepholes, for instance, two courses from the bottom of your kiln and twelve courses from the bottom, and at the manhole, we will say, on the side, right by the flash wall. You are able to look over your brick and compare your heads. As to the flashing of the brick, my experience is this: You put the fire in and stir it up, and it is that stirring in the fire which causes flashed brick. It is also trying to clinker your fires when they are too hot. I believe it is necessary to let your fires burn down some. And I believe it is necessary to fire when the kiln needs it. I have seen people try to burn a kiln according to a watch, but I have never been able to do it myself. When a kiln is settling, if it settles too fast, it will flash the top, and the bottom of the kiln is not burned. I believe the fire walls of the kiln should be run within eight inches of the crown, the first three courses of the brick set should be set tight, and after that the first of the brick up to the top of the kiln set three over three, and in that way of setting and burning you get the best results.

G. E. Penn, Chandler, Okla: I am an amateur in the brick business. I have no experience to offer in regard to the round down-draft kiln. I am here for information, and it occurs to me that I have partially fallen into a trap. I hope such is not the case, but from the discussion, I feel that I am a victim to a certain extent, from the sides that a certain member has taken in regard to different means of burning brick and the best results obtained. I have been doing a good deal of buttonholing in the lobby. As soon as my troubles were known to my brothers, that I was open for information in regard to burning dry press brick, and the advantages or disadvantages, as the case might be, of the two kinds of kilns, the round down-draft and the square down-draft, I have been given a good deal of advice. I have been told by a great many in the lobby that the round down-draft kiln was impractical and was not the best kiln for me to use for dry press brick. Now, I don't know whether Brother Eudaly told these people to talk for me or not. (Laughter.) I hope such is not the case. This is my first acquaintance with the gentleman. This is the first time I have ever met him, and I have a very high regard for him. (Laughter.) I feel that Brother Eudlay has almost got me in his little net. He had me closeted in his room for a while, but I don't know but that I will have to change my mind to some extent. I am asking you gentlemen for information, and I hope after this session is over to meet some of you in the lobby and get a little more information, where it won't take so much time of the Association.

W. A. Eudaly: Maybe you had better tell the gentlemen the number of your button.

Vice President Bradley: We will pass on to the next question—

"Is it best in burning pavers, in down-draft kilns, to close the dampers and reduce the draft when the kiln is pretty well burned, or to complete the burn with full draft?"

W. A. Eudaly: There seems to be no one to answer that question, and I am glad of it, for I do not think there is a man on earth who knows. The circumstances and conditions of kilns, and all that sort of thing, must lead a man to know about his draft.

Vice President Bradley: Then we will pass on to the next question, No. 18—

"Where shale contains carbon, and in burning the heat concentrates in different portions of the kilns, the fire showing bright in spots, if followed up these become white hot, while the remainder of the kiln is only red hot, is it due to faulty firing or the character of the shale? What is the best way to treat material of this kind?"

Vice President Bradley: We would like to hear from Mr. Hasbrouck on this subject.

Henry Hasbrouck, Kirksville, N. Y.: I do not know what prompted our President to call upon me, other than that I wrote our Secretary with reference to the subject and said that I would like to hear what was said in regard to it, because if anyone was suffering from it, I would like to talk to them, but for me to attempt to give you a remedy that would apply to all cases would be like trying to write to your physician, and, saying that "I am not feeling well, I wish you would tell me what is the matter and send me some medicine." If you have carbon in your material or any other substance in your material that would take fire in the watersmoke, as we have had, and burn your kiln out, without any coal under it whatever—I have done this without a pound of coal or five pounds of wood. This seems impossible and impractical, and yet with this same material afterward we have produced as fine a front brick as anyone need want to make by the dry press process. But it is impossible for me to tell you what to do, unless you tell me how your brick act, and then I may not be able to do so. If there are any of you laboring under that trouble, I would like to talk with you, because I would like to know what it is. I have been comparing notes here, and we get a lot of information in the lobby talks. I do not think it is worth while to take up that subject in the Convention. But the only thing is, I think you ought to be careful.

W. A. Eudaly: I think this is a wise suggestion. I have seen a number of kilns similar to this. No coal was put in, and when you see this red showing you will know whether you have it or not. It is best in a down-draft kiln to exclude all the air as nearly as possible, but you must have it on fire or it will blow up. I have seen kilns which, as soon as they would show red, that without another pound of fuel would burn to a white heat, and if you let that go on you would ruin your brick.

W. P. Blair: I do not know but what we are getting into deep water when we undertake to discuss that question, because I noticed an account in the newspaper where a railroad going out of Omaha has discarded coal and is firing her engine with clay. The question, as it occurred to me, is, that if we understood the subject, whether it would be worth our while to burn coal at all, but just use our own clay. We will have to refer questions of this sort, I am inclined to think, to the Ceramic Association for scientific investigation. We know so little about clays and so little about what is in them. I recollect very well an experience I had of my own in reference to the whitewash question. There was a professor visiting our works, and he was explaining some question that we had put to him, and I innocently asked him if he would be kind enough to tell me about the whitewash upon our brick, and he looked at it and said: "I will be busy this afternoon, but to-morrow I will have time, and I will look into the matter and will let you know day after to-morrow what it is." A few days after that I was fortunate to meet one of the best chemists of this country, and I took up the subject with him, and after I talked with him for a while he said: "This coming vacation my time is pretty well taken up. After I enter my school year this fall I will be pleased to make some experiments along the line and endeavor to determine what it is, and see if the following year some of my special students can give it special attention, and in the course of a couple of years I will be able to see whether or not I can solve the question." Now, one man was going to tell me day after to-morrow, and the next man was going to take two years to tell me whether he could or not, and I think we are taking the time of the Convention in discussing a matter that will have to be settled in the laboratory.

G. E. PENN, Chandler, Olka.

Robert Twells: I think the question has been misunderstood. What is the cause of the heat concentrating in spots?

H. Hasbrouck: Difference in the draft. You do not carry your draft off as fast in one place as in another.

E. L. Cook, State Farm, Mass.: While this question of carbon in the clay is before the meeting, I would like to bring a fact before the attention of the Convention as to what we have observed throughout the East, especially in the Hudson river region. We use hard coal screenings mixed with our clay. After our kilns are burned in some instances we have swelled brick, in which the coal is in the same condition as when the brick were made. That is, there was sufficient heat to swell the brick, but the coal that was within the brick was never burned. How do you account for it?

W. P. Blair: The water gas in the brick was sufficient to put the fire out so the coal did not burn.

W. S. Purington: The brick were burned too rapidly, and the brick were sealed over on the outside and burned before the coal was effected on the inside.

Vice President Bradley: We will take up the regular order of papers for the afternoon programme. The first was to have been a paper on the "Face Brick Proposition," by David C. Meehan, but he has not been able to either prepare his paper or to meet with us. I am informed that there is a gentleman here who is as well posted on the face brick proposition as anyone here, and I am going to ask our President, Mr. George M. Fiske, to talk on this subject.

George M. Fiske: I did not vacate the chair for this purpose by any manner of means, nor had I the slightest idea of saying anything on this subject. I do not know just what the proposition is in regard to the face brick, whether this is intended to discuss the question of the growth of the face brick business or the manner of using front brick, or its relation to other building materials. There are different phases that could be given to this subject. In regard to the producing of the brick, that is a proposition that has been pretty well thrashed out in a practical way by a goodly number of the members of this Association. We visited a plant yesterday where the proposition has been pretty practically thrashed out in all stages. I think you will all agree with me in saying that President Hunt's plant is about as perfect and as well built a plant for the production of face brick as any you have ever seen—everything moving along in a proper way, from the clay bank to the disintegrator, and thence to the storage shed, providing a large supply of clay, which, perhaps, more than anything else, told me how in that plant the large supply of clay would always be ready, no matter what the conditions were outside, passing through the different stages of manufacture until the brick were piled into the shed, in a manner which was most certainly pleasing to the eye and commendable in every way. I noticed I did not see any piles of refuse brick anywhere about that plant.

JACOB KLEIN, Baltimore, Md.

D. V. Purington: They were onto their job. (Laughter.)

George M. Fiske: I was told they were all dumped into a hole on the outside, and I thought it was a pretty good plan. There was a large stock of front brick, and they were certainly beautiful brick. Then comes the proposition of putting them on the market. We have had our experience in that direction, with more or less success, during the past year. We may say, it was a very good season. I remember well when, a few years ago, we heard a great many complaints about the difficulty of finding a market and the prices which ruled, but we do not hear anything of that to-day in this Convention. On the contrary, the universal verdict is, we have not been able to fill our orders, and I know something about that, for I am a dealer in brick as well as a manufacturer. In handling brick from Ohio, Pennsylvania and New York it has been impossible for me, for the first time in many years, to get enough brick. I could have sold twice as many if I could have obtained them, and that has been the great difficulty in that line. Of course, coupled with that condition is a very natural one of good prices and good profits. I have heard, directly and indirectly, of some of the profits which have been made this last year, and they certainly have been very pleasing and flattering to the managers and very pleasing for the stockholders. I don't know that there is anything else that I can say about the face brick proposition. It is a growing proposition and a growing interest.

H. Hasbrouck: May I ask Mr. Fiske a question as to face brick manufacture? What are the conditions of your market as to the sorting of your brick? What are the requirements as compared to three years ago? I refer to shades.

George M. Fiske: There has been a tendency for the past five years toward the use of brick of mixed shades, rather than uniform shades, with the blending of the colors, using perhaps what we would call three shades together, and it is the general opinion, I believe, among architects that such a wall has a more pleasing effect—there is more character to it—while, if you have a wall built of exactly the same shade, it has some of the effect of a painted wall, and while we do not like to speak of the painted brick wall, we know such a thing has been known in this country, but we do not like it. It is generally conceded, I think, that a little variety of shade in a wall is better. Perhaps that would appeal more particularly to the fire-flashed brick than to the other colors. We have in the fire-flashed brick the Pompeiian brick, and the mottled brick, and the fire-flashed brick, and a large and pleasing variety of colors and tones. It seems to me that there is nothing more beautiful in color than the variety of shades, say four shades mixed together, so that the colors blend. The effect is very fine, indeed. It gives character and individuality, which cannot be obtained by a perfectly uniform color.

Vice President Bradley: We will pass on to the next number, which I will ask the Secretary to announce.

Secretary Randall: The next is a paper, "The Economy of the Soft Mud Process," by William Sankey, of Pittsburg. Mr. Sankey is in attendance at the Convention, but he is not in the room at the present time, so I will read his paper for him.

THE ECONOMY OF THE SOFT-MUD PROCESS.

By William Sankey.

Mr. President and Gentlemen of the Convention:

When your Secretary was in Pittsburg several months ago our conversation led to the coming Convention, and the papers to be read and discussed. It was my misfortune to say that the "merits of the different methods of manufacturing brick" would make an interesting topic for discussion. He at once insisted that I take the subject and prepare a paper on the same. I did not make up my mind as readily as he did, but after some thought, concluded that one having had no experience except in the manufacture of what I shall hereafter term "Sand Molded Brick," could not well handle the other side of the question, therefore changed the subject to a brief article on the "Merits of the Soft-Mud or Sand Molded Brick."

Having had little opportunity to visit much outside Pennsylvania, I shall be compelled to make such statements as are based on the facts and figures obtained from plants in operation about us, and I fully realize that conditions are different in different localities, principally in the nature of the material to be used. I fully realize, too, that I am addressing an audience of experienced men, containing manufacturers of both "wire-cut" and "sand-molded" brick, as well as representatives of machinery for manufacturing by the different processes. I shall, therefore, be careful what I say, as I have frequently met the "wire-cut man," and his arguments on the cheapness of labor and fuel, and how the capacity of the dryer can be increased by having less moisture to evaporate drying forty thousand per day by "wire-cut" process intead of twenty thousand by the "sand-molded" process.

The "sand-molded" man will call your attention to the strong constitution of his machine, to the able manner it will handle stiff clay, thus enabling you to hack them up four or five high, to the easy manner in which they are set, requiring no sanding of courses in setting, and numerous other little advantages, which are equally true in both cases. In order to dispose of the "wire-cut" man, I shall admit that cases where clay is suitable, the cost of brick set in kiln is in favor of the "wire-cut brick," as to how much, I shall not attempt to say, as it is not necessarily a part of my subject, but shall contend that both kinds have their place in the market, and their uses are as distinct as their appearance will indicate, or, in other words, the manufacture of "wire-cut brick" is one business, and the "sand finished" is another. I shall illustrate this a little later on. Just as different from one another as "sand molded" are from press brick, and no one would attempt in any manner to connect them.

It is not true that a kiln containing three hundred thousand "wire-cut brick," when properly burned, so as to be close to top and sides without sticking the arches, contains three hundred thousand common brick, if in Pittsburg, would bring from $6.75 to $7.25 per thousand, or perhaps an average of $7.00 per thousand? Let us, for argument's sake, say that the manufacturer has saved thirty-three cents per thousand, or a total saving of one hundred dollars on the entire kiln. I am not willing to admit of such a saving when increased power is considered, as well as waste in burning.

A similar kiln, if properly made, on any of our "sand molded" machines, and burned equally as well, can be made to produce in the same market, in competition with the above, an average from $8.75 to $9.00 per thousand.

I have been careful to say properly made, selected clay, good colored sand, best of men and constant attention to details on part of men as well as manufacturer.

I have at this moment in mind two first-class plants, both under good management, situated nearly side by side in the best brick market, within one hundred miles of Pittsburg, both using natural gas for fuel—both having elegant color. The first makes "sand molded," with an equipment that makes and dries twenty thousand per day; the other, with double the equipment, makes forty thousand "wire-cut" daily. They meet on the common market, and I frequently meet them. I can say positively that while there is generally a demand for the produce of both, the former is always sold up at an advance for the latter. After selecting out hundreds of thousands of brick for fronts, yet he can command a lead on the price of his common brick, and I wish to say, further, that the "wire cut" referred to are without a doubt the best in strength and quality of any in this section. The "sand molded" are, perhaps, above the average quality. The conditions being so similar in every respect is what prompted me to refer to them. It is true that for many uses the "wire cut" will answer as well as and other—foundations, sewers and in large buildings, where perhaps after completion you cannot see that brick has been used in construction.

I contend that, after selecting, say, from one-fourth to one-third out of a kiln of well-made "sand molded" brick, you are able to not only compete with the "wire cut" brick, but, having sold the selected brick at a much higher price, you are in a position to quote lower than he cares for.

The point is well illustrated by the incoming of the Bessemer steel rail. After a test of the Pennsylvania railroad, it was found that in the famous horseshoe bend the steel rail would last just as long as twelve iron rails of the same size and weight; also the steel rail is much cheaper. This same company, however, is very careful in their specifications to say that tubes for their locomotive boilers must be made of charcoal iron.

I remember a number of years ago, when we were on the market for a press for the manufacture of dry pressed brick, when a prominent machine man stated that the day was not far distant when all brick, both common and pressed, would be made by the dry process. In this I could not agree with him, from the fact that in order to properly prepare the clay for the dry process, it will cost more per thousand. than to make brick by either "wire-cut" or "sand-finished" process. This argument on the part of a press manufacturer, in my opinion, has contributed more to the many failures to make dry press brick than any other one thing, yet with care in preparing the clay and favorable handling of products, the dry press can be made to accomplish its end, namely, the making of the highest class of front brick.

As to making common brick on the "sand-finished process," I can refer you to a yard in operation in the heart of Pittsburg, where brick are made and dried every twenty-four hours. In fact, the first three thousand made in the morning are set last thing in the afternoon. In other words, thirty thousand are made daily, and the tunnel contains but twenty-seven thousand. This, of course, cannot be done on the general run of clay, from the fact that it will not permit fast drying. By the way, I will call your attention to the fact that this is somewhat of a dryer. I can, however, assure you that the above statements are correct.

I have tried to demonstrate the different kinds of brick which have their place in the market, and no one can be said to be more important than the other. All are required to meet the many different uses that brick are put to. One can well afford to stand the cost of "sand finished" over the "wire cut," if the market will stand the difference several times over. The pressed-brick maker need not hesitate at the outlay of twenty-five cents per thousand for digging clay in order that the best material may be had, or to figure the cost of drying his product, or the careful selecting or shading of the same, when the market is waiting to take his product at sixteen to eighteen dollars per thousand. To the representatives of machinery for manufacturing of brick by the various processes is due much credit for the advancement made in the last twenty years. As I have always felt that the brick manufacturer usually has lent little encouragement to you, and has rather had his present condition forced upon him, he has always been apt to feel that improvements are not in order until forced to do so by some enterprising green company with a large name and capital, which erects and puts into existence an up-to-date plaht, that eventually falls into the hands of a brickmaker. That demonstrates the advantages of an up-to-date plant, thereby setting the pace for many others.

I have attempted to show the merits of the different ways of making brick, and any references to any persons is meant only as means of illustration, which, I hope, will be permitted on an occasion of this kind.

The Pittsburg brickmakers, having been closely connected by way of organization, enables each of us to closely observe the other, and any criticisms are generally received in the proper spirit, and many questions have been asked and answered, thus enabling us to profit by our association.

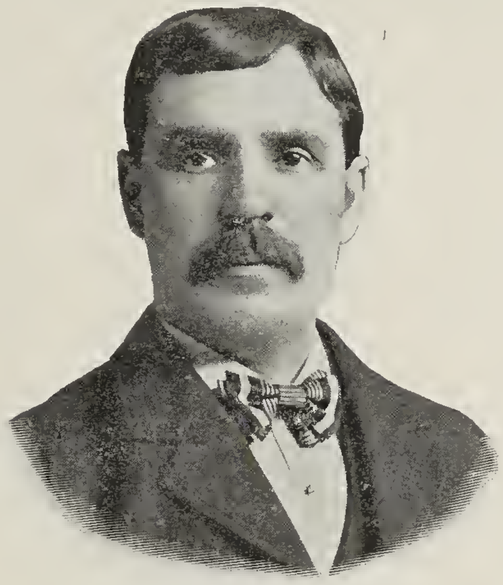
Not caring to become tedious, I will close by wishing the fellow-members a pleasant and profitable convention, as well as a prosperous season.

—General Discussion.—

D. V. Purington: I do not want to discuss that paper, and, while I am not a dry press manufacturer, I want to take issue with one statement the writer made. He said it costs more to prepare the clay for the dry clay process than it did to make the brick by either the soft mud or stiff mud process. I do not think the Convention can afford to allow this statement to go undisputed. I happened to have the figures of a dry press brick manufacturer not long ago, showing that it cost him 32 cents to get his clay into the storehouse, or, rather, delivered ready for the press. Now, if there is any man who can make a soft mud or stiff mud brick under that price I want to know how he does it.

President Fiske: I did not understand the statement as Mr. Purington did. We will ask Secretary Randall to read that statement again.

Secretary Randall: The statement is: "In order to properly prepare the clay for the dry press process, it will cost more per thousand than to make brick either by the wire-cut or sand-finished process."



WM. E. SANKEY, Pittsburg, Pa.

W. A. Eudaly: I think he means more per thousand for the preparation of the clay.

A Member: Mr. Sankey makes good brick all right.

President Fiske: We have several delegates here from the far West from whom we would like to hear.

Mr. James McNeen, Lajunta, Col.: I want to make a remark as to cost of brick. I am making dry press brick and stiff mud brick both, and my experience is that the dry press brick can be made from seventy-five cents to a dollar per thousand cheaper in my section than the stiff mud brick.

Jacob Klein, Baltimore: I do not agree with one statement the writer made: That it requires two different plants to make two different kinds of brick. I use a stiff mud brick machine, also a soft mud machine, making a sand-molded brick. The cost of the soft molded brick runs from 40 to 50 cents a thousand higher than for making stiff mud brick, and it takes more time to prepare the clay, more men to handle the clay, and it takes a longer time to dry. In our market they don't pay you much of a difference for soft mud brick over stiff mud. Of course, the soft mud brick have an advantage, that they can be used for face brick, where a stiff mud brick cannot, as stiff mud brick are rough and not uniform as to color. Therefore, we can sometimes get a little more in our market for the soft mud brick. I wish to relate one little thing, and if there is a man who can tell me where my trouble lies I would like to hear from him. We try to set our stiff mud brick in the bottom of the kiln forming our arches. We use an up-draft or old-style Dutch kiln. Above the arches we set eight or ten courses of the semi-stiff clay, or side-cut wire brick, and then try to set the soft mud brick. In setting the stiff mud brick in the bottom of the kiln, we need not pay any attention at all to how dry they are, if only stiff enough to stand up they take all the fire and never crack. If we attempted to set the soft mud brick, made out of the same clay, precisely the same material, only manufactured in a different way, with the slightest bit of moisture, if we put them in the bottom, we would have to use the utmost care in firing, or we would get only half of them. My theory at first was that the stiff mud brick, being more dense, it would prevent the evaporation of the evaporation of the watersmoke, and we would have to be more careful of them, and that the soft mud brick, being more porous, would allow the watersmoke to pass off easily. But, as I have stated, the reverse is true. But the soft mud brick, I believe, makes the better brick, although it does not act as good as the stiff mud brick, but it makes a better and more solid brick on account of the preparation of the clay.

L. C. Moore: I think this paper ought to be discussed from the conditions of the market, the demands of your market. The gentleman from Baltimore speaks of having a demand for the soft mud brick and that they bring more money in his market. In our market we can hardly sell a soft mud brick at all, and when it comes into competition with a stiff mud brick it sells for almost a dollar less per thousand. We are now making a stiff mud brick. They will take them for front brick quicker than they will a soft mud brick. I am discussing it from the standpoint of a Missourian. Mr. Klein was talking from the standpoint of a Baltimorean, and the paper was written from the standpoint of a Pennsylvanian. Where they want a stiff mud brick we propose to give it to them, and where they want a dry press brick Brother Ittner can furnish them all they want in that part of Missouri. I think that about covers the question. The gentleman from Baltimore said there was a little more expense in making a soft mud brick. All he has to do is to make a little calculation and he can answer it for himself.

WM. P. ALSIP, Grand Forks, N. D.

William P. Alsip, Grand Forks, N. D.: We in the North manufacture our brick by the soft mud process. We use a surface clay. Some years ago I made a little trip, and I saw them making brick on a wire-cut machine. I went home with the idea that I would put one in, and I did so, and I had the troubles of my life. My clay was not adapted to that method, and I simply speak as a warning to others that they may figure up the cost. Figure on your clay bank before you buy your machine. As to cost, I do not believe the cost will make or break the brick man. We put our soft mud brick from the bank into the rack at about 75 cents, and we have to shave pretty close then to save much out of that. When it comes to burning I think it is in favor of soft mud in the saving of fuel. In regard to the market: I had a neighbor who thought we had the best of it, because we had a soft mud machine. He went to work and bought a good soft mud machine, changed his whole system, only to find after he had got all his improvements in that it wouldn't work his clay. This is the first instance I ever heard of where they were making stiff mud brick out of material that they could not make a sand molded brick. He tore out his racks or drying sheds and replaced them again with his old machine that he had consigned to the scrap heap. So another note of warning, be careful. All through the Northwest, in Winnipeg even, we cannot make our brick on an auger machine, so we are perfectly content to keep right on with our soft mud, and any time that any of the members of this Convention visit the metropolis of the Northwest we will be pleased to show you our methods, and how we make brick. (Applause.)

D. V. Purington: There was one little point mentioned by Mr. Klein that I have never known to be touched on by this Association, and that is, if I understand it, the reason why the soft mud brick were superior to the stiff mud brick, was that the clay was better prepared. The simple remedy for that would be to prepare your clay equally well for your stiff mud brick. Don't try to make your brick out of the natural clay as it comes from the bank by any process. One of my hobbies is that the preparing of the clay for stiff mud brick is one of the essential things.

Mr. Klein: Do you think you can prepare the clay as thoroughly for stiff mud brick as for soft mud brick?

Mr. Purington: Yes, sir.

Mr. Klein: I manufacture both kinds, and I have thoroughly watched the pans for grinding my clay. In a stiff mud brick, if you break it, you see the brick in layers, where, if you break a soft mud brick, you do not see any layers, but just solid clay. And we do not make as good a brick on our stiff mud machine as on our soft mud machine.

J. Fred Smith: Out our way the architects have got into a notion that they have to have a sand faced brick on the outside, and it is pretty hard to get them out of that notion. We make both kinds, soft mud and stiff mud. Architects insist upon facing their outside walls with press brick or sand brick. We have one of the finest dry pressed brick plants out in Nebraska that you will find anywhere, as fine as the one we visited yesterday, and they make a fine variety, and as long as we can get a nice variety for outside walls we do not bother to make our stiff mud brick very smooth. There was a statement made a while ago about firing locomotives with clay. Undoubtedly the clay west of the Missouri is the hardest clay on earth to burn. Mr. Ittner's brother has burned the clay for several years, and I am sure Mr. Ittner has heard something about it. I think this clay they fired locomotives with is shipped from Iowa.

Mr. Butterworth: The gentleman made a remark about the people of his section having the hardest clay on earth to burn. I wonder if there is anybody in the Convention who does not think the same thing of his clay.

Mr. Meigs: I think I am safe in offering a chromo to the man here who has not make a mistake. I think if I had made more brick and less blunders I might have come to this Convention in a private car and arrayed like Solomon in all his glory, with a slik hat, spike tails and satin slippers. (Laughter.)

Mr. Eudaly: This is the most valuable information we have ever had. It has been the wonder of the world since the days of Solomon to know just how he was dressed. (Laughter.)

Mr. Klein: Can anyone tell me why a soft mud brick more dry than a stiff mud brick bursts and a stiff mud brick does not?

Mr. Yates: The gentleman takes his material and puts it in a soak pit and it absorbs a greater amount of moisture than the stiff mud brick. In the other case, he has got a clay in his stiff mud brick that is not so well tempered and forms laminations, and he needs to go to a doctor, and he will find in the machine man such remedies as will overcome his lamination. I disagree with the gentleman about getting better brick from a soft mud machine than from a wire cut. You will find that a great many brickmakers are making a very fine brick on a wire-cut machine. It is simply a case of knowing the clay, properly tempering it and the manipulation of the machine.

Mr. Klein: He is correct at first, but when they enter the kiln the excess of water has been taken from the brick.

Mr. Ittner: I think this gentleman has given one of the causes, and that is the difference in the density of the two brick. When we used to make brick in St. Louis by hand, and always by the soft mud process, our arches were uniformly ragged; that is, the ends of the brick for about three or four feet from the kiln wall. We used to burn brick at that time without a furnace, and this was our experience. With some it was just the corner of the brick, and some a quarter of the brick, and some a half, and sometimes whole brick were not fit for anything but the dump. When we went from the soft mud or tempered clay process to the dry press process it was as unusual to see brick ragged in the arches as it was in the other method to see them not ragged. Now, we never do see them ragged. The way I explained that myself was just as Mr. Klein explains it, that it was the density of the brick. The brick were not so porous, and when you opened your doors to fire, of course, a certain amount of cold air rushed into the kiln, and it depends upon the number of times that the operation is performed as to the amount of cold air that is taken into the kiln, and the cold air that gets into the kiln, of course, enters the porous brick, and the reason why your stiff mud brick do not shatter is that the body of the brick is more dense and the cold air does not enter into the brick. And, if you changed to the dry press process, you would not have any of this trouble, because you would get that density to a greater degree.

Mr. Yates: I feel that it is my duty to disagree with Mr. Ittner. When you make a stiff mud brick you mix all the water possible, and the more you have in your pug mill the closer relation you bring your molecules, and, consequently, the denser the body. You take a dry press brick, it does not have the same metallic ring of the plastic brick, because you do not put water in it.

Anthony Ittner: I have taken from our kilns brick made by the dry press process that were red hot, and immersed them in a bucket of water, and they were never damaged any more than a slight checking from the rapid cooling over and above the natural cooling. I still insist upon it that the view I advanced and the view that Mr. Klein himself advanced is correct, and I should not have gotten up to speak again but for the thought that by having remained silent it might have appeared that I yielded my view to Mr. Yates.

A. J. Kautz: I wish to state that there is a great difference in clay. I do not believe that there are any two brickmakers in the room who have clay alike. Here at Naugle's place there is a red shale which burns a beautiful red, and just across the Canadian side there is red shale. Take the two pieces of shale and you cannot tell them apart, yet on the Canadian side it burns a dirty white. So it is with the clay that the Baltimore brother talks about. He has one strong clay and one weak clay. This weak clay has dried off too fast. The strong clay does not burst. I know close to Mr. Klein's place there are brick made that are dried and burned in four days and four nights. I know clays within a few miles of there from which soft mud brick are made which require seven days to dry off the brick and seven days to burn it. I know of another place nearby where the clay is of such a tender nature that it takes thirty days to dry it off.

President Fiske: We will pass on to the next subject.

Secretary Randall: The next on the programme was to have been a paper on "Salt Glazing Brick," by Mr. Willian Cannan, who has not been able to attend the Convention. The subject was put on the programme, in accordance with an agreement with Mr. Cannan at the last Convention. This young man, as those of you who attended the last meeting will remember, gave us an interesting paper on the subject at that time, and it was his purpose to take up the question thoroughly this year, making chemical analyses, etc., and give us the benefit of his experiments.

Mr. Eudaly: I move that Mr. Cannan be requested to complete his paper and have it published in The Clay-Worker between this and the next Convention, or at that time.

Mr. Klein: I second the motion.

Mr. Blair: If there is anyone else in the room who can give us any information on this subject, I would like to hear from them.

Mr. Klein: We had this subject beautifully illustrated by Mr. Cannan last year, and if you will read the report of the last Convention you will get some very useful information.

The motion was then put to the Convention by President Fiske and carried.

Secretary Randall: The next is a paper, "Drying Brick with Waste Heat from Cooling Kilns," by W. L. Sibley, Birmingham, Ala.

John W. Sibley, Birmingham: I am sorry to say that my brother, W. L. Sibley, who is the superintendent of our factory, and has the practical end of the work in charge, could not be present with us. He recently finished the construction of our new plant, and in the opening operation and getting ready for the opening of our new fiscal year, on the 28th of this month, he could not leave home, but I will present the matter for him.

DRYING BRICK WITH WASTE HEAT FROM COOLING KILNS.

By J. W. Sibley,

Mr. President and Gentlemen of the Convention:

Our experience in this matter having extended over a period of less than a year, may make it seem presumptuous in our attempting to throw much light on the subject. For ten years we had been using a steam dryer, combining both blower and floor pipe systems, and for a capacity of 25,000 daily were working the life out of two 100-horse power boilers, as we used only live steam for drying and our fuel comsumption at boilers was ten to twelve tons every twenty-four hours.

Fortunately for us, we owned our coal mine and were able to get the fuel at less than $1.00 per ton.

Desiring to increase our drying capacity to 35,000 daily, we decided to put in the waste heat system, of which we had heard so much in the last Conventions. As our kilns were already built and our plant located in a valley, we found it impractical to use underground tunnels, on account of dampness when going below the level of our kiln flues, as would have been necessary. So we adopted the overhead pipe system, as used by Mr. Purington at Galesburg, the fan and engine being located at the discharge end of the dryer and about midway of the line of kilns, there being an iron damper at each kiln and cool air inlet to regulate the temperature of the air as delivered to the dryer.

The heat is delivered in a large conduit across the discharge end of the dryer, gradually decreasing in depth, so as to distribute the heat as equally as possible in the small flues that branch off at right angles and extend up the center of each track, there being two tracks to each tunnel. Over the tops of these flues we placed sheet iron, cutting small openings under each car, these openings decreasing in size as they progressed toward the receiving end of the dryer, thus supplying the hottest air at the discharge end of the dryer.

We place two high register thermometers in tunnels Nos. 1 and 6, so as to regulate the temperature of the dryer, fixing the dead line at 300 degrees, though it is said to require 600 degrees to ignite wood.

To avoid the possibility of having to shut down for lack of a cooling kiln, we have a small round kiln near the fan, which we fire up when needed and draw the direct heat into the dryer. This will occur perhaps two or three days in a month.

Through a mistaken idea of economizing by utilizing our old dryer building, which was largely constructed of wood, and firing the small reserve kiln with coal, instead of coke, as we now do, I was called up over the long distance 'phone about 2 a. m. on September 18th and advised by the superintendent that all we had left at one plant was the kilns and the hot air blower, the latter, though causing the fire, remaining untouched, as if through the irony of fate.

F. L. STILES, New Haven, Conn.

Fortunately, we had a good amount of insurance, which before the fire seemed an expensive luxury at a $3.60 rate. The loss was promptly adjusted, the insurance men, no doubt, having heard of your treasurer's propensity for maintaining a surplus at all hazzards.

As fast as material and labor could do so, the plant was rebuilt and in operation early in the new year. In rebuilding, especially the dryer, we spared no cost to make same fireproof. The walls are of brick and the roof of T iron, upon which is a course of hollow fireproof tile, and upon that a course of vitrified brick, laid on flat in Portland cement, and the whole grouted over with cement, thus giving us a waterproof roof and avoiding the necessity of an extra shed. The doors are covered with tin and the cross ties are iron, leaving nothing to burn but the brick.

I will mention, casually, that as a result of this style of construction the insurance company that had paid us the loss on the old plant gladly accepted the new risk at $1.75, preferring same to the old plant at $3.60. We have no trouble in drying 35,000 brick with heat from the cooling kilns daily, and have been enabled to relieve one of our boilers entirely from duty at night, and before the fire had reduced the fuel bill at boilers from ten and twelve tons to five and six tons for twenty-four hours.

In the improved arrangement of boilers at our new plant and utilizing of exhaust steam for heating water, which is fed into our boilers automatically, without the use of injectors, our fuel bill has been reduced from three and one-half to four tons for twenty-four hours.

So much from the standpoint of economy in waste heat system of drying.

We find that our brick are more uniformly dry than under the steam system, where frequently the centers were wet, and our superintendent says his life has been lengthened ten years by relief from worry over keeping up a thousand or more joints so prone to become leaky.

We were fearful that the taking of the heat from the top of kilns would have a tendency to check the brick, which, of course, was not desirable when the product was paving brick, but we have never been able to discover any trouble of that sort, the dampers all having been put in when kiln was closed down and all openings stopped and plastered. The space between the top of brick and crown of kiln, seeming to contain such an immense number of heat units that what we draw out in the fan does not affect it seriously, though we cool our kilns from twenty-four to thirty-six hours quicker than before, which, of course, increases our monthly capacity considerably. In the old plant we utilized the tall wooden stacks to carry off the vapor, thus removing same by the up-draft system. In the new we built two brick stacks and remove vapor by the down-draft system. We found that the tops of the tunnels, near the receiving end, were covered with a dew and the cars from the machine were received into a more humid atmosphere than formerly. This, we presume, would be advantageous to any one who had a shale or clay that had to be handled tenderly in drying, but as our shale can be dried very rapidly, the brick that were in the dryer at time of the fire not having been checked by that intense heat, we found it objectionable to have this surfeit of moisture. To obviate it we experimented by leaving the doors slightly open at the end of dryer during the night, and found next morning that the dew had vanished, and we got 25 per cent. more dry brick. We are of the opinion the same results can be obtained under our down-draft system by building our vapor stacks higher, to give greater draft, or by using a small fan to exhaust the vapor from the dryer.

ROB'T TWELLS, Elyria, O.

As I said in the outset, I would not presume to say that, from our limited experience, a waste heat dryer is best for every one, but I firmly believe that it is the most economical to the paving brick manufacturer, especially to those who have to buy coal on the market and pay freight on same. (Applause.)

President Fiske: The discussion of this interesting paper will be led by Mr. Robert Twells.

Mr. Twells: While this gentleman has been writing this paper in Alabama I have been writing my remarks for the opening of this discussion in Ohio, but if his paper had been submitted to me it would not have fitted any better. Our Secretary is suffering from throat trouble, and I am suffering from heart trouble, which I hope will very soon pass away when I get through with this paper. One thing that aggravated my trouble was that I have been sleeping on a folding bed for the last two nights, and I have had to lie awake nights for fear the thing would close up. (Laughter.) If it had closed up and shut me in, it would have been as the President of the Illinois Convention said was the case when the whale swallowed Jonah. It would have been hard to keep a good man down. (Laughter.) I have been wondering ever since I came here what my dear mother would have thought if she had known that her curly-headed boy would have lived to become known by the number 349. (Laughter and applause.) But I must read my few remarks:

DRYING BRICK WITH WASTE HEAT FROM COOLING KILNS

By Robert Twells, Elyria, O.

Mr. President and Gentlemen of the Convention:

As it is an accepted and established fact that it is not only possible, but practicable, to use the waste heat from cooling kilns to dry brick with, the subject is narrowed down to two heads, namely: Which is the best way to apply it and which is the best way to take the steam out after it is created. As we review the different kinds of dryers and the results obtained from them, they would seem like a strange contradiction of experiences.

For instance, here is A. He drives the heat through a duct at right angles with the tunnels, the heat coming up at once into them and finding its way best it can. He has a number of tall stacks at the other end, each doing for two or three tunnels.

B puts his heat in the same way, only, instead of coming up at once into the tunnel, it finds its way up an open space under the tracks, which runs two-thirds of the way up, gradually tapering up until level with the tracks, turning the heat and steam from that point on up amongst the brick. At the other end, instead of a tall stack, he has only an opening. Both of these dryers take the steam out by up-draft.

C has his dryer built just like B, only he takes the steam out by down-draft. Now, surely, with dryers built so very differently to each other as these, there will be a wide difference in results, and we ought to be able to point to this or the other as the best, but if we ask the representative of each of these dryers they will tell us that it was only after the most careful investigation that they built this dryer, and point to the thousands of brick that are daily dried in it to confirm their statement that their dryer is the best and only dryer in the world worth having.

This reminds me of the old farmer who, after listening to the most learned and profound and eloquent arguments made by two lawyers in the case of a desperate criminal, the one proving beyond all doubt that the prisoner was the most guilty wretch alive, the other that he was the most innocent man in the world, was asked which of the two was right, answered: "They are both right."

But someone will say: "Does not the fact that they dry the brick prove that they are all right?" In answer, does the fact that because the farmer in Cuba or the Philippines succeeds by main strength and awkwardness in plowing the land with a pointed pole prove that to be the best implement in the world for plowing land with?

But with reference to these three types of dryers, had we not better look for the good and bad features in each, and be as ready to acknowledge the one as the other, whether it be our pet idea or someone else's?

How proud we are to say of anything we have built or done that it was done on scientific principles, and yet can anything be done on scientific principles that is contrary to natural laws? Is it not a fact that in the great created universe there is the highest design—in operation we call it natural law—and do we not have to pay, whether we wish it or not, one of the highest tributes to the designer whom we call God. When we have to acknowledge that just as far as we imitate and work in accord with His laws so far we work on scientific principles.

Now I will point out what I think is a fault which each of these dryers have. It is that the heat is driven in at right angles with the tunnels, causing it to have to start afresh up the tunnels, losing the impulse which the fan gave it. I believe that the fan ought to stand at the end of the dryers and drive the heat straight into an open space under the tracks and up through this clear to far end of dryer. In this way it will carry clear to the far end. The temperature gradually becoming less the further it goes, and so becoming suitable for the soft brick that has only just been put in the tunnel.

When hot air is driven in this way the heat leaves the traveling current and radiates upward, filling the tunnel with heat and forcing the steam and moisture down beneath the tracks and carrying it on and out of the dryer, never allowing it to come in contact with the brick again, which it would have to do if this open space did not go clear up to the far end. By this method the fan can be driven very much slower and better results obtained. If there is a tendency to drive the heat too far up in the dryer the speed of the fan can be regulated to suit this, as the faster the fan is driven the further the heat is carried up, and the slower it revolves the nearer it leaves the heat.

The best way to take the steam out is by a fan or stack connected with this open space under the tracks. But someone will ask whether this is an untried theory of my own or whether it has been proved in practice. I will answer that there are two plants that rank amongst the best and biggest in Ohio, one of them having forty-nine or fifty kilns, that have their dryers fixed in this way. I think they work to perfection. There is no sharp, cutting blast of hot air striking the brick and cracking them. The fan was running very much slower than any that I have seen elsewhere, and yet the heat is carried clear up to the far end. Of course, I understand that a very large per cent. of old dryers that have to be fixed over could not be fixed in this way, owing to their location, but whenever this method could be adopted it will, in my opinion, pay you at least to investigate it.

But when we must connect with side of dryer I would set the fan some distance off, so as to give room to have three ducts branching out from the fan, and entering the dryer at equal distances from each other, crossing the tunnels at right angles. There ought to be room for two or three car lengths between each duct. This would spread the given amount of hot air which the fan was discharging over a much larger area, thus lessening the severity of the blast and lowering the temperature. If it was found that the air was too hot in the third duct, the one highest up the dryer, a slide could be provided to let in cold air to moderate the temperature as desired. But whatever way you may decide to put in the heat, there is, in my opinion, only one right way to take out the steam, and that is by down draft. (Applause.)

—General Discussion.—

William Sutton, Table Rock, Neb.: I would like to ask Mr. Sibley the amount of power required to operate those fans?

Mr. Sibley: We use an 8x10 engine and a ten-four fan. We have a belt directly attached.

Mr. Alsip: I would like to ask if there is any gentleman here taking the waste heat from the top of open-top kilns?

President Fiske: Don't all speak at once.

Mr. H. L. McNees, Kittanning, Pa.: We tried that, and we succeeded in getting about two days' heat from our open-top kilns, and then we went into the bottom of the kilns, right between the arches. We built a duct about six feet long, and run it into the tunnel, and we could get about two days' good heat out of the open-top kiln. There is another advantage—that you cool your brick better in a kiln by turning the heat down. In an open-top kiln the heat rises so quickly to the top that the arch brick in cooling are very often checked. We notice that since we draw the heat down through the kiln that is partly obviated.

Mr. Yates: I would inquire of Mr. Sibley if he considers his paving brick are as good quality as before?

Mr. Sibley: I think I stated in the paper that I did not find any difference.

O. N. Townsend, Zanesville, O.: In response to Mr. Alsip, the Oakland Press Brick Co., of Zanesville, O., are utilizing the waste heat from an open-top kiln with some success, how much I do not know.

Mr. Eudaly: Some years ago I saw in the Patent Office at Washington a number of inventions for taking the heat from open-top kilns. I do not remember the date, but they were very old.

W. S. Purington: We have been using a system of taking the heat right out of the kilns for drying purposes for nearly two years, and our brick are, if anything, better.

Mr. Klein: In reply to Mr. Eudaly's remarks that he saw several applications for patents in Washington for utilizing the waste heat by taking it from the top of the kiln, that has been tried by a gentleman in my neighborhood, and it was quite successful for about four weeks. The whole scheme was constructed of galvanized iron, and it cost him $450, and he used it four weeks, and the whole thing fell to pieces from the heat and gases, and I would sound a warning in regard to taking the heat from the open-top kilns.

Mr. Twells: I believe the day of deliverance has come for the up-draft men. I had thought until recently that the down-draft man had the best of it in getting the heat from the cooling kiln, but I recently visited a yard where I saw an up-draft kiln fitted up to perfection for taking the heat from it. The fire boxes are extended about three feet from the kiln, and built about two or three feet above the top of the furnaces, and above the end of the kiln, over which is an arrangement for drawing this radiating heat, and they pull it into the dryer and dry the brick with it. They take the heat from either side, and I think the up-draft man is going to have the best of it. The top of the furnace is raised a little, so it forms a chamber at the top of the furnace, and then, little by little, the air is drawn over the top of the fire boxes and the air is heated by radiation. It is a very good plan.

Charles Clippert: I would like to ask Mr. Twells where he saw this kiln.

Mr. Twells: I do not know whether the thing is patented or not, but I saw it at Barberton, O.

A. A. Lane, Akron, O.: I have seen the kilns that Mr. Twells speaks of. There is an air duct the length of the kiln, built over the top of the furnaces, with the intention of taking the heat from the top of them. In the outside wall of this duct there are openings over the fire holes, through which an iron rod may be run for the purpose of knocking out brick in the kiln wall, thus admitting hot air from the kiln to the duct over the furnaces, from which it is taken by a fan through underground ducts to the dryer.

W. A. Eudaly: They are trying to do that in an up-draft kiln, trying to draw the hot air down through the kiln into a duct over the furnace?

A. A. Lane: Yes, sir.

W. A. Eudaly: You had better not do it right away.

Mr. Alsip: They are doing this thing in North Dakota, and I wondered if any of the rest of you had done it. The gentleman who I have in mind has an inclosed kiln, down-draft, and several up-draft kilns, and he has constructed a tunnel under the center of the kiln, and attached to this is an exhaust fan, to carry the heat through the dryer, and he dries his brick by this method. I never have visited the plant, and cannot say how successful it has been.

A. A. Lane: I would like to ask if it is profitable to draw hot air right down through the kiln?

A. S. Naugle: I cannot understand how, if the gentleman Mr. Alsip refers to covers the top of his kiln, so as to exclude the air from it, how he can expect to draw the air down.

Mr. Alsip: The top of the kiln has so much greater volume of air than a fan would take, and there are some openings in the kiln, of course.

W. A. Eudaly: It seems to me that if we stop to think just a moment it will go without argument that with a tunnel running under the bottom of an up-draft kiln there is enough opening in the kiln above the blower to draw the hot air through the up-draft kiln down through this duct. It cannot help it. The air just must come.

J. F. SMITH, Omaha, Neb.

Mr. Naugle: What I want to know is how, if he excludes the air from the top of the kiln, he is going to create a vacuum, so as to get the air out.

W. A. Eudaly: The kiln is not tight enough that he can exclude all the air.

L. C. Moore: One question I want to ask of Mr. Sibley or someone else. If you take the heat out of the bottom of a down-draft kiln, say by tunnel, where do you leave the opening, over the furnace or over the top, to admit the cool air, in order to get circulation? How do you arrange this?

John W. Sibley: We try to close up the kiln just as tight as we can, and still we get plenty of air.

President Fiske: By your leave we will pass this subject and come to the questions for general discussion. I am going to ask Professor Orton to answer the first question, which is: "Where there is limestone in the clay is it possible, either by grinding, burning or any other way that is practical, to prevent the particles from exploding and chipping the face of the brick?"

Professor Orton: I do not feel competent to give any advice on this subject. I happened to be talking with Mr. Youngren and Mr. Eisenhart yesterday, our President being one of the party, and heard a thought expressed which was new to me, and which I can give you second hand. Mr. Eisenhart stated that, since he had begun to use a continuous kiln, he never had had any trouble from the lime chipping his brick, but before using the continuous kiln he did have trouble from that cause. Mr. Youngren also made the same statement, and the two gentlemen exchanged notes with each other at some little length. They stated only the facts they had observed and asked me if I knew the reason. I can only interpret this matter from a purely theoretical consideration, and do not know whether my explanation is the true one or not. I cannot find out without making some analytical investigations to see.

I believe the reason why these two gentlemen are not having trouble from the lime in their clays is that the lime has a better opportunity in the continuous kiln to absorb sulphuric acid from the kiln gases than it does in the average common up or down-draft kilns. I believe the lime is partly converted into sulphate of lime, which does not slake on receiving water. If the clay is ground up tolerably fine and the lime pebbles crushed, they have a better chance to take up some of the sulphuric acid from the kiln gases, and would be rendered innocuous. This is a theoretical explanation, and I do not know that it is really the case, but in answering the question offhand, in this manner, it is the most probable explanation I can suggest.

If any important amount of calcium carbonate or limestone, in grains of appreciable size, is heated in the kiln and is converted into caustic lime, I do not think there is any process by which that lime can be restrained from giving trouble when it gets out into the weather and takes up moisture. But, if the lime is reduced in size to very small particles, by grinding, the probabilities of its giving trouble are very greatly decreased. The finer it is the less liable it is to make any trouble. There are two causes for this: First, the finer it is the more closely it comes in contact with the surrounding clay, and the more likely it is to go into combination with the silica and alumina. If it does combine with them it will be rendered harmless. Second, the smaller the grain the easier it is to be attacked by kiln gases and thus converted in harmless forms. The free oxide is the only dangerous form, and this will be less likely to remain free if it is finely ground. Also, the harder the ware is burnt the less likely is the lime to give trouble, as the silicate is more likely to form.

J. R. COPELAND, Birmingham, Ala.

Alfred Yates: Would washing overcome the difficulty?

Professor Orton: That is not the question. If you remove the lime from the clay, naturally you avoid the trouble. But, if the lime is in the clay, and is ground with it, so that it remains a part of the clay as it goes to the kiln, and does not go into silicate combination, or is not converted into a sulphate, and is left in the form of free base, it will surely give trouble to the brickmaker.

George J. Walters, Chatsworth, Ill.: I am not in the habit of getting up in the Convention to say much, but I think I can give you a few points on this subject, as I had an experience with lime in my clay. Anyone from Illinois and who knows this prairie clay will know that all the stones or pebbles in the clay are limestones. In making brick and tile I used to lose about 10 per cent. of my tile when I loaded them in the wagons on account of breakage. These limestones were not reduced, and they would break the tile. When I made a kiln of brick and took them out, if I did not put water on them, so as to drench them with water, I would lose about one-half my brick. Before I used the water I thought it would not pay me to do that, so I figured out a new plan, and I can tell you in a few moments how I did it. In the first place, I put in a dry pan. I had the maker of the dry pan make the pan, so I could suspend the mullers from under the plate, then put two heavy rods, 8½ inches, with two burrs on each, and with great springs under these burrs, so as to relieve the strain if it was caught under the rock. I would raise these mullers three-fourths of an inch over the bed of the dry pan, so I could grind these rocks to a powder. We would run an hour or an hour and a half, so we would have plenty of clay for the machine, and then we would shut down for a moment, and then I would put the other clay into the pan, and these small limestones in the pan would be thrown out by centrifugal force on the outside of the pan, and the man who tended the pan would take a scoop shovel, and while the pan was running he would dip out these pebbles. He would take the whole lot out in about two minutes. Then he would put the clay in again, and then our clay went through a screen, and in that way we got rid of our limestone, and I don't have any tile or brick to break. I do not believe in grinding up the limestone and putting it in the clay.

President Fiske: Mr. Hunt has an announcement he desires to make.

W. H. Hunt: I have just come from the office of our most distinguished citizen and honorable Mayor, Tom Johnson. While he was unable to join us the evening of our banquet, he has expressed a willingness to be with us about half past 5 and wish us farewell before we separate, and I hope we will all remain and give him a hearty greeting.

President Fiske: We will take up the next question, No. 24—

"Although all good brickmakers expect eventually to dwell in the land where rust doth not corrupt, nor thief break through and steal, yet at present he finds he has to face the fact that rust is destroying his iron cars to such an extent that in less than a year the life is gone out of them and they drop to pieces. Has anyone had this trouble in drying their brick with heat from cooling kilns? If so, what is the cause and what the remedy?"

Mr. Yates: I should say sulphur was the cause, but I think there is a very able gentleman here who can give us more light, and I suggest you call upon Professor Orton.

Mr. Moore: Before Professor Orton speaks, I would like to know if there are many having this trouble?

W. S. Purington: We are using this waste heat, but not from burning kilns, from cooling kilns. From cooling kilns you will have no trouble, but from the burning kilns you will destroy the cars without any question.

D. V. Purington: I have probably paid for more cars that have been eaten up by iron rust than anyone else here. In Chicago we never had any that gave out in less than a year, but it does not take a great deal longer. There is a certain combination of chemicals that will eat out the iron in a very short time in Chicago. In Galesburg we are using the same cars that we used ten years ago. The remedy is, simply buy more cars. (Laughter and applause.)

T. B. Townsend: We have been using the same cars for three or four years, and we are still using them. We have a steam dryer.

Mr. Eudaly: I do not think Mr. Purington's advice should be passed over lightly.

Mr. Alsip: I was thinking maybe Brother Purington had an interest in some of the car factories. (Laughter.)

Mr. Twells: I would like to speak before Professor Orton does. So far as my personal observations go, the trouble is steam, and the remedy is to get it out. If the car remains saturated with steam it will rust out. If you can so arrange to draw the steam out, the cars will last forever.

Mr. Yates: I want to hear from Professor Orton. I do not think any other gentleman here is so able to handle the subject. It is sulphur and water.

Prof. Orton: Mr. Yates has answered the question himself. It is the sulphur and water together that are responsible. Mr. Twells has also stated the truth. If you keep the iron work of your cars dry they will not rust. The sulphur gases which may be in the atmosphere of your dryer will not perceptibly attack dry iron. All fuel except wood contains a notable quantity of sulphur. You probably do not realize how much sulphur you burn in your fuel. Ordinary coal contains a considerable quantity of actual sulphur—about two pounds in every hundred. That means a great deal of sulphur for a kiln of brick. Some of you would be surprised to find you had burned a whole ton of sulphur in one kiln, but double this amount is often used in one burn. A ton of sulphur makes an enormous volume of sulphuric acid gas, all of which passes through the kiln and among the brick, and if the combustion gases are then taken by fan to the dryer they are in condition to attack the iron work of the cars or anything else they can reach.

However, the sulphuric acid gas, So_3, without water, would be comparatively harmless. But the same combustion which produces sulphuric acid also produces steam from the hydrogen in the fuel. This steam is augmented by that given off from the brick in the kiln and damp flues through which the gases pass. When the gases finally reach the dryer they are getting cooler and cooler, and the moisture they contain is getting more and more perceptible, until finally it condenses as a fog or vapor and begins to settle on objects which are cooler than the air. The minute this happens the trouble begins. The dew thus deposited has taken up the sulphuric acid from the gases and has made a weak acid solution with it. It is not merely water which condenses on your cars and your brick. It is a dilute sulphuric acid, one of the most powerful corrosives known.

Now, there are several ways to avoid this difficulty. Mr. Twells has given one, i. e., do not let your gases get chilled down to their dew point in the dryer. Keep the gas moving out and allow no dew to deposit. Also, do not use gases from your cooling kilns until the fire on the grate bars has been burnt out or raked out. The dying embers of the fire are full of unoxidized nonpyrites, and give off sulphur for hours after firing ceases, and these emanations are not good for use as a dryer atmosphere. The air coming through a cooling kiln is pure as soon as the fire on the grates is extinguished or drawn.

Some people have tried to use the waste gases of burning kilns and of steam boilers for drying wares. It is perfectly feasible, so far as mere evaporation of the water from the ware is concerned, but it is almost certain to damage either cars or wares, or both, as the sulphuric acid gas and water vapor are pretty sure to get together sometimes, if not always, and when they do get together the results can only be bad.

Mr. Purington: Is there not significance in the fact that our Chicago clay has lime in it, and the cars go to pieces faster than the cars at the plant where the clay does not contain lime?

Professor Orton: I think if the clay was of a very limy character it would have a tendency to catch the sulphur itself and divert it from the attack on the iron. In fact, I know of some instances where lime is purposely placed in kilns to catch the sulphurous gases and prevent their being absorbed by other substances which are damaged thereby. The lime is replaced each burn and becomes full of sulphur from the gases. In a naturally limy clay I should think the lime would to some extent protect the cars from damage by withdrawing the sulphur from the gases.

When the sulphur in the kiln is burned at a low temperature it is converted into a colorless gas, sulphurous acid, which is a vigorous agent in attacking iron. If it is burned at a high temperature, and compelled to pass over redhot surfaces in the kiln of brick, this colorless gas is converted into visible sulphuric acid gas, which is a still more powerful solvent for iron.

When you take sulphurous gases direct from a burning kiln and put them through a dryer or another kiln, and cool them down to such a temperature that the dew begins to settle down from the atmosphere, this dew is almost certain to take up this sulphurous acid and carry it on to the iron cars. It is this acid solution that creates a scum or efflorescence on so many brick. In the case of iron it works destruction on the metallic parts of the car. I do not believe this trouble is found where the heat of cooling kilns is used, provided that the fire is allowed to burn down thoroughly before you begin to draw the gases out. If you immediately proceed from the close of the firing, and, with your fire boxes still full of coals, begin to use that gas, for five or six hours afterward you will be getting an amount of sulphuric acid all the time.

President Fiske: We will take up the next question, No. 25—

"Where a brick plant is to be located across the river from the land on which are the deposits of clay is it feasible: First, to convey the clay to the factory by the slumming process—that is, dilute it with water and pump it through a pipe to settling vats; or, second, to convey the clay in buckets or cars by an overhead cable a distance of about 1,300 feet, the factory site being about 15 feet lower than the clay bank?"

Secretary Randall: Unless there is a gentleman present who desires to talk on this question, I will say for the benefit of the parties asking that question, that I can put them in communication with parties who make a business of taking care of just such cases. The sluicing is impractical on account of the expense, but the overhead system is, I think, practical. If anyone else who wants information of this character will advise me I will gladly put them in communication with firms who can furnish them the desired plans, etc.

President Fiske: I think nothing more on that question is necessary, and we will pass to the next question—

"In dryers, where green brick are put in at one end and taken out at the other, is it best for the steam from the drying brick to have to pass to the far end of the dryer? Would it not be better for the steam to be taken out at several places, and thus prevent it from passing through the brick?"

Jacob Klein: I think that if the steam could be carried off without passing through all the brick contained in the tunnel, without loss of heat, it would be a great advantage, because I have noticed in my tunnel that the last car, after being deposited therein for one hour, would be more moist than when first put in. But if you attempt to cut off the steam you will lose the heat, and as the heat is what you are after, you will have to be content with the first and hold on to the steam.

President Fiske: This brings us to Question No. 27—

"Is salt a good thing to use in fire clay mortar in the construction of kilns?"

W. P. Blair: I did not ask that question, but I am interested in it. Very frequently we have to mix our mortar with salt in the winter time, and if Professor Orton will tell us, I would like to know if the salt is an injury to our kilns.

Mr. Alsip: My opinion in the matter would be that salt glaze in the mortar tends to bind the particles together.

F. W. Butterworth: I asked that question. I am not ashamed of it, and I want to acknowledge it. It was just some such thought as Mr. Alsip has expressed that brought it about. We had had some difficulty some years ago in holding our bag wall. We put salt in our fire clay mortar, and we found that there was a glaze sufficiently strong to hold these brick in place.

Mr. Bloomfield: There is a fire clay known all over the world as fire clay mortar, and there is no lime in it, but the addition of a little salt would have the effect when subjected to heat of vitrifying that to a certain extent, which would be an improvement.

Hon. TOM JOHNSON, Mayor, Cleveland, O.

Just at this point Mr. W. H. Hunt escorted Mayor Tom Johnson into the room, and he was greeted with applause.

President Fiske: Gentlemen, we are very much honored by the presence of the chief magistrate of this city—a man upon whom, perhaps it is safe to say, the eye of the country is resting, and I take great pleasure in introducing to you Mayor Tom Johnson, of Cleveland. (Applause.)

—Mayor Johnson's Address.—

Mayor Tom Johnson: Gentlemen of the Convention—The honor is mine. It is my misfortune not to be able to accept your invitation a few evenings since to participate in your banquet. I won't say I was overworked, but I have got a bad cold, or something of the kind, that laid me up for a few days, and I was unable to get out. It is with great pleasure that I am at this late hour able to say a word of greeting to you. Our people are proud and happy to have had you in our midst. It is to be hoped when you leave Cleveland that you will leave it with a feeling of friendship and a desire to come back. I can hardly say anything to you about your work. As I listened at the door for a few moments before I came in I noticed that you were discussing questions of brickmaking, and it carried me back to some experiences of my own some years ago. I used to say, when telling of my farmer experiences, that it cost me 25 cents apiece to raise potatoes, and my brickmaking experience was much worse than that. (Laughter.) I wish to extend you a word of welcome and wish you

Godspeed on your return to your homes. I hope you were not seriously impressed with the complimentary words of your President, and not consider me as a man upon whom the people of the country are looking, but simply as a business man trying to make a good Mayor of a good town. (Applause.)

President Fiske: I am sure I voice the unanimous sentiment of the Convention in extending to Mayor Johnson our sincere thanks for favoring us with his presence and a few words of welcome. I am sure we will be very glad to hear a parting word from ex-President Hunt.

William H. Hunt: I hardly know just what to say in conclusion of our week. Those of you who accompanied the excursion party on Thursday recall perhaps the statement made by my friend Mr. Bradley, who maintained that, although he was Vice President, he did not have as many vices as his friend Hunt. There is one vice that I have cultivated particulary during the last few weeks, and that is the vice, or intention, with the co-operation of some twelve or fifteen local brickmakers, to give the visiting delegates, an example of Cleveland hospitality. If we have succeeded in doing this, we feel amply paid for all our efforts. (Loud applause.)

President Fiske: Taking up this discussion of salt in fire clay mortar, I would recognize Mr. W. W. Parry, of Rome, N. Y.

W. W. Parry: The matter in question was that of using salt in fire clay mortar. I have frequently used salt in fire clay mortar with, I think, beneficial results, and I speak from the standpoint of the mason, as well as a brickmaker. Wherever I have used salt the repairs have always been less.

G. E. Penn: Having had some twenty years' experience in contracting and building, and quite a good many years in setting furnaces and boilers, and only about twelve months' experience in using and having occasion to use mortar for down-draft kilns or bag walls in down-draft kilns, I think I have found as good a mortar, probably the best mortar I have ever seen used. It is simply the sediment or top soil in a low spot of ground off the slope of the hill, where the sands may settle. Take off the dirt and trash and take the top sediment, use with salt, with a proportion, say, one-fifth ground clay that you make your brick of and a small portion of salt, will give you better results than any fire clay I have ever used in my life. I have put bag walls together, and if you want to take the brick apart you would absolutely split your brick before you could split your mortar. It will not melt or run, and, I believe, will stand forever.

COMMODORE W. G. TITCOMB, Providence, R. I.

President Fiske: This brings us to the last question, No. 28—

What is the best way of securing a glaze over the inside of the crown of a down-draft kiln when it is not desirable to glaze the burning ware, and is a glaze of this sort a help to the crown?

Alfred Yates: I have daubed the inside work of a kiln with fire clay and salt with good results. But for the first few times of burning the ware will take the glaze, but after you have burned the kiln awhile you will not have any trouble of that sort. In the long run it is beneficial. I do not think it benefits the crown of a kiln to salt glaze it. I have seen the crowns whitewashed, and think by whitewashing the bag walls it makes more light, and, I believe, is beneficial because you can see better to work in the kiln. Use just ordinary whitewash.

President Fiske: There is one other question which has been passed in:

Which is the best car for a steam dryer in drying soft mud brick—the rack car or the flat car?

W. A. Eudaly: It depends upon the kind of pallet you use.

President Fiske: Are there no other questions?

Secretary Randall: I have a letter here from one of our old-time members, and in it he asks a question.

Friend Randall:

Thanks for copy of programme. Lots of work planned out in it. I would be pleased to have the following question answered: If it takes a half ton of coal per 1,000 brick in a well-constructed down-draft kiln, how much coal per 1,000 brick would be needed to burn in a well-constructed muffle kiln?

My lameness prevents me from taking long trips from home, so I can't be with the brethren at Cleveland.

I inclose postoffice money order for $3.00 in renewal of my membership.

Wishing you a pleasant and profitable meeting, I am, yours truly,

J. W. McMILLAN.

Milledgeville, Ga., Feb. 7, 1902.

President Fiske: If there is no one here to answer that question we will hear the report of the Committee on Resolutions, of which Mr. D. V. Purington is chairman.

REPORT OF COMMITTEE ON RESOLUTIONS.

Mr. President and Gentlemen of the Convention:

Your Committee on Resolutions begs leave to submit the following as their report. While the sixteenth annual Convention has been the largest the N. B. M. A. has ever held, many familiar faces have been missed, some have been kept away by ill-health, some by reason of illness in their family, and others because of circumstances that seem to conspire to prevent their being with us. There are two who have been for years closely identified with the best interest of this Association whose voices are hushed forever and whose places in our ranks will never again be filled. On the 21st of October, 1901, Jesse Eastes, of Chicago, passed from this life to that which has no ending. For many years he had been a regular attendant at our annual gatherings. His natural gentleness. his quiet, unassuming manners, had made him a favorite with all who knew him. Among his competitors he was universally respected and beloved. On the 27th of November, 1901, in the same city, the Great Harvester gathered unto Himself another who had been for many years an example and an inspiration to all of us. S. S. Chisholm, the head of the corporation which had grown and prospered under his wise leadership, was taken from us. Different in many ways as these men were, there was little that can be said of one which would not be true of the other. Both were gentlemen of that type so rarely found in these days among business men. With a reputation deservedly high for honorable dealings, with characters which had never been tarnished by unworthy acts, they leave behind them a record of which this Association may justly be proud.

The following resolution, introduced by Mr. C. A. Bloomfield, your committee recommends for adoption. It is as follows, viz.:

"Whereas, the National Brick Manufacturers' Association, in keeping with one of the main purposes of its organization, approves of all proper means which aid in the development of the improved manufacture of brick and other clay products, and, believing that the better education of those who are to be engaged in making these products is the surest means of accomplishing this end; and,

"Whereas, a bill introduced in the Senate of New Jersey as No. 12, having for its object the creation and maintenance of the Department of Ceramics at the New Jersey State College for Agriculture and Mechanical Arts at New Brunswick, be it

"Resolved, That the National Brick Manufacturers' Association, now in annual session in the city of Cleveland, O., give its hearty support to such legislative action as is typified in this bill, which is for the encouragement of ceramic education. More especially does it do so in this instance, as New Jersey has for over a hundred years been known for its clay beds, from which a more diversified product can be made than from almost any other State in the Union, and, moreover, as clay is the chief natural product of said State, therefore, be it further

"Resolved, That the National Brick Manufacturers' Association, formally records its earnest hope that the Governor of New Jersey and its Legislature will enact as law this bill now pending, and the Secretary of this Association is hereby empowered to send a copy of this resolution to the Senate, to the House of Representatives, and to His Excellency, the Governor of said State of New Jersey."

The resolution presented by Professor Edward Orton your committee also recommends the adoption of. It is as follows, viz.:

"Whereas, it has come to the knowledge of the National Brick Manufacturers' Association that a movement is on foot among certain people, representing some of the denominational schools of the State of Ohio, to defeat the measures now pending before the Legislature of Ohio for the necessary increase of the revenues of the Ohio State University, and

"Whereas, the National Brick Manufacturers' Association has, by its direct financial support of the Ohio State University during the past five years, come into intimate relation with the institution, and acquired a deep and lasting interest in its welfare; therefore, be it

"Resolved, By the members of the National Brick Manufacturers' Association, in Convention assembled, that we are opposed to any movement to defeat the necessary appropriation for the maintenance of the Ohio State University, and regard it as an attempt to dictate an educational policy to the State.

"The Ohio State University is the people's college, designed to promote the liberal education of all classes in the several pursuits and professions of life, and any step which looks like curtailing its resources and lessening its powers is, in our opinion, unwise and illiberal, and should receive the condemnation of all patriotic citizens."

The resolution introduced by Jefferson Middleton, of Washington, D. C., has been carefully considered by your committee and its adoption is recommended. It is as follows, to-wit:

"Whereas, the great clayworking industries of the United States have never been adequately represented at international expositions held in this country, and

"Whereas, this Association is extremely desirous to see these industries creditably represented at the Louisiana Purchase Exposition, to be held at St. Louis, Mo., in 1903; therefore, be it

"Resolved, That it is the sense of the National Brick Manufacturers' Association, in Convention assembled, that these great industries should be fully represented at that exposition, and that, for the purpose of securing the recognition which these industries deserve, the President of this Association is authorized and directed to appoint a committee of five members to confer with Dr. David T. Day, Chief of the Department of Mines and Metallurgy of said exposition, as to the best method to be adopted to secure this end; that this committee be empowered to confer in the name of this Association with kindred organizations and with manufacturers, urging their co-operation in securing this end."

The resolution presented by the Sangamo Brick Co., of Springfield, Ill., is as follows, to-wit:

"Resolved, That in the judgment of the members of this Association the interests of both manufacturer and user of paving brick would be promoted by the inspection of the same by competent and disinterested experts at maker's works, and to this end that a committee of three be appointed at this Convention by the President of this Association to confer with the proper city authorities, or societies of city engineers, so that, as far as possible, all specifications shall provide for such an inspection."

This resolution is almost identical with one introduced by Mr. Ridgely, of Springfield, Ill., at the last Convention of this Association, but which seems to have failed at that time of receiving definite action. Your committee have earnestly wrestled with this matter, and while they are unanimous that the conditions proposed would be comparatively ideal, they are equally unanimous in the opinion that it would be next to impossible to produce these conditions, or to devise means to put them into practical use. Without going into details that would be inappropriate in a report of this kind, your committee believe they are justified in the recommendation that this resolution be not adopted by the Association, but that at some time in the future the way may open for this Association to recommend some better system of inspection than now exists.

While no resolution has been referred to us which in any way recognized the lasting obligations the Association is under to those who have virtually been our host during this memorable week, your committee gladly avails itself of this opportunity to congratulate the city of Cleveland that it has among its citizens so many men and women who possess the chief attribute of greatness, i. e., the ability to perform great deeds in an emergency. Had those who have given so freely of their time, energy, thoughtfulness and money to make this sixteenth annual Convention a success spent their whole lives in this particular line of work, they could not have been more successful. The large number who have shared in the labor of love, which has resulted in rendering our visit to Cleveland at this time so pleasant and profitable, makes it almost impossible for us to extend our thanks to them personally. One thing only has marred the unalloyed pleasure which would otherwise have been ours, and that was the absence of our dear Brother Eggers, and the cause of it. In our work, our enjoyments, and even in the few moments of rest that have been vouchsafed to us, our hearts have been sad with the knowledge of the sorrow and affliction that have been his portion.

To ex-President Hunt, chairman of the Entertainment Committee, and to H. C. Bradley, chairman of the General Committee of Arrangement, we have no words in our vocabulary with which to meet out the praise due for their intelligent conception of the whole situation, or for the ability displayed in carrying out the plans matured by their committees. In C. B. Stowe we recognize the Napoleon of Finance whose zeal and unflagging energy made the impossible a reality.

In preparing for an entertainment of such magnitude as this has been there are a thousand and one little incidentals, no one of which is of much moment, but an absolute necessity when considered as a whole. The clerical work, the arrangement of all these little details, has in this case been in the hands of Spencer M. Duty, who has filled the office of Secretary so ably.

Of W. D. Richardson, chairman of the Badge Committee, we can only say that he has done no more than we expected, but he has done it better than it had ever been done before.

S. A. Williams, chairman of the Exhibition Rooms Committee, for the earnest, faithful and efficient work he has performed deserves more than passing mention. His arrangement seemed to have been complete, even to the minutest detail. For almost the first time in the history of this Association no criticism has been heard in regard to the exhibit room. Very few of us realize the amount of labor necessary to harmonize all the conflicting interests in such a display. We tender our sincerest thanks to Mr. Williams and his committee for the magnificent results that crowned their efforts in this direction.

CHAS. SHULTZ, Roundout, N. Y.

Last, but by no means least, on this roll of honor we find a Committee of One on the Press. This one, Edward A. Roberts. We are satisfied, however, that no additions to his name on a committee were or ever would be necessary. He has been everywhere at all times during the past week, and although not directly connected with the clayworking industry, he has earned our esteem and gratitude, and merited our admiration for his ability as a manager and his uniform courtesy as a gentleman. We want it understood by all our Cleveland friends that we have tried to appreciate the many things that have been done for us.

The delightful banquet at The Hollenden, so perfect and complete in all its details and appointments, the excursion of the Hydraulic Pressed Brick Company to the different brickyards in the vicinity of Cleveland, the wholesale invitation of our members to the theater, the care and attention bestowed upon the ladies who came with us, and the unobtrusive thoughtfulness and politeness which has characterized the treatment we have received at the hands of our friends while here will always be gratefully remembered by every member of the Association whose good fortune made it possible for him to attend the sixteenth annual Convention.

In going to our homes your committee believe that the admirable address of ex-President Hunt to this Convention should be our motto and watchword during this and all succeeding years, and we earnestly recommend its frequent reading, that its teachings and precepts may become indelibly impressed upon our mind.

Respectfully submitted,

D. V. PURINGTON, Chicago, Ill.;
L. C. MOORE, Memphis, Mo.;
J. P. CAHOON, Murray, Utah;
CHARLES SHULTZ, Rondout, N. Y.;
WM. P. BLAIR, Terre Haute, Ind.;
J. R. COPELAND, Birmingham, Ala.;
W. P. ALSIP, Grand Forks, N. D;
Committee.

D. V. Purington: In the adoption of these resolutions I move that the resolution offered by the Sangamo Brick Co. be considered separately. I desire to give my reasons for this. It has long been known that I was opposed to this resolution, but I want it to have the fairest possible show it can have. I don't want it to look as though this committee had rushed it through without the knowledge of the Convention.

Seconded by Mr. Blair.

President Fiske: I think we can take that by consent. Is it your pleasure that we divide this question? I think we can take it by consent. The question now is, how shall we act upon the resolutions which are recommended to be adopted?

W. A. Eudaly: I move the adoption of the resolutions reported on by the committee in the affirmative.

Seconded by several.

W. P. Blair: Now, Mr. President, I want to say one word in regard to one of the resolutions—that relative to the appointment of a committee by this Association to act in conjunction with and in the support of Dr. Day in his effort to have a display of clay wares at the World's Fair at St. Louis —and I am only going to take a moment in presenting this feature of the resolution, and saying that I hope every member of the Convention will concur in the adoption of that resolution. We all know the expense and labor the citizens of St. Louis have been put to, and expect to be put to, in their effort to make this one of the greatest expositions that has ever been held in the history of mankind. (Applause.) I hope your interest in this matter will not lag after you shall have returned to your homes, but that every effort shall be used on the part of every member of this Association to the end that the clay industries of the United States will be represented at the World's Fair as they deserve to be.

Fawcett Plumb: I would like to hear again the resolution pertaining to the Ohio State University.

D. V. Purington: Then reread the report pertaining to the Ohio State University.

An exceedingly animated discussion followed Mr. Plumb's remarks, which called for an explanation from Prof. Orton, which calmed the fears of those who thought they discerned the color of politics in the resolution, and were not a little exercised thereby. President Fiske then put the question of the adoption of the resolutions which had been recommended favorably by the committee, and the motion was carried.

President Fiske: We now come to the resolution which is reported on unfavorably by the committee, which reads as follows: (See resolution.)

J. C. Adams: I move that we concur in the report of the committee.

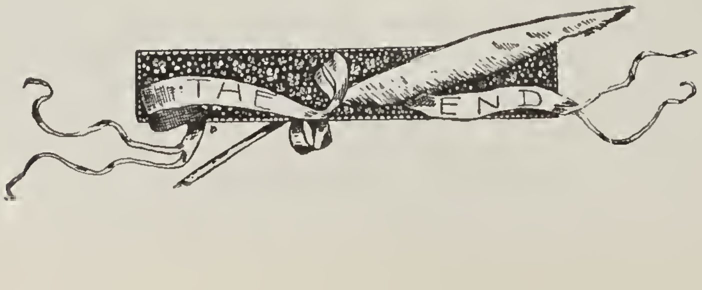
Motion was seconded by Mr. Richardson and carried.

President Fiske: This completes the formal business of the Convention, and we now come to miscellaneous business. I would like, in closing, to extend to the Convention my sincere thanks for the uniform courtesy they have accorded me as presiding officer, and express the wish that you may all carry away with you valuable information and that we will all come together again some time. (Applause.)

Mr. Alfred Yates: I move that a rising vote of thanks be extended to our retiring President, Mr. Hunt, and the committee of Cleveland brickmakers for their hospitality, and that we give it with a hip, hip, hooray.

Seconded by several and carried unanimously.

Upon the motion of Mr. Alsip, seconded by Mr. Adams, the Convention adjourned sine die.



IMPRESSIONS OF THE CONVENTION.

THE SUM OF EXCELLENCE.

My Dear Randall:

Look back over the files of The Clay-Worker and take note of the letters I have written after attending previous Conventions. Put them all together and distill them. The result will be a weak statement of my recollections of last week in Cleveland. Yours truly, NO. THIRTEEN.

Chicago, Feb. 21, 1902.

FELT IN VITAL POINTS.

My Dear Randall:

Home from the Convention and time for reflection has convinced me of the increasing value of the N. B. M. organization, as a more intimate acquaintance is cultivated, more and more valuable, because of the buttonhole talks and lobby discussions.

It is impossible to learn all the individuality the Convention is possessed of, but the value of the Convention must ultimately be felt in the pockets of the members, by the better methods and expert knowledge gained from each other, cordial and willing disposition to impart to others items of valuable experience. Very truly yours, WILL P. BLAIR.

Terre Haute, Ind., Feb. 18, 1902.

EXPECTED A GOOD TIME AND HAD IT.

Dear Randall:

I expected to have a good time at Cleveland. Some one has said that the pleasure of anticipation is greater than that of realization, but my experience at the Convention knocks that theory into a cocked hat. You asked me before I left Cleveland if I had had a good time, and I told you yes, and promised that I would not only come to the next Convention, but that I would bring my silent partner with me. I had such a glorious good time that I want her to share Convention week with me in the future. I never saw four hundred men enjoy themselves so much in the same length of time. We here in the "wild and wooly," accustomed to outdoor life, many of us learning the alphabet from the brands on the cattle, enjoy a breezy time, and the N. B. M. A. certainly fills the bill. I am glad I went to Cleveland. If I have my way about it, I will be with you a year hence wherever you meet. Sincerely, G. E. PENN.

Chandler, O. T., Feb. 24.

WILL NOT MISS ANY FUTURE CONVENTION.

My Dear Mr. Randall:

We reached home last evening, and I take the first opportunity to tell you how much we all enjoyed our trip to the Convention and to express to you our thanks for your kind attention while we were with you. Through you I also wish to extend thanks to all the very kind ladies and gentlemen of Cleveland, whose whole desire seemed to be to furnish entertainment for members and their families; the spirit shown was certainly of the kindest, and I am certain was greatly appreciated by every one who was fortunate enough to be at the Sixteenth Annual Convention of the N. B. M. A. My wife and boy have already announced that "we" are not to miss any future Conventions so long as life is spared to us.

Our members have great reason to feel fortunate and thankful in having for their Secretary one who has the ability and willingness to use it in promoting and carrying out arrangements which give us such meetings. My boy, who seemed to enjoy the Convention as much, if not more than his mother or father, insists upon writing you himself. He says: "You know, father, Mr. Randall was good to me, and I want to write him to thank him." HENRY HASBROUCK.

Kirkville, N. Y., Feb. 16, 1902.

THE ANNUAL BANQUET.

A Splendid Audience, an Excellent Dinner, Fine Music and Eloquent Addresses, Combined, Afford a Most Enjoyable Evening.

THE SECOND ASSOCIATIONAL dinner of the N. B. M. A. was an unqualified success, and accentuates the feeling made manifest at Old Point that the Powwow is a thing of the past, and that the associational dinner, or banquet, admitting, as it does, the presence of the "silent partners," affords more pleasure to the lords of creation than the old-time stag affair. The ladies enjoy the occasion thoroughly, despite the fact that they are silent participants, and it would be a poor prophet who would not predict its continuance.

The beautiful dining hall of the Hollenden presented an inviting appearance when, at 8 p. m., the doors swung inward and the guests marched to their places. Plates were laid for 440, all that could be accommodated. The tables were beautifully decorated with roses, carnations and tulips, and the Hollenden orchestra discoursed popular airs during the preliminaries. At each plate was placed a souvenir menu brochure containing portraits of the officers of the Association and the various local committees having in charge the Convention arrangements. It also gave a brief history of the National Convention and the Ceramic Society, and the following

MENU.

Blue Points.
Consomme Princesse.
Celery. Olives. Radishes. Salted Almonds.
Planked Whitfiesh.
Pommes Duchesse.
Filet of Beef—Aux Champignons.
Petis Pois.
Vol-au-Vent of Sweetbreads a La Reine.
Ceramic Punch.
Mayonnaise de Crevettes.
Neapolitan Cream. Assorted Cakes.
Cafe. Hollenden Special Sauterne.

The ladies composed fully one-fourth of the splendid audience, which was one to inspire the very best efforts of the noted after-dinner speakers, who came in response to the invitation of the local committee and made the occasion a memorable one to every participant.

—The Opening Address.—

Toastmaster Hunt: Ladies and Gentlemen—It is one of fate's decrees that the retiring President of this Association shall serve as toastmaster at the annual dinner. I do not know why this custom obtains, unless it is that the President may be "let down easy," or, rather, that his term be rounded out with a postlude. I might have said "obituary," but that term would sound rather harsh on a joyful occasion of this kind. To say that we Clevelanders are delighted to entertain the visiting brickmakers and their ladies is to repeat what has already been said. I can only reiterate the welcome and express the hope that the part of the programme which we have already had has proved enjoyable, and that the feast of reason about to come will be likewise regarded.

It is peculiarly fitting that our annual dinner should fall upon the anniversary of the birth of that great emancipator, Abraham Lincoln. While we honor to-night the name of our splendid organization, we can likewise pay tribute to the man who, next to Washington, is the most beloved of all our Presidents. This coincidence has been emphasized in the menu books by a picture of the martyred President, which honors the souvenir and adds its halo to the many likenesses of our own members contained in the book.

It may be of interest to the visitors to know that the illumination of the cover of this book reproduces the lighthouse in the Cleveland harbor, made famous by Sankey's well-known song, "Let the Lower Lights Be Burning." No nobler use of brick could be devised than that of a lighthouse, upholding the beacon which marks the way to the mariner upon the lake, guiding him safely into port.

It is eminently proper that the first speaker of the evening should represent our city, which we all believe to be one of the most beautiful, progressive, and, altogether, one of the gems of our great Republic. We regret that Mr. Johnson, whom you all know by fame, if not personally, is unable to be with us to-night on account of illness. He telephoned me this morning that he was confined to his home, and could not serve us in the capacity desired. In his stead we have the Director of Charities and Corrections, Mr. Harris R. Cooley. In his official capacity Mr. Cooley has direction over our city workhouse, and naturally knows a few things about bricks, especially bad ones. I take pleasure in presenting him to you to respond to the sentiment, "Our City."

"THE CITY OF CLEVELAND."

By Rev. Harris R. Cooley, Director of Charities and Correction, Cleveland, Ohio.

Mr. Toastmaster, Ladies and Gentlemen—I regret very much, indeed, that the Mayor is not able to be present in person. I know you would be glad to see him and greet him. Your presiding officer has referred to the fact that I have charge of the workhouse and infirmary. I will not speak particularly about my department of the city this evening, because, to tell the truth, it is not the parlor part of our city's life, and we always take our guests into the parlor and dining room, leaving the back part of the house unseen by them. I will say, however, that we have over two hundred men in the workhouse, but the number of women has fallen below twenty, and there are not all the men there who really ought to be there.

I well remember my first visit to the great metropolitan city. The first feeling seems to be that of a new social and community life. There is in a great city more than the character of the individuals who live there. The new organized life has its own characteristics and its own spirit. The cities of the West, such as Chicago, have the Western spirit. Boston has its Eastern characteristics. We hope Cleveland possesses the good qualities of both of them. We trust that hospitality is one of these qualities. We are proud to-night to have such a gathering as this come into our midst. As far as this hospitality is concerned, we feel that it is more blessed to give than to receive, and that we shall be blessed abundantly in the extending of this welcome to our guests.

ROBERT SPEED, Memphis, Tenn.

In speaking of the city of Cleveland, there is one characteristic of which I cannot refrain from speaking. We hope to be the first large city in our country having a three-cent street car fare. I well remember paying for the first time in a foreign land three cents for a street car fare; it makes you feel very small, indeed, at first, but you soon get accustomed to it. We hope to adjust ourselves before long to this new condition; the first step to something which is still beyond.

This city and vicinity has furnished to the United States a number of its great statesmen and Presidents, and some think that possibly in the future there may be some more whom we would be willing to send to Washington for the country's good.

I wish to speak not only of the city of the present, but also of the city of the future. In our American life there has been a constant tendency to gather in the busy centers of population. Municipal life is the important part of our national progress. The time is soon coming when we will be not the United States of

America, but the United Cities of America. The cities are to dominate the future of our country. The life of the cities are to control the destiny of our Nation. We are really just beginning to understand the possibilities of our municipal life.

One of the speakers said this afternoon that there had been a wonderful development in the manufacture of brick in the last twenty years. I prophesy that with such a body of men as is here, with the good will and the fellowship, and the intelligence and inventive genius, the next ten years will see greater progress than the past twenty years has seen. We are only in the beginning of a marvelous social and industrial growth and progress.

We are yet to realize the city of God come down upon the earth. Magnificent public and private buildings, beautiful streets paved with brick, perhaps, and kept clean. A great city, well governed. A city which shall not need its infirmary. A city whose workhouse shall be turned into an art gallery. A city such as the workers and builders of the land shall be proud to build, with all its comforts and blessings; which shall not be simply for the few, but for the benefit and blessing and uplifting of all. This is the great possibility in our city and municipal life.

The clayworkers are to have a part in the realization of this dream. After all, everything which man's skill and genius has fashioned has come out of mother earth. With our human hands we are molding with greater and greater skill the things of beauty and glory and strength. We, too, are all of us workers in clay.

Helped by these material achievements and conquests, we are yet to realize a happier fellowship in all our social and industrial life. The gladness and mirth and kindly feeling around these tables is but a prophecy of a broader social life. If you could come back a hundred years from now, you would find a more beautiful city, with better government, with more opportunities for a free, happy life for its men and women. It will be the realization of the dream that—

ARTHUR BRADLEY, Cleveland, Ohio.

"Far away beyond her myriad coming changes, earth will be
Something other than the wildest modern guess of you and me."

"When the schemes and all the systems, kingdoms and republics fall,
Something kindlier, higher, holier, all for each and each for all."

(Applause.)

Toastmaster Hunt: In many newspaper advertisements we are warned to beware of substitutes. In other words, to be chary of something offered us "equally as good as the original." It was expected that Mr. Harvey D. Goulder, vice president of the Chamber of Commerce, would represent our business interests this evening, but that gentleman was unexpectedly called to Detroit this afternoon. Instead we have his law partner, Mr. S. H. Holding. I can assure you with confidence that in this case the newspaper logic does not apply. Mr. Holding is "equally as good as the original." While we are sorry Mr. Goulder cannot be here, we are very glad to have Mr. Holding take his place. I am pleased to call upon him for an expression on the subject, "Our Business Interests."

"OUR BUSINESS INTERESTS."

By S. H. Holding, Cleveland, Ohio.

Mr. Toastmaster, Ladies and Gentlemen—I find my position at this time decidedly embarrassing. This afternoon I was requested to act as substitute for Mr. Goulder and respond to the toast assigned to him. I hurriedly made mental arrangement of a few thoughts, but much to my embarrassment I found upon reaching the banquet table that I had misunderstood the toast. This embarrassment is much enhanced by the presence of ladies whom I, in common with others of my profession, rarely address. Nor is my embarrassment at all lessened by the warning just given by your toastmaster, to be beware of substitutes.

I believe this is the first visit to Cleveland of brickmakers as an association. We have occasionally an individual brickmaker visit our city to dispose of gold bricks, and usually his visit is extended contrary to his desire, because some of our worthy citizens have made objection to the nature and character of the manufactured article.

The topic upon which I am to speak is "Our Business Interests." We citizens of Cleveland are familiar in a degree with their extent and kind. It is a vast topic, which may interest many men, but would scarcely prove of interest to ladies, and, therefore, I shall touch it very lightly, leaving the ladies to get information during a shopping tour, which, we are informed, they are expected to take upon the morrow.

Twenty years ago our prosperous city, compared with its size and its business interests of to-day, was but an overgrown village. To-day it is a vast city with vast business interests. These interests are to be found upon both land and water. They are the result largely of the enterprise of those associated together, like yourselves, with common purposes and common interests, seeking protection to and advancement of those interests in those associations wherein you have concentrated thoughts and energy, and many can speak and act as one. This united effort of those who have the business interests of Cleveland in their keeping has brought our city from the village, and I trust I will not offend those from our former rival, Cincinnati, when I say has made her the metropolis of the State.

Those representing our business interests are endeavoring to further interests of our merchant vessels, which add so much to the commerce of Cleveland, but the banquet table is not the place for more than a statement of the matter. We in Cleveland also recognize the fact that we are living in a generation in which the United States has become a world power in business, and questions involving the extension of territory must be decided with reference to our business interests rather than our political ones, but such topic I shall not pursue at this time.

I presume our Eastern friends, and particularly those from the native city on the Delaware of my friend Bradley and myself, where they have brick in their houses, sidewalks, streets and backyards, will think, when they have seen our many frame houses, which in time must give way to those of other materials, that there is a good market in Cleveland for brick, but let me tell them that our brickmakers here and hereabouts, like other business men of Cleveland, get all they can and keep all they have, so that outsiders need expect very little.

The Chamber of Commerce and the Builders' Exchange, the latter Association having for its President your retiring President, Mr. Hunt, have done much to bring about the prosperous state of business affairs which now exists, and in welcoming you to our city I believe those representing our business interests will feel that your coming has done the city good, and I hope that when you go away you will be better pleased with our city than you were when you came.

Toastmaster Hunt: Nearly all cities have a Chauncey Depew—that is, one upon whom this title rests with ease. It is our good fortune to have corralled the one whom we regard as the New Yorkers do their newly wedded orator, the only difference being that the speaker I am about to introduce has not yet reached the United States Senate, but we believe that in time he will surely get there. I am happy to present to you an ex-president of the Builders' Exchange, one who is regarded in many ways a leader in that organization, Mr. Arthur Bradley, whose sentiment will be "The Builders."

"THE BUILDERS."

By Arthur Bradley, Cleveland, Ohio.

Mr. Toastmaster, Ladies and Gentlemen—I esteem it a great privilege to be permitted to address you this evening, and especially to welcome you to our city in the name of the Builders' Exchange.

So many of the members of the National Brickmakers' Association here in Cleveland are honored members of our Exchange, and you have on your rolls so many names that are of national reputation, that I hardly feel as if I were welcoming strangers, but rather extending the greeting hand to old friends and acquaintances after years of separation.

Brickmaking from time immemorial has been one of the most important industries that the world has known, and from even before the making of bricks with and without straw, in the days of old Remeses the Second down to that admirably designed and shrewdly conducted brick combine of Barkwell & Bradley, in our own city, men able in affairs and notable in their day and generation have been connected with its interests.

The glory of Babylon, the grandeur of ancient Rome and Carthage has passed away, but the product of the brick kilns of these ancient cities are still found upon the face of the earth, a mute testimony to their former civilization. The Ten Commandments that Moses wrote on stone, where are they? But the laws of the ancient peoples of Asia, thousands of years before Moses, are still found written on tablets of brick, in the cuniform characters of those days.

The first corner in grain was formed by Joseph when he was the "Old Hutch," the Napoleon of the grain pit in Egypt, and as it is to be presumed that his descendants kept the business in their own family, we are not surprised a hundred years later to hear the Israelitish brickmakers excusing themselves for a raise in the price of brick, claiming they could not obtain straw necessary for their work. One branch of the family controlled the grain and straw, and the other branch controlled the brick industry, and the price of brick went up, and I am not surprised that Pharoah got hot under the collar and started to thin out this pestiferous people.

That the Builders' Exchange is glad to see you here needs no word or assurance of mine, for we have been looking forward to your coming for nearly a year, ever since the word was flashed over the wires from Fortress Monroe that you had honored our President by electing him to the highest office within your gift. So pleased were we with this honor that we elected him to the second term, and if you want to re-elect him, we will go you one better and give him a third term.

The fact is the Builders' Exchange flatter themselves that they know a good thing when they see it, and know how to keep a good thing when they get it, and that is why my friend Hunt found himself this year embarrassed by holding two presidencies, and also accounts for my presence here in response to this toast, for with all his talents, he finds it a little difficult to assume two star parts on the same night. My friend Hunt, in the six or seven years I have known him, has several times come to me for assistance and advice in matters outside of brickmaking. He believes, and I think rightly, too, that a man who can manufacture Bedford shale into brick for six dollars a thousand and sell them for thirty does not need advice in that direction. But in matters outside of his business he is particularly modest and of inquiring mind. A couple of years ago he confided to me that his greatest ambition was to become President of the National Brickmakers' Association, and thought I, being many years his senior, could suggest the ways and means. Having the interests of society very much at heart, I told him the first thing to do was to get married, but he said that there were so many girls from California to Nova Scotia who would be disappointed (nay, broken-hearted) if he settled on any particular one that it was out of the question.

I then suggested to him that the next best thing was to be elected President of the Builders' Exchange, hitch up with Teddy Roberts, and depend upon him to touch all the necessary buttons and do the rest, and when Teddy hied himself to Fortress Monroe last February, accompanied by the greatest of all spellbinders, "Senator" Eggers, we knew to a certainty that all was over except the cheering.

Besides elevating Mr. Hunt to the position he now fills so admirably, the Builders' Exchange fills other functions here in Cleveland, and it is really about these that I am expected to speak this evening. We are an organization of about three hundred contractors and material men, who find it to their advantage to meet daily and transact their business in the more or less commodious quarters occupying the third floor of the building owned by our big and elder sister, the Chamber of Commerce.

Our dues are moderate, our policy liberal, and we welcome to our membership any reputable business man who is connected with the building interests of the city. The old trades unions, who were our great-great-grandfathers, were banded together against the common foe they found in the nobility, and the gentry by whom they were as individuals robbed and oppressed whenever opportunity presented. We are banded together for protection against ourselves; protection from the ignorance, the prejudice, from the selfishness which is bound to arise among competitors in the same line of business among men who do not know each other, and who regard every business rival as an enemy who is only awaiting an opportunity to thrust his hand deep into their pockets. This is the attitude of the builders and material men in every city where they are unorganized, this was the attitude in Cleveland before the Builders' Exchange became prominent, and, although human nature is weak, and occasionally now men will backbite, and rivals in trade will accuse others of unfairness, yet under our system this is being reduced to a minimum, and I think I do not exaggerate when I say that never before in the history of Cleveland has there grown up such a healthy atmosphere of fair competition and fair dealing as we now find among our members.

The secret of all this is acquaintance, for, take it all in all, a man who would be willing to do to the death a stranger cannot act very unfairly to the man he has sat next to at one of our dinners, or with whom he has smoked a cigar or swapped inaccuracies within the week on the floor of the Exchange.

We increase in knowledge of our business as we go along in life from personal observation, but we learn far more from the exchange of views with our fellows in the same line of work, and for this purpose the assembly room of our exchange, with its inviting view from our front windows, with the easy armchairs, suggesting repose of body, affords especial advantages.

There is great profit doubtless gained from such an annual Convention as is now being held in this city, but we are holding a like convention six days in the week year in and year out, which, although lacking in the formality and breadth of view which comes from the assembling of men from all parts of the country, has the advantage of being continuous.

I can see now the "honest plumber," after a heart to heart talk with another of the same trade, putting into practice a hint gained from that conversation in the Exchange, by which he is enabled to use forty feet of lead pipe between two places twenty feet apart, and I can see him charge for the job and collect it, too. This is what is called a "lead-pipe cinch."

Can you imagine a more beautiful sight than that of my good friend "Senator" Eggers seated at ease with his post-prandial cigar and pouring into the ears of Spencer Duty his tales of millions of brick? Can you not imagine how, with wide eyes and heightened color, the younger man takes it all in, and goes home and reports to the head of his company how, with his new down-draft ovens, Ferd Eggers burned six million of brick last week and there was not a soft brick among them all? And don't you suppose Duty wants to get some of those ovens right off?

W. H. HOAGLAND, Findlay, Ohio.

There is another feature which the Builders' Exchange fills besides being a clearing house for ideas. We have on our floor a continuous exhibit of building materials, a miniature World's Fair, not in a room set off by itself where nobody goes except they are dragged in, but right in our midst, where every builder and architect who enters our door is bound to see it.

If any man has a building device worthy of notice, if any man has a building material that is new, unique or valuable, he is invited to join the Exchange and put up a sample exhibit in our rooms, and there is no better way possible to bring them both to the attention of Cleveland's building public. If you will come over and see us you will find much of interest in your own line of business. Your President has perhaps the most notable exhibit there in the way of tile and pressed brick, and his pagoda is worth going miles to see and worth your life to lean up against. His collection of ancient Roman brick, the acquisition of which he has never fully explained, has been an object of interest to us all for these many days. Then there is Stowe-Fuller's corner, and John Kling's fine space, and the Kelly Island exhibit, that requires an Angel to look after it, and the beautiful samples of Akron roof tile that J. G. Ewert & Co. have put up. Then there is the Cleveland Brick Co.'s big wall, and last, but not least, a generous sign over the space made sacred by Colonel Eggers' occupancy, which says "Millions of Brick," and which we all (knowing the Colonel) believe is to represent his output, although we do not see them.

The Builders' Exchange has a warm place in its heart for the National Brickmakers' Association. We have given you our President and we have loaned you our most precious possession, Secretary Teddy Roberts. We have a sign over our door with letters a foot high, "WELCOME," and they mean it just as strongly as if they were six feet high.

We want you to feel while you are in the city that our home is yours, and the greatest kindness you can do us is to call upon us for any service we can render. (Loud applause.)

Toastmaster Hunt: An inquiring mind is a valuable possession. There are men who accept things simply as they are, without stopping to examine the whys and wherefores. There are thousands of workers in clay who never go below the surface in their investigations. It is our good fortune to have as a member of this Association a man of discriminating mind and rare talents in scientific research. Prof. Orton belongs to the whole State of Ohio, but we claim him more particularly as our "own." He cannot be duplicated, and is therefore all the more valuable. I am glad he is on the programme tonight, and will speak to us on "Our Association."

OUR ASSOCIATION.

By Prof. Edward Orton, Columbus, O.

Mr. Toastmaster and Ladies and Gentlemen—There are good hygienic reasons back of the selection of some speakers. You all know that it is not wise to eat too much sugar, and too little meat, nor is it well to eat too much fat and too little lean. That is the reason that Chicago manages to sell so much of her "chicken" over the country, because there is a streak of fat and a streak of lean in it. (Laughter.) I am the lean feature, I fear, in the flow of wit with which you are being regaled this evening. But I console myself with the thought that were it not for some such "lean" streaks you would all go home with mental dyspepsia. It is difficult for me to speak acceptably on an occasion of this sort. An American audience justly demands of an American post-prandial speaker that he shall have wit and humor and a facile tongue to express them, but these gifts are not given to me. But if speak I must, I am glad that I have been assigned on this topic, "Our Association," for out of the fullness of the heart the mouth speaketh.

C. W. McDERMOTT, Wellington, Ohio.

I have questioned somewhat the propriety of my selection to speak for the National Brick Manufacturers' Association. My first thought when the Secretary came to me and told me that he desired me to serve in this capacity was, "Why does he not go to an older member? I am but a new man." But, on consideration of this statement for a moment or two I began to see that old Father Time has been moving on, even though I have been too busy to note it myself. It is nine years since I first attended a Convention of this Association and gathered around the festive board with you, and in the system of chronology which has been adopted by this Association, and which was introduced by one of the members from Pittsburg, I believe I am a nine-year-old. In an Association in which the eldest is only sixteen, perhaps, after all, I may be excused for speaking.

The physiologist tells us that we do not see things with our eye; but that the eye is just a delicate little piece of machinery designed to accomplish a specific mechanical purpose. A ray of light, coming from a distant object, strikes through the lenses, through the clear, limpid liquids of the eye, finds its place finally on that wonderful panoramic mirror, the retina, and is conveyed from this in telegraphic messages back through the nerves until finally, in some remote corner of the brain, some few of the many millions of cells receive an impression. That impression, by means of purely mental processes, is finally translated into a suggestion, which we think we see. The eye sees it not, the brain sees it. The eye of the new-born babe is as perfect as yours or mine, but the brain is not yet awakened. The eye does its mechanical work, but the babe sees nothing, because its brain cells have not yet learned to interpret the many messages which the eyes are flashing back to them. If our physical vision is thus seen to be a mental process, we can understand how objects do not look alike to different people. One person cannot distinguish blue from green. Another cannot tell discord from harmony. It naturally follows that what one sees in the working of social forces and in the realm of imagination is even more diverse than in actual physical vision. Those of us who have attended these meetings for years and have witnessed the workings of this Association, do not necessarily see in them the same things. Each one has a different experience and arrives at a different conclusion. What I see in the N. B. M. A. may not be what you see, but I am going to take this opportunity to tell you what I see in the National Brick Manufacturers' Association.

I see an Association which has performed more than any other with which I am acquainted, in the way of bringing commercial unity and business harmony wherever it has met. A friendly feeling has been engendered between local competitors who before would pass each other on the opposite side of the street. I do not speak unadvisedly in this matter. Even in the town from which I come we have entertained this Association, and we have felt the benefit of the spirit which it has left among us. Before it came to Columbus, our brickmakers were each for himself—and I will not say who for the hindmost—but now they are a happy family, as any who are here will be only too glad to testify. I credit the N. B. M. A. with accomplishing this gracious task. What it has done for Columbus it has done for many other centers, not only those who have been fortunate enough to entertain the Association, but also those to whom its members have gone back after a Convention.

I see an Association which has done more than any other to build up technical co-operation in the clayworking industry. It has done its share toward the abolishing of the old "trade secrecy," the curse of progress. In the old times manufacturers used to feel that if they discovered a good way to accomplish any desired result that it was to their interest to shut their doors and prevent anyone else from getting an idea as to how it was done. But many men who have come to these Conventions have learned that more is gained in the telling than in the keeping, and that to the man who honestly attempts to give to his brother such of his store of knowledge as may be required comes an added power and insight into his own affairs which can be gained in no other way. The old adage, "Honesty is the best policy," is no truer than that other, "'Tis better to give than to receive." Apart from all ethical considerations, and just as a matter of cold-blooded business policy, the open hand and open heart pays better interest than all the selfish trade secrecy in the world. The N. B. M. A. has exercised a beneficial influence in the United States in breaking down these old barriers and teaching us that even though competitors, we are brothers still.

I see in this Association a potent influence in building up trade literature. In this day and age, when the world is growing so fast that a book is out of date almost before it is off the press, it is no longer possible in the school, or college, or university to keep up to date on the improvements which modern technology is introducing. This field is probably more closely filled by the trade journal than by any other source, because that presents a faithful mirror of the times. In it appears the latest chit-chat of every sort, the latest ideas and discoveries. Only by careful study and by careful review of what is appearing in the trade press is it possible for the technical man to keep abreast of modern exigencies. The trade literature which the National Association of brick manufacturers has brought forth occupies a unique position in the United States. For years it was practically the only repository of information along this special line. Such books as we have in the English language, I regret to say, are not generally adapted to meet the demands of modern ceramic work. Those in other languages have been written in a way so abstruse and difficult that only the patient scholar can dig out their hidden meaning. The literature which this Association has produced has filled the want of the majority of American clayworkers, and has made the Association a tower of strength in the land.

I see in this Association a potent influence of inspiration in scientific work in many ways. This influence was first manifested by founding the first school erected for the study of the clay industries. Almost ten years ago this project for such a school was first presented before this organization. There the idea found a fruitful soil, and by the ready responses made, and by the moral support, and later the financial support, the first formal step in the education of the clayworker was taken. Now, not content with one school, we have three already organized. And through the active and untiring energy of our friend, Bloomfield, we bid fair to soon have a fourth. The State of New Jersey, through his influence, has put its shoulder to the wheel, and we will soon have to welcome another full fledged ceramic school. Thus has the work initiated by this organziation waxed strong and fruitful.

Scientific investigation has also been directly forwarded by this Association, not only, as I have just described, through the agency of the ceramic schools, but also by our own Committee on Technical Investigation. This Association has contributed its money, and the time of its members, and has maintained for the last seven years a course of hard scientific investigation, which is the best work of its kind yet done. It has prosecuted scientific investigation, in which nothing is taken for granted, in which every step must be proven before it can be accepted. This is the first American association which has ever attempted to solve any of the problems of the clay industry. Even to-day, a man came to my room, with a catalogue of machinery. He represented a house which makes a specialty of turning out the highest grade of testing appliances, and he said, "I would like to show you some of the things we have." I looked at the catalogue, and saw there a picture of a brick rattler. I said, "I see you have a brick rattler." "Yes," he said, "we make and sell the standard rattler of the National Brick Manufacturers' Association." There I saw to-day the direct fruit of the work of our technical investigations. The highest authority in the field of mechanical testing appliances has taken up our recommendations as worthy of being exploited.

This Association has further stimulated scientific advance through the foundation of a branch society—The American Ceramic Society. The two organizations have no organic union; they are separately officered, and separately managed, and with somewhat separate fields of usefulness, but I hope that the American Ceramic Society will never forget that it sprang from the side of this organization. Many of its members are in common, their meeting place is in common, and their aims are in part common, and whether we will or not, we of the American Ceramic Society cannot but look back upon this organization except in the relation of child to parent. The new organization (I may be excused for saying a word in its favor, because I happen to have an intimate relation with it) is devoted almost wholly to strictly scientific work, which is only a part or a feature of the work of this organization. But whatever of credit we of the new organization may earn, we cannot help but feel that much of the credit must ultimately come back here.

I might still further elaborate the series of scientific advance which this Association has made, and of which it is the direct cause, but it would take far longer than I can give or than you would be willing to listen.

I see in this Association a powerful influence towards rare good fellowship and fraternal feeling. As one of the speakers has just said, it is difficult to hit a man after you have just shaken hands with him. It is difficult to drive a hard bargain after you have just exchanged cigars, and after we have met here, year after year, and quarreled and argued and made it up again on the floor of the Convention, we cannot help but have a warm spot for our brother clayworkers, no matter whether they think as we do about drying and burning and all the other questions we discuss. This Association has done a wonderful amount of good in bringing men together, not only in the flesh, from all parts of the country, but also in that rarer and more beautiful union of the spirit.

I used to be a brickmaker; I am now a teacher, or, as some people like to call it, an educator, but I feel that I am addressing an educative audience. Nine years ago, when first I stood up to speak before this body, the first words which rose to my lips were these: "I cannot help but feel that whether we have directly intended it, and striven for it, the work of this Association has its educative force on all of us, and through us on the country at large."

What is the motive power of this organization? Our membership is large, but I am sure the Secretary will forgive me if I say somewhat shifting. Our membership comes and goes; we depend, more or less, upon the fortunate location of our meeting place and a good year's business for the number of our membership, and many of the members do not renew from year to year. With a membership that is coming and going, as ours always has, and as it probably will, it is not possible for the rank and file to have a very intimate hand in the management of the Association. A well defined and concrete policy is necessary for the life of any organization. Where does it come from in this body? As you look over this beautiful souvenir programme, as it lies before you this evening, and see the faces of our leaders—our Purington, our Gates, our Eudaly, our Richardson, and many others whose names I might profitably mention—you see there the motive power of this organization. They are always behind its needs. Their influence, their time, their money, has always been at its service.

Back of all these, however, is the correlating influence of one man, whose patient self-sacrificing toil—consecrated labor, I call it—has never been stinted for this organization. Little he thinks what it may profit him, and much on what he may do for the cause. Without such a man this Association would have made poor headway. Such toil has been given to this Association by one of its members, and when the names are written on the honor roll of the American clayworkers, I opine that the name of Theodore A. Randall will stand well to the front. (Applause.)

As I said in my introductory remarks, this is a topic about which I could have more readily spoken than any other, but I have said, perhaps, even more than I should and taken more of your good time and attention than I have the right to ask, but in conclusion, I wish to say that I love this Association, and I hope to always see it flourish and prosper, and I wish you now to join me in a toast to the National Brick Manufacturers' Association. (Prolonged applause.)

Toastmaster Hunt: We will now be favored with a song by Mr. Francis Sadler, one of our city's well-known singers.

Toastmaster Hunt: Many good things come from Boston besides beans; for instance, that city sometimes furnishes brains, and these not alone in the heads of its infant prodigy, whose sayings and doings fill our story books. Boston is the hub of the universe and the center of all our thought; however, Bostonians sometimes dream, and that fact has led to the assignment of the subject, "Day Dreams," to the newly elected President of our Association, Mr. Geo. M. Fiske, whom I take great pleasure in presenting to this audience.

"DAY DREAMS."

George M. Fiske, Boston, Mass.

Mr. Toastmaster, Ladies and Gentlemen—In open Convention this afternoon I was referred to as a Yankee. Well, I do not object to the title. In fact, I am rather proud of it, but I have been wondering, since I sat here, whether I am really entitled to it. Some one has described a Yankee as a long-legged, slab-sided, peaked-faced, sharp-nosed specimen of humanity, who always gets the best of a horse trade and possesses an unusual degree of shrewdness. Now, as to the horse trade, I bought a horse once which might have been really worth $15, and I paid $160. Another time I paid $350 for a horse worth, perhaps, $40, and, as to shrewdness, I fear I am very deficient in that trait, for I did not discover until I sat down at this table that I was upon the programme in such a formal way. I said to the toastmaster, who was at my side, "Now, do not call upon me to respond to any formal sentiment, for I am not prepared to do so," and he at once took up this elegant menu and showed me where I was advertised to respond to the very ethereal and poetic sentiment—"Day Dreams."

GEORGE H. CLIPPERT, Detroit, Mich

Mr. Toastmaster, I cannot do it! It is too late! I shall be obliged to treat the subject as Artemas Ward did the subject of one of his lectures. He would come forward and say: "The subject of my lecture to-night, ladies and gentlemen, is 'The Babes In the Wood,'" and then he would never mention the subject till he closed the lecture, when he would remark, "And now, ladies and gentlemen, I hope you have been interested in what I have said about the babes in the wood." Among the bad habits which crown my life is one acquired several years ago. I was in a gathering of Grand Army men, and in an unguarded moment I recited a short poem, and not long after that, in another unguarded moment, I did it again. And ever since them occasionally these lapses from discretion come over me, and I commit the same offense. I feel one of these spells approaching now, but before it arrives permit me to say, As I came up the aisle my friend, Bloomfield said, "Do you know this is Lincoln's birthday?" and I replied, "Why, so it is, but it had entirely slipped my memory." I at once remembered that I had in my wallet a portion of a Lincoln poem, by Edwin Markham, the author of that remarkable poem, "The Man with the Hoe." It was written by him for the Lincoln dinner in New York two years ago, and I have asked leave of the gentleman on my left, who is to speak upon Lincoln, if I may trespass upon his subject just enough to read this poem, and he very cordially gave me permission. Now, please note how true to life is this description of our great war President.

A LINCOLN POEM.

(By the Author of "The Man with the Hoe.")

The color of the ground was in him, the red earth,
The tang and odor of the primal things—
The rectitude and patience of the rocks,
The gladness of the wind that shakes the corn,
The courage of the bird that dares the sea,
The justice of the rain that loves all leaves,
The pity of the snow that hides all scars,
The loving kindness of the wayside well,
The tolerance and equity of light * * *
So came the Captain with the mighty heart.
And when the step of earthquake shook the house
Wrenching the rafters from their ancient hold,
He held the ridge pole and spiked again
The rafters of the Home. He held his place—
Held the long purpose like a growing tree—
Held on through blame and faltered not at praise.
And when he fell in whirlwind he went down
As when a kingly cedar green with boughs
Goes down with a great shout upon the hills.

But this is not the poem which is to form my principal offense this evening. The one I had in mind was written by a poet of the far West, whose "non de plume" is "Ironquill." I believe it has never appeared in print in the East, and I presume it is new to most of those present. It is not exactly a war poem, and yet gives a whiff of battle smoke, which will be especially appreciated, perhaps, by those present, and I think there are quite a number, who "wore the blue," as I did, forty years ago.

C. W. HIATT, Cleveland, Ohio.

THE ORGAN GRINDER.

I have no great ear for music, but yet for all of that,
I always drop a quarter in an organ grinder's hat.
I welcome on the pavement that old familiar noise,
Around which there are gathered all the little girls and boys.
While solemn, sad and hungry, a-turning of the crank,
Stands a nobleman of Europe of attenuated rank.
This nobleman chews plug, and grinds with organistic glee,
A ballad of Old Ireland, the jewel of the sea.
"The most distracted country that the world has ever seen,
They're hanging men and women there for wearing of the green."
And my thoughts go back to those who went to war with me,
Who claimed a home in Ireland, the jewel of the sea.
My comrades, and my messmates, none braver or more true,
Holding aloft the Stars and Stripes, a-wearing of the blue.
Alas, far down in Dixie, their many graves are seen,
Beneath the grassy hillocks, they are wearing of the green.
Immortal little island, no other land or clime,
Has placed more deathless heroes in the pantheon of time.

And now the ancient Roman brings his music to a halt,
There are certain indications of a neighborhood revolt,
Around him whirl the girls and boys in animated glee.
Again he grinds; I catch the tune, "Der Deutcher Companie."
"Der Deutcher Companie is the bestest companie
That ever comed acrost from de old Germanie,
Der Deutcher Companie, Der Deutcher Companie."
The music carried me back to the spring of '63.
I saw a German regiment move out from our brigade,
They marched across a meadow where a hundred cannon played.
Their bugles hurled defiance! They skirmished up a slope,
Beneath a fire which gave no man the promise of a hope.
They fell like wheat, they came not back, at night no bugler played,
There was no German regiment attached to our brigade.
The world has seen thy valor, oh, land of song and wine,
Since Herman plucked the eagles from the ramparts of the Rhine.
Adown Time's lustrous colonades is seen thy martial throng,
Thy scholars and thy statesmen, oh, land of wine and song.

And now the noble Roman is asked to give a rest,
And the fires of indignation light his Romulistic breast.
He stops the crank, and gazes up, defiantly, yet mute,
While from an uuper window, there descends an ancient boot.
He dodges it and passes on, and soon this man of Rome
Begins again to turn the crank, "When Johnny Comes Marching Home."
"When Johnny comes marching home again, hurrah! hurrah!
When Johnny comes marching home again, hurrah, says I.
Oh! the women will sing and the men will shout,
And the boys and girls will all turn out;
We'll all be gay when Johnny comes marching home."
And I think again of those who went with me to war;
They knew where they were going, and what they went there for;
They knew that there was little left of present or of past,
Of hope, of home, of country, if the die was wrongly cast.
Fires smouldered on the hearthstones when the Nation called to arms;
My comrades left the factories, the foundries and the farms;
They fought the Nation's battles on the land and on the sea.
Alas, alas, no millionaire went out to war with me.
The merit of the country marched and filled the Union ranks,
The money of the country marched and filled the English banks.

But at last the war was over, and Johnny ceased to roam;
He came with bugles playing. Yes, Johnny came marching home.
Oh, outcast organ grinder, your simple music starts
The frenzy of the cyclone through the highlands of my heart.
Some scorn thine idle music, because to them there comes
No bawling of the bugles, no raving of the drums.
They hear no "boots and saddles" sounded in the midnight chill,
They hear no angry cannons thunder up the rocky hill,
They hear no canteens rattle, they see no muskets shine,
As troops sweep on at double quick to brace the skirmish line.
Go play thy ragged music of hapless sport of fate;
The ballads of the people are the bulwarks of the State,
The bugles that hang dreaming now like bats upon the wall;
They recognize the choruses that rose above the call,
And in unconscious musings those battered bugles see
The glories of our future in the centuries to be.

Toastmaster Hunt: Great men love to revert to their childhood and their days at school and college. Two of the speakers on the programme were college chums. One of them, from whom we shall hear shortly, has drifted to that wicked city of Chicago. The other is a minister who is an honor to our city, and is greatly beloved by the people he serves. No more happy choice could have been made than that of the Rev. Dr. C. W. Hiatt, of the Euclid Avenue Congregational Church, of this city, who will speak to us on the subject, "Lincoln."

"LINCOLN."

By Caspar W. Hiatt, D. D., Cleveland, Ohio.

Mr. Toastmaster, Ladies and Gentlemen: When I learned that William D. Gates was a member of this Association, I thought that I understood the significance of the word, "brick," in the title of the organization. (Laughter.)

As a retaliation upon our friend who has just encroached on my topic, I offer a few additional lines as a companion piece to his tribute to the organ grinder:

Johnnie Morgan plays the organ,
His father beats the drum;
His sister plays the tambourine,
His brother goes pom-pom-pom-pom
All alone on an old trombone.
And the music sounds so sweet,
They often get a penny to go down another street."
(Laughter and applause.)

The past five centuries are epitomized to us in the lives of five great men. In the fifteenth century we see Columbus, who widened the arena of human activity by half a world. In the sixteenth century we see Luther, who unlocked with the key of Scripture the ecclesiastical prison house, liberating faith. In the seventeenth century we see Milton, who gathered in himself the letters of Bacon, the songs of Shakespeare, the civil daring of Cromwell, and the faith of Robinson. In the eighteenth century we see Washington, George the First of the United States, who wrote with the points of his sword upon these Western lands that great word, Democracy, so clearly that George the Third of England could read it without glasses across three thousand miles of sea. (Applause.) In the nineteenth century we see Lincoln, who bore the lineage of the lowliest and the title of the loftiest member of society, impersonating the golden age, in which "mercy and truth are met together and righteousness and peace have kissed each other"—the age of liberty.

I do not wonder that Germany is about to lay a chaplet on the monument of Lincoln in Chicago. But I have wondered whether Germany fully understood the significance of the act. For by so doing she lays a chaplet on the brow of every true American, because Lincoln was the type of the highest in our civilization, the embodiment of the essential Americanism. This is the one thought which, at this late hour, I would contribute to your festival of speech, Lincoln, the representative American.

Awhile ago I saw a cartoon entitled, "Lincoln's Monument." It consisted of two cannon, meeting in the form of a Latin cross. On one appeared the name, "South," on the other, "North." Below them was the inscription, "1865." It was the noblest tribute to the Emancipator I have ever seen. I thought of those cannon as he found them. Not bound together at right angles, but pointed toward each other. Each hot and vocal and vengeful with the rage of war. Between them lay the tragedies of the Cumberland, the Mississippi, the Rappahannock and the James. I saw this rising figure in the North. I saw him take those fearful orators of battle by their brazen throats and throttle them to silence. I saw him bind them forever with their muzzles at right angles, and the chain with which he fastened them he had wrested from the limbs of slaves. And that monument represents the popular conception of our martyred President, viewing him in the superb service that he wrought for his age. We see him in all those tragic days of carnage smiling through his tears, speaking of charity when the rest of the Nation was grinding its teeth in rage; speaking of angels where the hell of war had made men demons; enduring jibes, threats, insults with the patience of a godly mother, trusting his country while bearing its scorn; finding time amid his cares to write kind words to distracted families; Lincoln giving good cheer to despondent Cabinet in homely anecdote, or urging the sublime Tanner to push things, or smiting the chain from human bodies, or kneeling with sobs before his God in prayer, or falling a martyr upon the soil he had saved from shame. All this appears to us as we contemplate this suggestive picture of the cannon and the chain.

But there is the other idea behind this popular conception, which I would mention, that Lincoln, in his character and development and loyalty, represents every true American. He stands as a type of that Anglo-Saxon quality which, in us as a nation, has been brought so forcibly of late to the attention of the world. Just now the nations are regarding us with a deference hitherto unknown. They are admitting the Anglo-Saxon supremacy and inquiring for its cause. They are saying: "The Anglo-Saxon rules America by Canada and the United States, Africa by Egypt and the Cape, Asia by India and Burmah, Australasia by Australia and New Zealand, and all Europe by his trade and industries and policies." The Spanish war was for them a play in nationality. They had whispered among themselves that the militarism of the Anglo-Saxon had declined under the burden of his civilization. They watched this war as a stage play. The curtain rang up and out came Dewey. (Applause.) They said, "This must be a mistake." (Laughter.) The curtain went up again and out came Hobson, ascending to the clouds on his own gunpowder. (Applause.) They say, "Something is wrong here." (Laughter.) The curtain went up again, and out came Schley. (Prolonged applause.) Again it went up and out came Roosevelt. And he is still coming out. (Applause and laughter.) The play was over and the nations gave up their theory of the weakness of these tradespeople of the West. They made a profound bow to the Anglo-Saxon, as if to say, "You are it." (Laughter and applause.)

Our foreign neighbors are inquiring the cause of this supremacy, and M. Edmond Demolin thinks he has found it in our individual independence and resourcefulness. He illustrates by the story of a young aristocrat of Boston, who wagered that he could start in his club, naked as when born, and, by his own shrewdness, could go round the globe in twelve months, returning with five thousand dollars in his pocket. The bet was taken. He began by polishing shoes until he earned enough to clothe himself. He then appeared on the street selling newspapers. Later he took steerage passage for England, and as he was a university graduate, earned some money as interpreter on board ship. After landing, like a true American, he began lecturing. (Laughter.) Securing a position as press correspondent for one or two journals, he started for India, taking some goods that he had purchased with his earnings. These he sold at large profit in Calcutta. Before he was half around the globe he had his five thousand dollars, and the year was only half up, and he was sorry he had not bet ten thousand dollars. (Laughter.) "This," said the Frenchman, "is the typical Anglo-Saxon." It represents Young America, who starts in life empty-handed, with only a good name and a good heart, and comes off with trophies of victory. And the historic figure who is the inspiration of this indomitable and successful Young America is Abraham Lincoln. (Applause.) He was the father of all such, and their inspiration. He wrote the great word, "Hope," across the steep path which ascends before each child of poverty. (Applause.) We remember how he matriculated in the school of toil and trial. We remember how his hand grew hard and his nature gentle in the discipline of privation, disappointment and obstacle. We remember how, far from university, he acquired its finish and equipment, working out the problems of Euclid on the back of a wooden shovel, and acquiring the art of pictured speech by compositions written on the hewn sides of logs. We remember how, by such application, he won the eulogies of his brilliant contemporaries of the East, whose writings he had never read, the Emersons and Longfellows. In short, we remember this son of nature, who, by personal force, pushed his way through every opposition to the summit of fame. He was the representative American, and stands for that strong power which has in us aroused the interest and envy of the world.

And this man is the inspiration to all America, because he himself was inspired. Among the few books which he read in boyhood, the favorite was "Weems' Life of Washington." This put an impress upon his life and wrought in him the reproduction of the lofty patriotism of the Father of His Country. These two, Washington and Lincoln, both sons of February, are inseparable in history and in the affection of a nation. We see the superb loyalty of Washington. It was loyalty to an experiment—Democracy. It was loyalty without a hope of reward. Loyalty while those who owed and had pledged to him support were defrauding his army of supplies, and abusing his good name. Loyalty that saw no sectional lines, but while John Adams was pleading in Continental Congress for Massachusetts, and Jay for New York, and Jefferson for Virginia, was folding its arms around the shivering, starving boys of Morristown and Valley Forge, and fusing them into one courageous, unfailing Americanism. Loyalty that maneuvered, assaulted, retreated, pursued and against the greatest of odds, after eight long years, conquered independence for these western shores. Loyalty that unfurled among the tawdry banners of this world the brilliant Stars and Stripes. (Applause.) And after half a century we behold Lincoln. We see him catch the banner of Washington in the hour when it seemed to be falling to the earth. We see him holding it on high through the sad and solemn, the tragic, the terrible interval from sixty-one to sixty-five—holding it there with fortitude and faith until his arm grew rigid in death, but fixing it in the heavens as perpetual as the pleiades and milky way, God's eternal stars and stripes, there forever to preserve in glorious fellowship his memory with that of Washington. (Prolonged applause.)

J. C. ADAMS, Indianapolis.

Toastmaster Hunt: At our banquet last year at Old Point a new feature was introduced, which the Cleveland committee has seen fit to perpetuate. In every business there are silent partners, or, in other words, powers behind the thrones. A man's business is generally near to his fireside. Another retiring President, Mr. Chas. F. Binns, of Alfred, N. Y., of the Ceramic Society, will handle this feature of our programme, responding to the toast, "Directors."

"THE DIRECTORS."

Charles F. Binns, Alfred, N. Y.

Mr. Toastmaster, Ladies and Gentlemen—I am continually impressed in a gathering like this with the thought that most men come entirely unprepared to speak, and they finish up with some very successful effort, and it reminds me of the story of the Dutchman who went in to purchase a clock, and after examining several kinds, he was told that "Here is one that will go eight days without being wound." He said, "Mine Gott, mine Gott, what would she do if she was wound." I have been asked to respond to the toast, "Our Directors." I feel totally unable to do so. By some misapprehension, I thought I was down to propose the sentiment of "Our Directors," the response to be left to abler hands, but if it be the proposition or the sentiment, I do it as best I can.

By the way, Mr. Toastmaster, while you are perfectly correct that I am an ex-President of the Ceramic Society, don't forget I wear this badge also, and I am equally proud of my membership in the N. B. M. A.

Our Directors: Those, who taking advantage of the plasticity of our youthful minds, proceed to form them into a character, into habits; those to whom every mother's son of us look for the earlier influence impressed upon our plastic minds—and may I suggest sometimes upon our suffering bodies, but the influence which these directors have over us has changed in a measure, and it is quite remarkable that while it differs in regard to the personnel of the director, the character, the method, scarcely varies throughout life. You may, for example, take the case of the infant boy, who has for a short time reigned as king in his own right in the nursery. He scarcely goes out in the world before he places himself under the direction of some mite of a school girl, who holds him in undisputed sway until she can find higher and nobler worlds to direct.

Notwithstanding this experience he straightway attaches himself to another one, generally one belonging to the age of his own mother, and after indulging in this for some time, he breaks away, probably because he has reached the conclusion that the law of consanguinity forbids that a man shall marry his own grandmother. But his liberty is of short duration, for he straightway seeks out a director of suitable age and proceeds to place himself under her direction for the term of his natural life. There are two methods in common vogue, each with the usual variation. They may be classed as the "suaviter in modo" and the "fortitor in re," which we may characterize as the sweet and the strong.

PROF. CHAS. F. BINNS, Alfred, N. Y.

I give you an illustration of the former. This morning we were in session in another place, as the parliamentary phrase goes, and there were assembled a number of men who were puzzled to follow the ramifications of a burrow, which one of their number was digging for them. In the midst of them was a man with the features of a Seneca chief, a tall, handsome man, but of rather an austere countenance. Presently the door opened, a slight figure in black appeared and lifted a silent finger, and the tall man immediately got up and went out. She took him by the buttonhole, the door closed, and the rest of that drama must be left to your imagination. That was the method of sweetness. I will illustrate the second by telling you a little story. There was, I believe it was in Allegheny county, of which I have the honor of being an inhabitant, a farmer who was away from home and wished to communicate with his wife. They had recently introduced country telephones, and a friend suggested that he could telephone to his home town and get his wife to come down to the store and talk to her. He thought there would be no harm to try the experiment, and he accordingly went to an exchange and waited for a call. Then he was told to step into a booth and talk to his wife. He stepped to the receiver and lifted it to his ear, and just at that moment lightning struck the wire. Picking himself up, he remarked: "Them's wonderful inventions. That's Hannah, sure." That was the "fortiter in re."

There is another point I want to mention. You will notice that we were notified that we were to make a start to the brickyards to-morrow at 9:30. Now mark the subtlety of the directors who have taken charge of the business. They wait until they see us safely out of the city before they start, at 9:45, on their trip. It is a pity they did not give us a few nursemaids to take care of us.

When I first met our friend, Prof. Orton, I was impressed, as you all have been, with his personality. I liked to hear his boys call him "'Fessor"—whether they meant con-fessor or pro-fessor, they did not say; probably it is a compromise between pro and con. Now, we can see in our Orton an ideal director of another sort, but last summer the mystery was revealed, for we met in Buffalo a brisk, attractive little lady, who is evidently the director of a director—we may call her the creme de la creme of the ceramic world.

Our Secretary, Randall, is exceedingly fortunate in that he has two directors, one in the office and one at home, to say nothing of a charming daughter, who, if I know anything of American girls, directs the whole business.

The American woman, it is said, carries all before her, and she is beginning, like Alexander, to sigh for more worlds to conquer. I notice she is rapidly conquering the National Brick Manufacturers' Association, and if we go on at this rate there will be no room for the men at all, and it seems to me we will have to draw the line somewhere if we are to meet together. Max O'Reil said that the American woman expects a triumphal arch built over every doorway through which she expects to pass, and he adds, "She gets it, but, moreover, she deserves it."

But it becomes us not to treat this subject altogether in jest. We all acknowledge that without our feminine directors we would be pretty badly off, for her direction is always toward that which is higher and nobler. Who is there among us who has not reached home, weary and tired, to find our troubles and worries dispelled by the love and solicitude of the fireside? Who is there who has not taken some business worry to the director and found that with her intuitive insight she has cleared all away, and we recognize in every case that the influence has been on the side of that which is highest, noblest and best.

> "For woman is not undeveloped man.
> But diverse, could we make her as the man
> Sweet love were slain; his dearest bond is this:
> Not like to like, but like in difference.
> Yet in the long years, liker must they grow—
> The man be more of woman; she of man.
> He gain in sweetness and in moral height,
> Nor lose the restling thews that throw the world;
> She mental breadth nor fail in childward care,
> Nor lose the childlike in the larger mind,
> 'Till, at the last, she set herself to man
> Like perfect music unto noble words."

(Loud applause.)

Mr. Sadler will now favor us with another solo.

Toastmaster Hunt: I know that we have all been awaiting with pleasant anticipation the next toast. If there is one member of the N. B. M. A. who really shines in post-prandial efforts it is our genial Mr. Gates, of Chicago. I will not attempt any puns on his name, for the supply has long since been exhausted. I will ask him to stand up and allow the ladies to smile upon him and the gentlemen to admire him.

"JUST A BUTTONHOLE TALK."

W. D. Gates, Chicago, Ill.

Mr. Toastmaster, Ladies and Gentlemen—If there is any one thing that I admire more than another, it is those large fragrant bunches of carnations that the toastmaster throws with such grace. This was very unexpected to me. I knew I was coming on all right—I arranged that beforehand—but when I glanced at this programme I thought I was down for a basso solo. I never have been requested to sing a basso solo, and I am afraid now I never will. I listened with much pleasure to the eloquent remarks of the representative of the city of Cleveland as he pictured the beauties of their great Commonwealth and the many great men who were born in this State—I was born here myself; most of us were. (Laughter.) I listened with delight when he told of the policemen here who wear full dress suits, and what splendid facilities they have down at the city hall, but when he spoke of the street cars with three-cent fare I turned to my silent partner and said, "Here we rest." (Laughter.)

I will have to beg Mr. Sibley's pardon for using the name of his State. We have been getting our rest in his State. We have a little association which meets down there, and we call ourselves the Sons of Rest. We have only one regulation in that organization, and that is that a man found doing anything is fined, and no man has ever yet been fined. My silent partner has just come up from there—she is my banker. You know we all have to have a bank. I remember a man once said that as soon as a man found a clay bank, the next thing to do was to get a national bank and connect the two. (Laughter.) I want to be candid with you. I never have been anything else with you; it would not do any good to be anything else. Of course, I hate to mention family matters, but I have spoken of my silent partner, and she has been in the South, in the State where we take our rest, and she has been resting and reading fiction—I must acknowledge it, she has been reading fiction—and I have been up North working hard and writing the fiction for her to read. (Laughter.)

A good many years ago (I always have to go back), when I first knew Randall, he was even then doing missionary work and running people into trouble. He inveigled me to Indianapolis to a tilemakers' convention. It was the first convention I had attended there, or anywhere else. He had, with his winning way, coaxed me on the programme, and put me down for the evening session, thinking he would try me when only a few were there and see how it would work. I remember I went up into the convention hall in the afternoon, after they had got started, and Randall came down to me and said somebody who was down for the afternoon programme had been called away, and he wanted to put me on, and I knew he would if he wanted to. Well, at this interesting moment I was introduced to a machine man. Those are the men you usually meet at a convention (but that is another story), and we were, as people usually do in cases of this kind, carrying on a whispered conversation while the business of the convention was going on. He thought he had never seen me at a convention, and he recognized that I was a good subject for information, and he said: "You can't learn anything from these darned fools that get up and read papers, but you get some fellow in the lobby of the hotel and you buttonhole him, and you will learn something, but these frauds that talk at the convention"—and just then they called "Gates," and I went up to do some of this talking. (Laughter.) Of course, it was embarrassing, but it conveyed the impression that has remained with me all these years. I have been somewhat connected with buttonhole operations myself. Of course, I have been expected to keep my ears open and my mouth shut. I do not want to detain you long, but I want to say that, much that you have heard that has been accomplished in our Conventions, that it does not begin to give the history of the benefits of the organization. No history can ever be written that will give the vast benefits that have accrued from these buttonhole talks in the lobbies and corridors, that occur between the sessions of the Convention. There is no way of counting up the vast amount of good that is gained by talking with men in the same business, heart to heart and hand to hand, giving freely of their experiences in an off hand manner, each trying to repay, with interest, all the benefits he had already received.

I do not want to dwell on this. As I got up to talk, I heard a small voice say, "Don't say much." I have been doing a good deal of explaining the last week, and for fear I will have to do more, I am going to quit right here. (Applause.)

Toastmaster Hunt: The last number on the formal list for this evening is that of "Progress and Prosperity," assigned to our Southern representative, the man who holds the purse strings of this Association, and whom I know we will all be glad to hear from, Mr. J. W. Sibley.

"PROGRESS AND PROSPERITY.

By J. W. Sibley, Birmingham, Ala.

Mr. Toastmaster, Ladies and Gentlemen—Half a century ago, "in the good old days which are not forgotten, when Dixie land was a land of cotton," with its fertile soil and the millions of slaves, there lived a race of land owners almost feudal in their possessions and wealth. Naturally there prevailed a feeling of ease and contentment over the state of affairs, and such efforts as were made towards progress met with little favor and less encouragement.

It is not my purpose to-night to discuss the causes that led up to the civil war, or the relative merits of the contestants. The arbitrament of the sword is on the pages of history. Suffice it to say that when the hero in gray turned his face homeward from Appomattox there seemed nothing of hope before him. He found his fields devastated, and in many cases his home in ashes. Did he sit down in despair and weep over the elegance of the past, forever lost and gone, and bemoan the fate that had befallen him? No!

Through the generosity of his magnanimous conqueror, that peerless and gallant son of Ohio, General Ulysses S. Grant, he was allowed to retain his horse and accoutrements, which enabled him to till the soil, and with the help of wife and mother, than whom no nobler nor more devoted race of women ever lived, he raised his first crop and with determination and zeal faced his changed conditions. No longer could he command the services of his former slaves, though, to their credit be it said, some refused to desert "ole marse and missus" in their hour of need.

Having sworn allegiance anew to the flag, not even the fires of reconstruction could cause his loyalty to waver.

History is replete with proofs of this, and when the call to arms against a common foe was made by our commander-in-chief, the lamented and beloved William McKinley, the Southerner proved his loyalty by his acts on land and sea. Sire and son both proved themselves worthy of the confidence manifested by our President, who, more than any other man, by his life brought about the feeling of fraternity that exists in our great country, and by his death cemented it in a way never to be dissolved.

Where cotton alone had been king, we now see this Southland filled with diversified industries and the treasures of earth uncovered by pick and shovel, and by science and art made into the finished product.

Twenty years ago Alabama produced a small amount of iron and coal. To-day we see the output reach the millions of tons, until she ranks fourth in the list of States in coal and iron.

Within my memory Birmingham was a small way station of a few hundred souls. To-day a metropolis of 60,000, magnificent residences and buildings, including some skyscrapers, paved streets (mostly of vitrified brick), mammoth plants, bidding fair to rival Pittsburg and Cleveland; one of the finest public school systems in the country, with elegant buildings for white and black, but supported almost wholly by taxes paid by the whites; a street railway trust, thoroughly up-to-date, even when viewed from an Ohio standpoint; seven great trunk lines of railway, two of which originate from your Queen City of Cincinnati, but though starting in different directions, were obliged to come together again and cross at Birmingham before wending their course to the Gulf of Mexico.

All this greatness has not come to us because, as some one has said, we make pig iron and steel for a living. We have extensive plants for making building brick, fire and paving brick, and though we came to Columbus, O., for the press brick in our beautiful new city hall, surely the time is not far distant when from our clays and shales will be made the finer grade of clay wares and the pipes for our sewers.

What I have said of Birmingham, Ala., is true in a large measure of the other Southern States. Time forbids my referring at length to the marble and gold industries of the Carolinas, the fruit, fertilizer and naval stores of Georgia and Florida, and the great oil gushers of the other States. You will have to come and see them for yourselves.

A brief anecdote and then I am done. A few years ago the armored cruiser Montgomery lay in the harbor of Mobile. Governor Jones, the Democrat recently appointed a Federal judge by our honored President, Theodore Roosevelt, went down with a party to present a silver service. After the presentation one of the party was asked by the captain to propose a toast to "Our Country." He said: "Thirty years ago a young soldier in Lee's army returned to his home in Alabama. He would never have believed it if a prophet had told him that in after years he would present a silver service to a ship in the United States navy as a token of love and loyalty from the people of Montgomery." Turning to the captain, he said: "This is the ship." Pointing to Governor Jones, he said: "There is the man, and that is Our Country." (Applause.)

Mr. T. A. Randall: Mr. Toastmaster, Ladies and Gentlemen—I shall not indulge in any remarks at this late hour, but, instead, suggest that we conclude the evening's entertainment with this toast, "May the chain of good-fellowship wrought by the National Brick Manufacturers' Association never lose a link."

The toast was applauded, and the assembly was at once transformed into an informal conversational, and the orchestra played on. Mr. Hunt and the other members of the local committee were warmly congratulated on the great success of the banquet.

Ex-President Eggers' Gratitude.

Dear Randall:

I cannot find words to express my sincere appreciation of the sympathetic action taken by the N. B. M. A. touching the illness in our family. I wish to thank you with a full heart for your thoughtfulness in this matter, which I can assure you rendered less distressing my forced absence from the Convention. To Mr. Purington and to all the delegates who adopted the resolution inclosed by you I desire to express the gratitude of every member of our family, and to say this token of filial regard is indeed reciprocated most truly by us.

With best wishes for the success of our noble organization. I remain,

Yours respectfully,

Cleveland, February 22, 1902.

T. H. EGGERS.

LIST OF MEMBERS N. B. M. A., 1902.

Chattahoochee Brick Co.........Atlanta, Ga.
The Atlanta Terra Cotta Co....Atlanta, Ga.
The Augusta Brick Co.........Augusta, Ga.
Alton Paving, Building & Fire Brick Co ....,Alton, Ill.
Anderson Foundry & Machine Works ......:..................Anderson, Ind.
George M. Stedman..............Aurora, Ind.
J. H. Barry.....................Atchison, Kan.
J. F. Lewis.....................Addison, Mich.
D. S. Hildebrand.............Asheville, N. C.
Hubert Somers..........Atlantic City, N. J.
Charles F. Binns..................Alfred, N. Y
McCausland Bros.,....................Akron, O.
H. B. Manton.........................Akron, O.
Samuel Cooper......................Akron, O.
H. B. Camp............................Akron, O.
A. Hoover (Fultonham Brick Co.).Axline, O.
D. C. Cawley...................Allegheny, Pa.
Jas. L. Whyte..................Allegheny, Pa.
C. H. Yohe...................Alexandria, Va.
W. H. Carter...................Appleton, Wis.
John W. Sibley............Birmingham, Ala.
J. R. Copeland............Birmingham, Ala.
M. E. Jacobs.....................Berlin, Conn.
George E. Green...............Berlin, Conn.
The Donnelly Brick Co.........Berlin, Conn.
S. H. Alsip......................Belleville, Ill.
Warren Wayne Ittncr.........Belleville, Ill.
O. W. Dunlap..............Bloomington, Ill.
J. M. Elder.................Bloomington, Ill.
George H. Drew.............Blue Island, Ill.
W. H. Swett.................Blue Island, Ill.
Granite Brick Co., The.......Burlington, Ia.
McRoy Clay Works..............Brazil, Ind.
T. Bishop..........................Bishop, Ky.
J. Parker B. Fiske............Boston, Mass.
George M. Fiske...............Boston, Mass.
The Spiers-Fish Co............Boston, Mass.
Frank G. Evatt.................Boston, Mass.
Edward W. Emerson.........Boston, Mass.
Arthur D. Rogers..............Boston, Mass.
George L. Twitchell..........Boston, Mass.
New England Brick Co.......Boston, Mass.
Baltimore Brick Co..........Baltimore, Md.
Charles H. Classen..........Baltimore, Md.
Jacob Klein...................Baltimore, Md.
E. V. Donelson...............Baltimore, Md.
Chas. G. Edwards............Baltimore, Md.
Seely & McCord.......Benton Harbor, Mich.
S. J. Monroe...............Butte City, Mont.
Brian J. Dunn....................Bangor, Me.
William H. Brush.............Buffalo, N. Y.
Jno. H. Black..................Buffalo, N. Y.
E. E. Gorton....................Buffalo, N. Y.
George W. Schmidt...........Buffalo, N. Y.
V. H. Whitney..................Buffalo, N. Y.
Cling-Surface Mfg. Co........Buffalo, N. Y.
F. W. Haake....................Buffalo, N. Y.
S. C. Brush.....................Buffalo, N. Y.
G. M. Springer.................Buffalo, N. Y.
Edwin Brockway............Brockway, N. Y.
C. A. Bloomfield.............Brooklyn, N. Y.
Chas. Graham................Brooklyn, N. Y.
P. F. Jamieson..................Batavia, Ohio
Geo. O. Robinson....................Bellaire, O.
W. W. Reehl........................Bucyrus, O.
R. G. Ferguson.....................Bucyrus, O.
Alex. R. Batley.....................Bucyrus, O.
George H. Bruns.....................Brecon, O.
R. R. Hice.................Beaver Falls, Pa.
Reese, Hammond & Co.........Bolivar, Pa.
L. R. Berkey.........................Bolivar, Pa.
T. M. Berkey.........................Bolivar, Pa.
Hugh J. Phillips.............Brick Haven, Va
L. C. Besley..............Council Bluffs, Ia.
George J. Walters...........Chatsworth, Ill.
E. M. Pike..........................Chenoa, Ill.
D. V. Purington....................Chicago, Ill.
W. D. Gates........................Chicago, Ill.
Charles Bonner.....................Chicago, Ill.
Thomas Moulding Co...........Chicago, Ill.
H. J. Flood.........................Chicago, Ill.
W. L. Jacoby.......................Chicago, Ill.
Harrington & King Perforating Co ....Chicago, Ill.
F. Lehmann.........................Chicago, Ill.
S. S. Kimbell........................Chicago, Ill.
John J. Moroney...................Chicago, Ill.
P. L. Simpson.......................Chicago, Ill.
Tiffany Enameled Brick Co.....Chicago, Ill.
Melvin L. Emerich.................Chicago, Ill.
Fritz Wagner.........................Chicago, Ill.
J. H. Gray............................Chicago, Ill.
D. W. Cummins.....................Chicago, Ill.
E. H. Moore..........................Chicago, Ill.
Windsor & Kenfield Pub. Co....Chicago, Ill.
Chicago Fire Brick Co..........Chicago, Ill.
L. D. Rogers........................Chicago, Ill.
E. C. Kimbell........................Chicago, Ill.
L. D. Binyon.........................Chicago, Ill.
A. J. Kautz...........................Chicago, Ill.
E. A. Glockson........................Chicago, Ill
The Barron Dryer Co...........Chicago, Ill.
H. B. Skeele............Chicago Heights, Ill.
Otto Hensel............Chicago Heights, Ill.
W. C. Mitchell.........Chicago Heights, Ill.
J. W. Robb...........................Clinton, Ind.
I. C. Wheeler.....................Carthage, Mo.
Walter Clark................Clarksdale, Miss.
Hervey Haigh.....................Catskill, N. Y.
Hubert Solloway..................Catskill, N. Y.
F. A. Kummer.....................Catskill, N. Y.
M. E. Gregory....................Corning, N. Y.
F. R. Hyman................Charlotte, N. C.
The Bonnot Co..........................Canton, O.
The Cleveland Brick Co..........Canton; O.
G. B. Willis..............................Canton, O.
W. A. Eudaly......................Cincinnati, O.
S. G. Burt..........................Cincinnati, O.
J. W. Hornsey......................Cleveland, O.
Spencer M. Duty...................Cleveland, O.
C. M. Bassett..................Cleveland, Ohio
H. C. Bradley.......................Cleveland, O.
J. N. Battenfeld....................Cleveland, O.
Andrew Duty......................Cleveland, Ohio
G. Greise...........................Cleveland, Ohio
Dover Fire Brick Co...........Cleveland, O.
Fred E. Frey.........................Cleveland, O.
Geo. S. Hanford.................Cleveland, Ohio
C. B. Stowe...........................Cleveland, O.
C. S. Bigsby.......................Cleveland, Ohio
Jno. H. Wilson.....................Cleveland, Ohio
Ohio Ceramic Engineering Co.Cleveland, O.
F. H. Eggers.........................Cleveland, O.
Wm. H. Hunt (Clevcland Hy. Press Brick Co.........................Cleveland, O.
Atlas Car and Mfg. Co..........Cleveland, O.
F. B. Many...........................Cleveland, O.
W. D. Richardson..................Cleveland, O.
Cleveland Car Co..................Cleveland, O.
Prof. Edward Orton, Jr........Columbus, O.
The Ironsides Compound Co..Columbus, O.
Edward W. Dow...............Columbus, Ohio
The Jeffrey Mfg. Co............Columbus, O.
L. G. Kilbourne.....................Columbus, O.
Chas. F. Harrison...........Columbus, Ohio
Capital City Brick Co........Columbus, Ohio
M. P. Street.........................Columbus, O.
S. V. Peppell........................Columbus, O.
A. V. Bleininger....................Columbus, O.
Adam Schneider....................Columbus, O.
D. C. Meehan........................Columbus, O.
J. W. Chandler.................Collinwood, Ohio
The Harper - Norton Shale Brick Co ....Conneaut, O.
G. B. Pike.............................Conneaut, O.
The Keller Brick Co..Cuyahoga Falls, Ohio
G. E. Penn...............Chandler, Okla. Ter.
Alex. T. Taylor..........Cariton Place, Ont.
Clearfield Clayworking Co....Clearfield, Pa.
G. A. Guignard..............Columbia, S. C.
C. G. Guignard..............Columbia, S. C.
C. E. Negiey.......................Daleville, Ind.
Frank W. Butterworth.........Danville, Ill.
Leader Manufacturing Co......Decatur, Ill.
D. C. Haeger..........................Dundee, Ill.
J. B. McGorrisk...............Des Moines, Ia..
L. Aulmann......................Des Moines, Ia.
American Blower Co...........Detroit, Mich.
George H. Clippert & Bro....Detroit, Mich.
Jacob Daniel.........................Detroit, Mich.
Jno. S. Haggerty...................Detroit, Mich.
Walter J. Haycs.....................Detroit, Mich.
The F. H. Wolf Brick Co.....Detroit, Mich.
H. C. Weideman (Huetteman & Cramer Co.).......................Detroit, Mich.
L. D. Haggerty......................Detroit, Mich.
F. B. Stevens.........................Detroit, Mich.
Delbert C. Morris...................Detroit, Mich.
Thomas Bros. Co...................Detroit, Mich.
A. Wagner & Son..........Dearborn, Mich.
Walter E. Hilton.............Dunkirk, N. Y.
C. T. Fitzgerald..................Durham, N. C.
Teigler Bros........................Dayton, Ohio
The C. W. Raymond Co...........Dayton, O.
S. A. Williams..................Darlington, Pa.
Ben. H. Richards...........Edwardsville, Ill.
F. R. Carter..................East Peoria, Ill.
F. W. H. Hammerschmidt....Elmhurst, Ill.
John C. Boss.........................Elkhart, Ind.
H. C. Kleymeyer (First-ave. Brick & Tile Co.).....................Evansville, Ind.
F. G. Thompson........Elizabeth City, N. C.
W. F. Tallman..........Edmonton, N. W. T.
Henry J. Wheal...........East Cleveland, O.
George S. Cox............East Liverpool, O.
Robert Twells........................Elyria, Ohio
Frank J. Halbeisen...................Erlin, O.
I. M. Justice............................Erie, Pa.
H. C. Dunn.............................Erie, Pa.
T. J. Paradine..........................Erie, Pa.
Howard L. Hix..................Frankfort, Ind.
T. C. Lundy..................Farmingdale, L. I.
C. E. Schildknccht............Frederick, Md.
E. A. Poe....................Fayetteville, N. C.
W. H. Hoagland........................Findlay, O.
D. M. Potter............................Fremont, O.
Thos. A. Bichl...................Fremont, Ohio
R. M. Matson, Sons & Co..Falls Creek, Pa.
Frost Manufacturing Co......Galesburg, Ill.
W. S. Purington...............Galesburg, Ill.
Will J. King..............Grand Blanc, Mich.
D. P. Delong...............Glens Falls, N. Y.
Frank E. Wiles..........Grassy Point, N. Y.
Wm. P. Alsip............Grand Forks, N. D.
Jno. Dinnie..............Grand Forks, N. D.
E. M. Freese & Co....................Galion, O.
B. E. Place..............................Galion, O.
William Finnegan..........Green Bay, Wis.
Geo. N. Dickerson (Standard Brick Co.) ....Hartford, Conn.
James F. Mock...........Hartford City, Ind.
F. W. Heidenreich..................Hedrick, Ia.
Kleymeyer & Klutey Brick & Tile Co ....Henderson, Ky.
Charles H. Bray................Helena, Mont.
R. G. Eisenhart...........Horseheads, N. Y.
Philip Goldrick...........Haverstraw, N. Y.
C. H. Forry......................Hanover, Ohio
J. W. Joncs.....................Haydenville, O.
W. A. Stephens...........Hammond, W. Va.
Henry W. Carter..............Highcliff, Wis.
T. A. Randall & Co.........Indianapolis, Ind.
C. & A. Potts & Co.........Indianapolis, Ind.
Robert Elliott (Standard Dry Kiln Co.) ....Indianapolis, Ind.
H. C. Adams................Indianapolis, Ind.
Chandler & Taylor Co.....Indianapolis, Ind.
L. P. Battefeld.............Indianapolis, Ind.
H. Wirsching (Standard Dry Kiln Co.)........................Indianapolis, Ind.
Justus C. Adams..........Indianapolis, Ind.
James W. Hensley.........Indianapolis, Ind.
Sheridan Brick Wks. (O. H. Root, Gen. Mgr.)...............Indianapolis, Ind.
W. W. Winslow.............Indianapolis, Ind.
John McKay (National Dry Kiln Co.) ....Indianapolis, Ind.
Henrich Ries.......................Ithaca, N. Y.
Fred G. Adler....................Jackson, Mich.
George H. Morton.........Jewettville, N. Y.
Ernest S. Yates............Johnsonburg, Pa.
Alfred Yates................Johnsonburg, Pa.
Jefferson Brick & Tile Co...Jefferson, Wis.
Horace D. Payne.........Kensington, Conn.
John K. Connelly.........Kensington, Conn.
J. M. Leach..........................Kokomo, Ind.
F. E. Dickinson.............Kendallville, Ind.
J. W. Barncy...............Kansas City, Mo.
Walter S. Dickey..........Kansas City, Mo.
William W. Taylor.........Kansas City, Mo.
Shinnick & Massman......Kansas City, Mo.
Henry Hasbrouck..........Kirksville, N. Y.
G. W. McNees...............Kittanning, Pa.
J. F. Scott & Son..........Knoxville, Tenn.
Jas. McNeen.....................La Junta, Col.
William Hammerschmidt......Lombard, Ill.
M. C. Meigs......................Lafayette, Ind.
Mitchell Brick Co.......Lawrenceburg, Ind.
George T. Howe.........Leeds Junction, Me.
Wm. Mahanna.......................Lenox, Mass.
Gustav Voelcker............Lancaster, N. Y.
Henry Martin B'k Mach. Mfg. Co ....Lancaster, Pa.
Jas. P. Martin....................Lancaster, Pa.
John Sailes...............Lawrenceville, Va.
A. Magoon..............................Logan, O.
Thew Automatic Shovel Co........Lorain, O.
Adams Bros.—Payne Co....Lynchburg, Va.
National Paint and Mangenese Co.............................Lynchburg, Va.
C. W. Williams.................Mansfield, Ark.
J. S. McCannell...........Milton, Ont., Can.
James W. Tester..............Montreal, Can.
J. W. McMillan............Milledgeville, Ga.
John Salgue..........................Macon, Ga.
Stratton Brick Co...................Macon, Ga.
O. T. Dennison (Mason City Bk. & Tile Co.)......................Mason City, Ia.
Isaac Hardy.......................Momence, Ill.
Christopher Roeske.....Michigan City, Ind.
B. W. Bennett.......................Muncie, Ind.
John D. Mock........................Muncie, Ind.
George M. Hodges............Meridian, Miss.
L. C. Moore.......................Memphis, Mo.
J. J. Hoffman............................Milan, Mo.
P. J. Connell..................Muskegon, Mich.
F. G. Hoffman.................Metuchen, N. J.
Marion Steam Shovel Co..........Marion, O.
C. H. Carpenter............Martin's Ferry, O.
The Canton & Malvern F. B. P. Co ....Malvern. O.
Malvern Clay Co................Malvern, Ohio
Robert H. Evans..................Massillon, O.
Geo. J. Markley...........Mineral City, Ohio
John T. McIntyre...........McKeesport, Pa.
H. E. Fredericks.................Mill Hall, Pa.
Robert A. Speed...............Memphis, Tenn.
J. P. Cahoon.......................Murray, Utah.
David Stephens...................Madison, Wis.
L. H. Taylor....................Milwaukee, Wis.
Henry Herman.................Milwaukee, Wis.
Peter L. Youngren..........Milwaukee, Wis.
Geo. J. Schwarz..............Milwaukee, Wis.
Clifford Chase.................Milwaukee, Wis.
S. J. Kane.......................Milton, W. Va.
E. S. Morse...............New Britain, Conn.
R. Clifford Merwin......New Britain, Conn.
William P. Felt..........New Britain, Conn.
Elford P. Trowbridge....New Haven, Conn.
H. E. Doty..................New Haven, Conn.
J. Wheaton Stone.........New Haven, Conn.
Ezra D. Fogg..............New Haven, Conn.
W. L. Davis & Co........New Haven, Conn.
Eastern Machinery Co...New Haven, Conn.
Frank L. Stiles..........North Haven, Conn.
F. H. Brockett..........North Haven, Conn.
W. A. Bailey...........Northampton, Mass.
R. C. Penfield...............New York, N. Y.
Orrin D. Person.............New York, N. Y.
Pfotenhauer & Nesbit......New York, N. Y.
Meeker, Carter & Booream.New York, N. Y.
W. A. Lombard.............New York, N. Y.
Robin Main..................New York, N. Y.

Carl E. A. Trommer........New York, N. Y.
Ohio Mining & Mfg. Co....New York, N. Y.
E. J. Hermans..............New York, N. Y.
Henry A. Maurer..............New York City
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R. C. Brown....................Oshkosh, Wis.
A. Brewster..................Pine Bluff, Ark.
A. W. Walton...................Princeton, Ill.
Robert Nesch..................Pittsburg, Kan.
Thomas H. Gwynne..........Pittsburg, Kan.
H. W. Katterjohn...............Paducah, Ky.
Melvin Hamblet.................Portland, Me.
A. R. Root...................Princeton, N. J.
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J. D. Fate & Co.................Plymouth, O.
Jno. Peebles.................Portsmouth, Ohio
A. C. Giveler.......Pine Grove Furnace, Pa.
J. H. Chambers.............Philadelphia, Pa.
William Conway............Philadelphia, Pa.
T. B. McAvoy...............Philadelphia, Pa.
M. J. Carroll................Philadelphia, Pa.
H. J. Roth...................Philadelphia, Pa.
Frank B. McAvoy..........Philadelphia, Pa.
George W. Sharer..........Philadelphia, Pa.
E. Webster & Nephew.....Philadelphia, Pa.
William McCay.............Philadelphia, Pa.
D. Charles Murtha.........Philadelphia, Pa.
Mack Mfg. Co...............Philadelphia, Pa.
C. B. Sharer.................Philadelphia, Pa.
Sankey Bros......................Pittsburg, Pa.
Phillips & McLaren............Pittsburg, Pa.
W. D. Henry......................Pittsburg, Pa.
D. J. Kennedy....................Pittsburg, Pa.
S. C. Martin......................Pittsburg, Pa.
A. A. Hersperger...............Pittsburg, Pa.
Evan Jones.......................Pittsburg, Pa.
W. R. Herschperger...........Pittsburg, Pa.
Central Brick Co...............Pittsburg, Pa.
W. B. McHenry...................Pittsburg, Pa.
W. W. Whiting...................Pittsburg, Pa.
Darlington Brick & Mining Co ....Pittsburg, Pa.
William Flinn.....................Pittsburg, Pa.
G. F. Monfort.....................Pittsburg, Pa.
T. B. Freeman....................Pittsburg, Pa.
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W. W. Parry........................Rome, N. Y.
C. A. Shultz....................Rondout, N. Y.
Jay Terry.......................Rondout, N. Y.
Albert Terry....................Rondout, N. Y.
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Montello Brick Co................Reading, Pa.
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Russell Parker..................St. Louis, Mo.
R. F. Grady.......................St. Louis, Mo.
J. M. Williams..................St. Louis, Mo.
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Lemon Parker....................St. Louis, Mo.
George F. Speer.................St. Louis, Mo.
Otto C. Oehler...................St. Louis, Mo.
W. P. Grath.......................St. Louis, Mo.
Fernholtz Brick Mach'ry Co..St. Louis, Mo.
J. L. Green........................St. Louis, Mo.
Hydraulic Press Brick Co....St. Louis, Mo.
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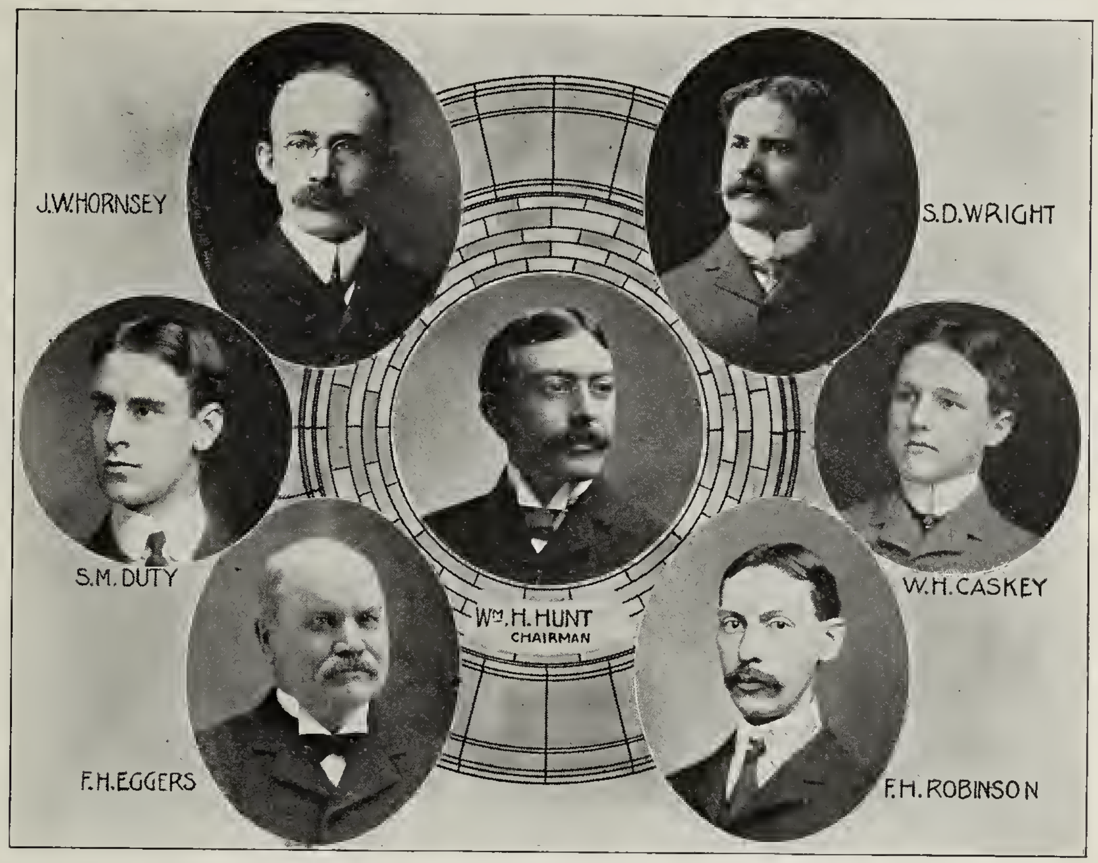
J. Frank Plumb..............Syracuse, N. Y.
James L. Breed..............Syracuse, N. Y.
William Cannon, Jr..........Syracuse, N. Y.
W. F. Fisher...............South River, N. J.
Edgar Bros.' Co............South River, N. J.
A. J. Darbyshire........................Sabina, O.
C. W. Turner..................Sciotoville, Ohio
S. M. Gould......................Shawnee, Ohio
R. E. Kelley......................Shawnee, Ohio
Charles Slattery................South Park, O.
George J. Fickes..............Steubenville, O.
J. A. Francis....................Shamokin, Pa.



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E. E. Klooz....................Youngstown, O.
Chas. M. Crook...............Youngstown, O.
Zeeland Brick Co..............Zeeland, Mich.
T. B. Townsend Brick & Con. Co ....Zanesville, O.
Ross C. Purdy...................Zanesville, O.
R. C. Burton.....................Zanesville, O.
E. N. Hatcher.................Zanesville, Ohio
R. H. Rutherford.............Zanesville, Ohio
R. L. Queisser.................Zanesville, Ohio
American Encaustic Tiling Co.Zanesville, O.

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THE EXHIBITION ROOM.

THE DISPLAY of clayworking machinery, brick and tile yard supplies and trade literature in the exhibition room was the largest and most attractive ever made in connection with a Convention. The local committee in charge of this department deserve great credit for the masterly manner in which their duties were performed. Mr. S. A. Williams, Jr., Mr. W. E. Ellenberger and Mr. A. A. Davis each deserves a medal for services rendered in addition to the vote of thanks tendered by the Association. They were untiring in their efforts to accommodate exhibitors, and they did not stop at that, but saw to it that the exhibit room in no way interfered with the Convention sessions. Promptly at the proper hour the room was closed to exhibitors and visitors alike, thus making it possible for the exhibitors who desired to do so to attend every session. If this rule is followed as it should be at subsequent conventions, it will place the exhibition room above criticism and make it a feature of real value to the entire membership.

The exhibit rooms were spacious and well adapted for the purpose. The walls, which would otherwise have been bare and unsightly, were made attractive by the decorator's art, being draped with colored bunting, thanks to the local committee. Each individual exhibitor's space was in this same way made distinctive. The exhibitors showed their appreciation of this by vying one with another in the matter of decorating and arranging their displays.

—The Display of Brick.—

A feature of the Convention which was successful even beyond expectation was the display of brick by members. In this display, which was made in the Exhibition Room annex, were found samples of the product of yards from all over the United States, upwards of three hundred brick being shown. Each exhibitor was permitted to send six brick, but in some cases more were sent in order to properly represent the varied styles and shapes. The brick were shown on long tables, draped with yellow and white bunting, and were plainly labeled. In the collection were common brick, pavers, fire brick, pressed brick and tile. Among the last named was a fine display by the Ludowici Roofing Tile Co., which gave beauty to the tables and afforded relief to the long lines of brick. Nearly all the local yards were represented, giving the visitors a good idea of the class of material turned out in the vicinity of the convention city. It is not possible to give a complete list of the exhibitors, but among others may be mentioned displays of a very creditable character from the Columbus Brick & Terra Cotta Co., the Athens Brick Co., the Barr Clay Co., of Streator, Ill.; the Parker-Russell Mining & Mfg. Co., of St. Louis; the American Fire Brick & Clay Co., of Mineral City, O.; the Garden City Co., of Farmingdale, L. I.; the Laclede Fire Brick Mfg. Co., of St. Louis; the Oakland Pressed Brick Co., of Zanesville, O.; the Purington Paving Brick Co., of Galesburg, Ill.; the Canton-Sparta Brick Co., of Mineral City, O.; the Dover Fire Brick Co., and the Cleveland Hydraulic-Press Brick Co., of Cleveland. It was the unanimous judgment of those having this feature of the Convention in charge that if cultivated from year to year this innovation could be made of great value and interest to the Association at its annual gatherings.

—The Exhibits of Machinery, Etc.—

The largest individual exhibit was that of the Atlas Car & Mfg. Co., Cleveland. The U and V-shaped rocker dump cars attracted a great deal of attention, as the visitors would tilt the immense iron beds first one way and then the other, and they would almost invariably remark, "Why, how easy they move!" There was also exhibited a line of dryer cars on regulation tracks, which enabled visitors to see and examine every detail in construction and adjustment.

The Williams Patent Crusher and Pulverizer Co., St. Louis, Mo., exhibited one each of their shale crushers and wet and damp clay disintegrators. The senior member of the firm, Mr. M. F. Williams, was early on the scene of action and was usually found explaining the merits of the Williams machines to an interested group of spectators.

The American Clay-Working Machinery Co., Bucyrus, Ohio, exhibited a new side-cut brick cutting table and a section of their new ball-bearing dry pan, which well illustrated what they mean by machinery that is "Built right and runs right." This, fortified with a variety of catchy booklets and other trade literature and the liberal distribution of their good-luck penny, clover leaf and horseshoe combination badge, kept the American line of machinery well to the front.

The Cleveland Car Co.'s exhibit attracted a great many, whether it was because of the winning ways of Mr. Ellenberger, the drawing qualities of Mr. Caskey or the warmth of the stove located in their immediate vicinity it might be hazardous to say. Their exhibit itself was attractive, however, and included a number of steel cars of various designs, turntables, etc., some of which are illustrated on page 290.

Taplin, Rice & Co., Akron, Ohio, were represented by H. W. Wynn, who seemed to take much pride in their new ball-bearing dry pans, one of which was shown in section.

The Battenfeld Mfg. Co. exhibited a working model of their "Dictator" brick molding and pressing machine. The Dictator is so different from other brick machines that it was examined very critically by nearly every delegate who found his way to the exhibition room. Indeed, the "Dictator" and its manufacturers were in the mouth of every visitor, for Mr. Battenfeld very thoughtfully distributed quill toothpicks bearing their imprint to each of those who participated in the banquet.

Another novel exhibit was that of Arthur Koppel, New York City, which consisted of a miniature railway upon which were run diminutive clay cars of various sorts.

B. E. Bechtel, Waterloo, Ont., Canada, exhibited his brick-hacking and trucking system to decided advantage. Its practical features appealed strongly to the building brick manufacturers. While the illustration on page 280 gives an idea of the scheme, the truck and method of handling must really be seen to be fully appreciated.

The Wellington Machine Co., Wellington, Ohio, as usual, came early and stayed late. The rotund figure of Chris McDermott is easily picked out in a crowd even, and those looking for "Quaker" and "Monarch" information had no difficulty in locating the Wellington display, though they showed only a line of brick barrows and trucks.

Passing from the main exhibition room, where only those having machinery and appliances to exhibit were given space, into the "annex," a mass of bunting, placards and highly colored signs met the eye. Almost every prominent advertiser in the clay field was represented, but most of them were content to show their catalogue and other printed matter. A few notable exceptions to this rule are worthy of mention.

H. C. Dunn, of Erie, Pa., exhibited a large well-drawn picture of the Dunn Continuous Kiln, suspended from beneath which were the small shovels that had been used to burn 5,000,000 brick in the Dunn kiln at Erie. The shovels were so small and showed so little use that practical brick burners could not fail to appreciate the point illustrated—that the Dunn kiln requires but little coal.

The Horton Mfg. Co., Painesville, Ohio, in addition to their printed matter, displayed a large picture of their Hercules brick machine.

The Mail Belting Co., Philadelphia, Pa., was ably represented by Mr. H. J. Roth, who displayed samples of Leviathan belting in a manner to catch the eye of every passer-by.

E. C. Tecktonius, Racine, Wis., had a small but attractive exhibit, showing samples of the Tecktonius malleable iron hoop lugs and kiln bands.

W. P. Grath, of the Illinois Supply & Construction Co., St. Louis, Mo., got there a little late, but lost no time after arrival, distributing a new catalogue of the Grath Brickyard specialties, which are enumerated on page 177.

The Fernholtz Brick Machinery Co., St. Louis, Mo., was represented by Mr. John B. Beale, who exhibited a model press and industriously distributed pencils and printed matter.

Mr. J. F. Scott, of Knoxville, Tenn., a pioneer in the brick and tile business of East Tennessee, had charge of the Scott's Patent Brick Car Company's exhibit. It consisted of a model of their patent brick car, combined transfer car and turntable, drying racks, tracks, etc. (illustrated on pages 300 and 301), inclosed in a traveling case, all of which made a neat and attractive display. Those who saw the model system were impressed with the many advantages it had, and will no doubt be the means of many brickmakers adopting it on their yard.

John Moroney, of Chicago, represented the Chicago Brick Machinery Co. in true Hibernian style, displaying the miniature model of the Berg press with as much pride and enthusiasm as when he first introduced it.

Charles Burredge, representing H. Brewer & Co., Tecumseh, Mich., shed his genial personality and their new catalogue on every comer with undeviating impartiality.

The Henry Martin Brick Machinery Mfg. Co. displayed a fine line of trade literature, most of which is printed in their own job office.

O. W. Dunlap, of Bloomington, Ill., presented his friends with a handsome pocketbook and memorandum, which, like their clay screen, is a "Perfect" combination.

The American Blower Co., Detroit, Mich., had an attractive exhibit consisting of a large color drawing illustrating the A. B. C. drying system. This picture covered a space 5x6½ feet.

There were other exhibitors, who speak for themselves in the accompanying letters, and still others too numerous to mention, each vieing with the other in extending the glad hand to every visitor. There were no dull moments in the exhibition room.

—Every Feature of the Convention a Success.—

Dear Mr. Secretary:

We beg to express through the Clay-Worker our appreciation of the liberal provision made for the machinery men by the management at Cleveland. We were promptly assigned all the space we requested and were only sorry that we could not make our usual display of operating machinery, but the crowded condition of our works prevented our giving the matter as much attention as we would have liked.

We showed one of our double-deck steel-channel dryer cars, No. 17, which met with favorable commendation, and we also showed some round-cornered paving brick cut with the new indenting cutter used at Springfield, Ill. Also some samples of Philadelphia arch, straight hard and head-sanded stretcher brick made on the Chambers machines.

In addition to this we had quite a number of framed photographs of our brick machinery, clay granulators, crushers, and also our automatic side-cutter.

We were very much gratified by receiving while at Cleveland two orders for this "merry-go-round, whirligig thing," that in the seeming estimation of some people is doomed to perdition, but which goes on, month after month, quietly cutting good, clean, square side-cut brick. These orders came from experienced brickmakers who are well posted and thoroughly acquainted with the machinery now on the market.

A recent improvement in this side-cutting enables us to cut at each revolution of the wheel one or two brick of building brick thickness and the remaining four of paving brick thickness.

To the paving brick manufacturer who desires to set the lower courses of his kiln of builder size, and then follow with the paving brick size, this feature is particularly valuable.

We are having some new cuts made and would like you to reserve for us in the March number of The Clay-Worker one extra page.

THE CLEVELAND EXHIBITION COMMITTEE.

We think you, as well as all others connected with the management, have every cause to feel gratified with the success of the Cleveland Convention. Yours very truly,

CHAMBERS BROS. CO., J. H. CHAMBERS, Manager.
Philadelphia, February 22.

—Believes the Exhibition Room Should be a Permanent Feature.—

Secretary Randall:

I think the exhibit room at this Convention was a point of considerable interest to attending delegates, and I hope you will use every endeavor to push this feature of the Convention to the front hereafter, in which case I believe that no particular difficulty will be experienced in inducing machinery manufacturers to make a much more complete display of their products.

I think the exhibit room is a feature that is appreciated more by the brickmaking fraternity than is generally realized. Of course it might be said that I "have an ax to grind," but my ax does not need nearly as much grinding as others', as I can never have anything to exhibit but cuts, catalogues, etc. Many times brickmakers not members of the N. B. M. A. have said to me that if they could only see the various types, for instance of automatic cutters or soft mud machines, etc., on exhibition in the same place, they would gladly attend the Conventions, and I believe that in this manner the membership of the Association could be almost if not quite doubled, with profit to the Association and also to the exhibitors.

With best wishes to all, believe me, I am,

Very sincerely yours,

Cleveland, Ohio, February 22, 1902. J. W. HORNSEY.

—Substantial Benefits Realized.—

Cleveland, O., Feb. 22, 1902.

Messrs. T. A. Randall & Co., Indianapolis, Ind.:

Dear Sirs—Replying to your favor of the 20th, would say that we had a Richardson repress and one each of the following cars on exhibit: Single transfer, with 18-inch wheels, and pushing and braking device; single, double deck and rack dryer cars, the first two with channel steel decks. We thought, as a whole, the exhibit was very creditable. As for ourselves, as a result of the exhibit and the general good times, we are figuring on a considerable amount of business. In a letter just received from a customer, he winds up by saying: "I was never at a Convention where more hospitality was shown the visiting brickmakers than in Cleveland."

Yours very truly,

THE OHIO CERAMIC ENGINEERING CO.,
By FRANK H. ROBINSON, President.

AN ODE TO CLEVELAND.

Fair Cleveland, rare Cleveland, my heart turns to thee,
As the bird to her fledgling on the bough of the tree;
Your might and your mercy, your manhood and mirth,
All seem to be bending toward peace here on earth;
Your municipal justice is bound to obtain
While splendid Tom Johnson holds both whip and rein.
Great iron-bound Cleveland, you seem to possess
That spirit which prompts a kind mother's caress.
Backward, turn backward, old time, we implore,
And let Cleveland banquet and bless us once more.

—Montgomery C. Meigs.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

NINETEENTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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Six copies, " "	10.00
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27 Monument Place.] T. A. RANDALL & CO., Indianapolis.

XXXVII. FEBRUARY 1902. No. 2.

CURRENT COMMENT.

The "silent partner" was strictly in it at Cleveland. We apologize for the slang, but it just fits the case.

* * *

Now that they have been publicly recognized as "directors," will they rest content to remain "silent partners?" Should they demand the floor, who will dare say them nay?

* * *

The faithful Secretary was paid many fine compliments, and fully appreciated them all, but he still wears the same size hat, and will continue the same faithful Secretary.

* * *

Ohio is a great State, and great are her clayworkers. Not one of all those who attended the National Convention but will be glad of an opportunity to again visit the Buckeye metropolis and once more break bread with the good fellows who entertained us so royally.

* * *

President Fiske may well feel honored, and not alone because of his preferment, but as well because of the unanimity and thorough cordiality with which his election was received by the entire membership. No President was ever welcomed more heartily to the executive chair.

* * *

We claim the prophet's plume. A year ago we said: "Future events will prove the wisdom of Mr. Hunt's election. The energy and enthusiasm with which he will direct the affairs of the Association will surely prove a source of much strength. Like begets like, and President Hunt's enthusiasm will make itself felt in many ways." His record now stands complete, and a splendid record it is. He failed to do his whole duty in but one instance only—he is still unmarried. As he avers in extenuation that it is not his fault, we can but forgive him and hope for the best.

* * *

It was intended to have a group picture of the members taken in front of the Chamber of Commerce Building, but the delegates were too busy with Convention affairs to carry out the scheme. It is a pity, for it would have made a fine souvenir. As we look over the portraits of representative members in the preceding pages we are impressed with the youthful appearance of the majority of them; even the old-timers appear to grow younger. In the large number of new faces we have added to our N. B. M. A. picture gallery we see a sign of promise.

* * *

The address of President Wm. H. Hunt was not a mere perfunctory document, but was an able presentation of live questions, worthy of serious consideration by every brick manufacturer in the land. It speaks for systematic organization and strenuous methods, for high ideals and exact business dealings, which, if followed, will elevate the industry to a higher plane than it has heretofore occupied. President Hunt practices what he preaches, and his success in life affords good proof of the correctness of his theories.

THE LADIES AT THE CONVENTION.

Every feature of the National Convention was a marked success, the entertainment of the ladies particularly so. Mr. S. D. Wright and Mr. J. W. Hornsey, to whom were assigned this duty, were complimented very highly by many of the fair visitors. There were more lady visitors at Cleveland than at any previous Convention, and no effort was spared to entertain and make them comfortable. The ladies of Cleveland were very attentive, and did escort duty very gracefully. The trolley ride through the city and to the Garfield Monument proved very pleasant. On their return a fine luncheon was served at the Colonial Club, and was thoroughly enjoyed. The ladies also participated in the banquet and the theater party, and Friday morning were taken on a shopping tour through the great stores of the city. This trip proved very interesting, and the visiting ladies left Cleveland with exalted ideas of its beauties and greatness, which, we take it, is what the local committee most desired.

THE TRIP TO THE BRICKYARDS.

The excursion to the brickyards Thursday morning was one of the most enjoyable features of the Cleveland Convention. President Hunt did many things to please the visiting brickmakers, but in no way did he win greater praise than in arranging and providing for this brickyard pilgrimage. A special train was provided through the courtesy of the Cleveland Hydraulic Press Brick Co. Nearly four hundred delegates made the trip and enjoyed it thoroughly. The party left the B. & O. station promptly at the appointed time—9:30. The first stop was at Mr. Hunt's plant, which, with the other plants visited, was fully described in the January Clay-Worker. Many of the delegates had never before visited a dry press plant, and the magnitude, orderly arrangement and general air of tidiness of the entire plant was a revelation to them. After an hour spent in inspecting the various features of general interest, the party was marshaled into one of the immense stock sheds, where excellent coffee and a toothsome lunch were served, after which the party again boarded the train and visited, in turn, the plant of the Standard Brick Co. and that of F. H. Eggers, returning to the city at 1 o'clock. All who participated voted it one of the most profitable half days ever spent at a Convention.

THE CONVENTION.

History repeats itself. As was expected, the Cleveland Convention was unquestionably the most satisfactory that the members of the National Brick Manufacturers' Association have ever held. In point of attendance, in the spirit of good-fellowship, which was really remarkable, as well as the character of the papers and discussions, the Convention was an unqualified success. Perhaps the condition of the times has something to do with all this, but we are inclined to think that it is the natural outgrowth of the progressive spirit dominating the entire membership. There is no denying that trade conditions are favorable. The demand for brick is greater than the supply, and, as a natural result, manufacturers are getting good prices. Competition has lost its sting somewhat. Later on, when market conditions are less favorable, the old spirit of reprisal, if we may term it such, may again prevail, but it seems to us that never again can competition be quite so fierce and demoralizing as it was before the brickmakers knew each other so well and so favorably. Now that friendly relations have been established and brickmakers know and understand that, though competitors, they are good fellows just the same, there will be less disposition to cut and slash when trade slackens and the demand falls off, as, in the nature of things, it must do some time. We are a little visionary, perhaps, but we feel quite confident that the good-fellowship which finds its expression in the N. B. M. A. will have a marked influence, even in local interests.

DRYING BRICK WITH WASTE HEAT.

In his able paper on the above subject Treasurer Sibley demonstrated that he is more than a humorist; that he can handle plain facts as well as figures and balances. He handled the subject in an unusually practical manner; he told what should be done, what could be done and how to do it. In this respect his paper differed from ordinary offerings, and was appreciated accordingly. Mr. Twell's paper, which followed, was similar in character. To those interested in this branch of the business these papers and the discussion which followed will prove of much real value.

THE STATE CONVENTIONS.

The Convention season closes with the meeting of the Northwestern Clayworkers at Princeton, Minn., March 4 and 5, as per programme on a preceding page. All of the State Conventions have been well attended, and the Princeton meeting will be no exception. The glad hand awaits all who attend.

The meeting of the Wisconsin Clay-Workers' Association was a delightful occasion. The Milwaukee brickmakers proved themselves royal entertainers. A full report of the Convention will be given in a subsequent issue of The Clay-Worker. The election of officers resulted as follows: J. W. Hinkley, Green Bay, President; Wm. Meadows, Burlington, Vice President; George W. Schwarz, Milwaukee, Secretary, and J. G. Hamilton, Grand Rapids, Treasurer.

The meeting of the Iowa Clayworkers at Des Moines was one of the largest attended and most satisfactory Conventions in the history of that Association. The papers and discussions were of more than passing interest, and, in good time, will be placed before our readers. The following officers were elected for the ensuing year: W. W. Lewis, of Williamsburg, President; L. C. Besley, Council Bluff, Vice President; F. A. Stephenson, Mason City, Treasurer, and Robert Goodwin, Jr., Redfield, Secretary.

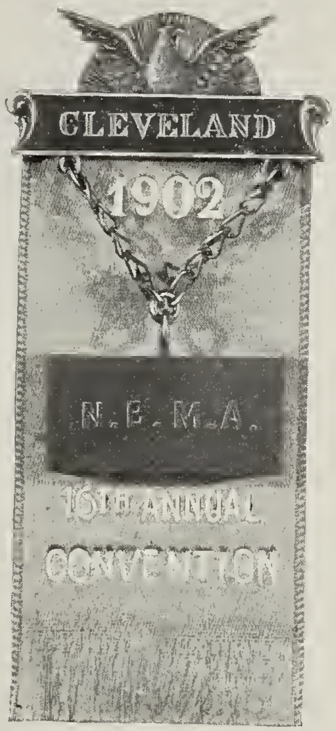
THE AMERICAN CERAMIC SOCIETY

The meetings of the American Ceramic Society were well attended. The members of this organization are noted for their industry. From the first session to the last the delegates give strict attention to business; not a moment is lost, but every feature of the programme is taken up and considered seriously and exhaustively. A number of very able papers were presented, which, with the discussions, will, when put in type, make a large and valuable work on the science of ceramics. A sufficient number of new members were enrolled to increase the membership past the one hundred mark. Evidently the Society is in a very healthy condition. The following are the officers elected for the ensuing year:

President—Ernest Mayer, Beaver Falls, Pa.
Vice-President—Frank W. Walker, Beaver Falls, Pa.
Secretary—Edward Orton, Jr., Columbus, Ohio.
Treasurer—Stanley G. Burt, Cincinnati, Ohio.

The proceedings of the Society are never given to the press until after being published in book form by the Secretary. Later on we hope to lay before our readers such of the papers as are of general interest.

THE BADGE OF MEMBERSHIP.



The souvenir badge presented to the visitors by the Cleveland brick manufacturers, like everything else connected with the recent Convention, was a model of good taste. The design is both pretty and appropriate. It is the first real brick badge we have had. A diminutive red brick, on which the initials of the Association are stamped, is suspended by a chain over a ribbon bearing the date, etc. The accompanying illustration gives but a hint of the real appearance of the badge, it being rather difficult to show in a half-tone engraving the details of the brick. Quite a number of the delegates were so well pleased with them that they asked for duplicates. With true Cleveland generosity the local committee have ordered an extra lot to enable the Secretary to furnish them to members who were unable to attend and yet want to add this badge to their collection. The stay-at-homes who have not already renewed their membership are requested to do so at once. A badge will be sent to each one desiring it. The Secretary also has a few of the number buttons, which, on request, will be sent with the badge. As there is but a limited number, they cannot be sent to every one, but so long as the supply lasts they will be mailed in the order of "first come, first served."

BRICK IN ARCHITECTURE.

Architect James M. Dyer, of Cleveland, contributed a valuable paper to the Convention, interesting alike for its historical references and for its practical suggestions. It gives a very interesting account of the Roman methods and those of Spain and of the Moors, and the still more interesting work of the seventeenth century, as exemplified in the brick structures at Fontainebleau and elsewhere. Mr. Dyer shows that there are other considerations than those of mere economy in modern brick work. It is true, as he indicates, that capitalists and builders are always willing to pay a good price for a good material. There are certain grades of brick that the modern builder may hesitate to use, no matter how cheap the price. On the other hand, he is ofttimes ready and willing to pay a relatively high price for a high grade of brick and a good quality of work. In other words, a good brick demands a good price.

A DAKOTAN FINDS PLEASURE AND PROFIT AT THE NATIONAL CONVENTION.

Editor Clay-Worker:

It is with pleasure that I write of the Convention held at Cleveland, O. I am very glad that I was permitted to meet with you, and right here let me say that, had I attended such a Convention twenty years ago—which, of course, I could not have done, as there was no such Association then in existence—I would have been spared many of the mistakes of my life. I say this in hopes of getting the young men and beginners to attend our Conventions. Fathers, bring your sons to the Conventions; it will stimulate them, and may save them many of the trials and tribulations that have been yours.

Inclosed find the announcement for the Northwestern Brick Manufacturers' Association, which meets at Princeton, Minn., March 4, 1902. A cordial invitation is extended to all interested in the clay industry.

Thanking you for the many favors extended me, I am pleased to be, yours very truly,

W. P. ALSIP, President N. W. B. M. A.

NORTHWESTERN BRICK MANUFACTURERS' ASSOCIATION OF MINNESOTA, AND NORTH AND SOUTH DAKOTA.

—Officers.—

W. P. Alsip, President, Grand Forks, North Dakota.
W. H. Oakes, Vice President, Princeton, Minn.
Louis Moline, Secretary and Treasurer, Willmar, Minn.

Next Meeting, March 4 and 5, Princeton, Minn.
Third Annual Convention.

—Ex-Presidents.—

Henry Ames, 1899, Litchfield, Minn.
O. Duclos, 1900, Little Falls, Minn.

—Programme.—

First Session, Wednesday, 2:00 P. M., March 4, 1902.

Prayer.
Enrollment of New Members and Roll Call.
President's Annual Address................W. P. Alsip, Grand Forks
Report of Secretary..............................Lewis Moline, Willmar
Appointment of Committees.
"Transporting Clay from Bank to Machine"......................
....Mr. Vance, Crookston, Minn.
"Stiff Clay Brick"..................Mr. W. H. Oakes, Princeton, Minn.
"Sand Mold Brick"..............Mr. John Dinnie, Grand Forks, N. D.
"Dry Press Brick"......Twin City Press Brick Co., St. Paul, Minn.
"Burning Brick in Continuous Kiln"..............................
...................................Mr. Gustave Hunt, Perham, Minn.
"Dryers—Drying Brick from Cooling Kilns with Fan, Open Top and Arched Kilns"....Mr. W. S. Russell, Dickinson, N. D.
"Outdoor Drying"...............Wm. Alsip, Sr., Winnipeg, Manitoba
"Grading Brick"..................Mr. Henry Ames, Litchfield, Minn.
Election and Installation of Officers.
Question Box.

The Princeton Mercantile Co. has arranged for a place of meeting, hotel accommodations and a visit to the brickyards of Princeton. This trip to the brickyards will be instructive, as the Princeton yards are all up-to-date in their equipments.

A SECOND CROP OF CALENDARS.

The new year, like a tropical garden, is very prolific. We have already harvested a second crop of calendars. The Suffolk Clay Co., Suffolk, Va., have favored us with a large hanger, so warm in color effect that it makes one think of balmy days in Cuba. This effect is further emphasized by a picturesque red brick archway and a tile-roofed arbor, beneath which stand a pretty miss and an adoring swain.

A beautiful photo of another summer maid, representing "Purity," bears the imprint and brings greetings of the Main Belting Co., Philadelphia, Pa. We presume we are to infer from the combination that the "Leviathan" belting, like the beautiful maiden, has strong pulling powers.

The New York Brick and Paving Co., Syracuse, N. Y., sends a beautiful combination of green and gold, being a reproduction of the famous picture, "The Raffle." It is a taking combination of a good calendar and a pretty picture.

The Standard Brick Co., Berlin, Conn., have our thanks for an exceptionally handsome hanger. A maiden fair, with golden hair, is shown in medallion form. The cardboard and calendar is of very dark gray, the lettering and dates being printed in silver bronze, making a dainty and yet conspicuous display.

The offering of the Winkle Terra Cotta Co., St. Louis, Mo., is exceptionally appropriate in that it appears as though it might have been modeled in clay. The design is allegorical in character, representing, in heroic figures, Trust, Strength and Security.

One of the prettiest wall decorations of the season bears the imprint of the Alton Paving, Building and Fire Brick Co., Alton, Ill. It is a reproduction in colors of a fine oil painting of the "Bibulous Monks," one of whom is built on the same style of architecture as Eb Rodgers himself, to whom we are indebted for the picture, and, as he stands with uplifted glass in his hand, we in fancy hear him say, "Here's to the Clay-Worker."

A DISASTROUS FIRE.

On the morning of February 3 the factory of the Wallace Mfg. Co., Frankfort, Ind., was entirely destroyed by fire. While a severe loss, it affords that firm the opportunity of building a new factory, which they are not slow to avail themselves of, and, phœnix-like almost, a new and much improved factory has risen from the ashes and now occupies the site of the old one. While the ruins were still smoldering men began work clearing away and preparing to rebuild. In just three weeks from the date of fire a new brick structure 68x132 feet was up and under roof, and adjoining a foundry 32x90 feet has also been built. Each department is equipped with immense traveling cranes, which will enable them to handle their heavy castings easily and quickly. New engines and boilers have been installed, also a number of improved lathes, planers, etc., which gives the factory double its former capacity, so what at first seemed a serious disaster proves to be a blessing in disguise

SEGER'S COLLECTED WRITINGS.

This is the best book ever published on the clay industries. Indispensable to the practical man, as well as to the pottery chemist. Seger's articles on clays, brick, pottery, porcelain, glazes, kilns and kiln gases, etc., form the foundation of all modern ideas on these subjects. At the time of his death he was not only the most famous scientist in this line, but was equally famous for the practical results which he obtained.

Vol. I, of 550 pages, is now ready. Vol. II, completing the work, will be ready in the near future. The price for this work is fourteen ($14) dollars, paid in advance. Send all subscriptions to

THE AMERICAN CERAMIC SOCIETY,
Stanley G. Burt, Treasurer,
Rookwood Pottery, Cincinnati, O.

TABLE OF CONTENTS.

Official Report 181
FIRST SESSION 181
The Opening Prayer 181
Official Welcome to Cleveland 182
Response to the Address of Welcome 182
Annual Address of President William H. Hunt 183
The Programme of Entertainment 185
Treasurer Sibley's Report ... 185
[illegible] 186
Election of Officers 187
A Twentieth Century Retrospect and Prophecy.......... 189

SECOND SESSION.

Appointment of Committee on Resolutions 191
Letters from Absent Members 192
Clay As a Commercial Commodity 193
Experimental Work in Brickmaking 195
Modern Brick Plant, Prospecting and Construction.. 197
Economy in Building and Repairng Permanent Kilns 200
Report of Committee on Technical Investigation ... 201
Questions for General Discussion 202

THIRD SESSION.

Proposed Exhibit of Clay Products at St. Louis Exposition 203
Hot Air Direct vs. Steam Heated Dryers 203
Drying Problems, General Discussion 204
Brick in Architecture 205
Burning Brick with Oil....... 209
The Permanent Improvement of Public Highways.. 211
Report of Committee on Specifications for the Construction of Brick Pavements 215

FOURTH SESSION.

Round vs. Square Kilns, General Discussion 217
The Economy of the Soft Mud Process 221
Drying Brick with Waste Heat from Cooling Kilns.. 223
General Discussion — Drying Brick with Waste Heat.... 224
Mayor Johnson's Address.... 227
Report of Committee on Resolutions 229
Impressions of the Convention 230

THE BANQUET.

Toastmaster Hunt's Opening Address 231
"The City of Cleveland"..... 231
"Our Business Interests".... 232
"The Builders" 232
"Our Association" 234
"Day Dreams" 235
"Lincoln" 236
"The Directors" 237
"Just a Buttonhole Talk"... 238
"Progress and Prosperity".. 239
Ex-President Egger's Gratitude 239
List of Members N. B. M. A. 240
The Exhibition Room......... 242
Every Feature of the Convention a Success........... 243
Believes Exhibition Room Should Be a Permanent Feature 243
Substantial Benefits Realized 243
Among the Potters............ 264
St. Louis Brick and Building Notes 266
The New York Brick Market 268
Western Pennsylvania Clay Industries 262
The Oldest Brick Plant....... 262
Chanute, Kan. 262

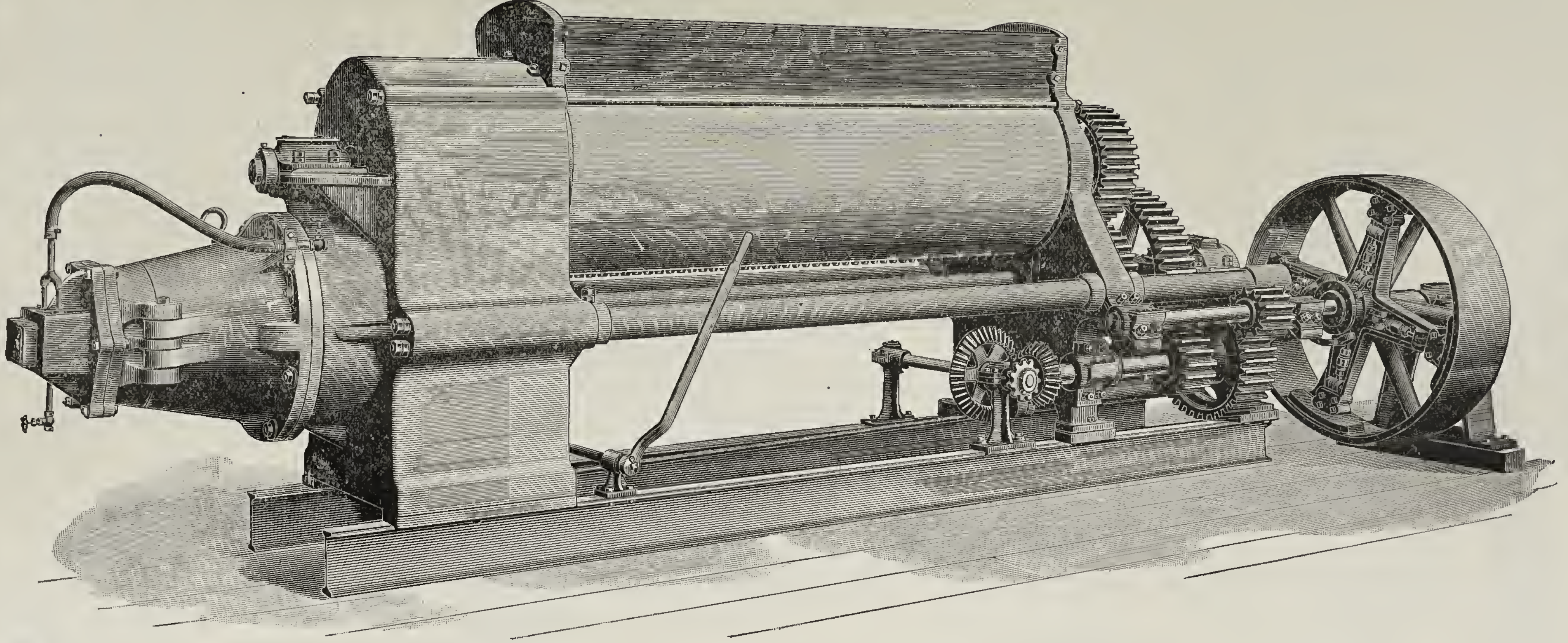
EDITORIAL :

Current Comment 252
The Ladies at the Convention 252
The Trip to the Brickyards.. 252
The Convention 252
Drying Brick with Waste Heat 253
The State Conventions....... 253
The American Ceramic Society 253
The Badge of Membership... 253
Brick in Architecture......... 253
Editorial Notes and Clippings 256

Index to Advertisements on Front Inside Cover Page.

THE HEAVY
BRICK MACHINERY

Is made by Raymond. ✠ *It is not as Cheap as some others, but it lasts.* ✠ *It has Staying Qualities.* ✠ *You Avoid Expensive Break Downs, and Incidentally Break ups by using it.* ✠ ✠ ✠ ✠ ✠



WE DON'T MAKE all the Brick Machinery sold in the U. S., but those who use it say it is the best. We have every reason to believe this is true because that is just what we try to make. We can attribute the unprecedented demand for our machinery to no other reason than the fact that it is strong and heavy and satisfies the trade. Users of our machinery are our friends because they get good value for their money.

The C. W. Raymond Co.
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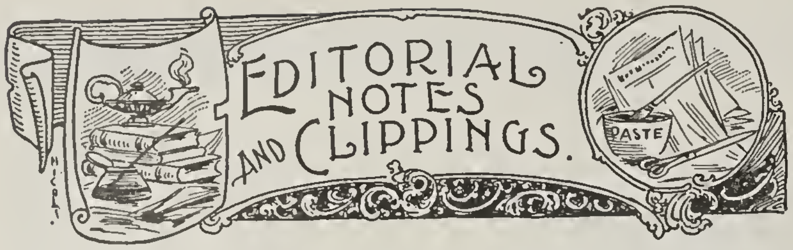
NEW YORK OFFICE: 39 and 41 Cortlandt Street.



EDITORIAL NOTES AND CLIPPINGS.

Williams & Bailey will erect a brick plant at Cushing, Okla. Ter.

M. L. Moore will manufacture brick at Akeley, Minn., the coming season.

M. F. Trabert is making arrangements to start a brick plant at Prescott, Iowa.

Lambert Bros. will move their brick plant to Dahlgren, Ill., from Mt. Vernon, Ill.

J. G. Cowden has sold his brick plant at Cleveland, Tenn., to Banks & Voorhees.

Brownsburg, Ind., is to have a new tile factory, in which Mr. Lindeman is interested.

The North Texas Press Brick Co., Sherman, Texas, is in the market for a clay pulverizer.

Samuel Bradfield, of Belair, Md., contemplates the manufacture of brick at Northeast, Md.

W. L. Dale and C. E. Bradley expect to engage in the brick business at Carson, Iowa, in the spring.

The Denton Pressed Brick Co. has been incorporated at Denton, Texas, with a capital stock of $30,000.

H. L. Price, of Fairmount, W. Va., has purchased the brick factory of Porter Arnold at Weston, that State.

Colfax, Ind., is to have a new tile and brick factory. Work will be commenced on same early in the spring.

L. Porter, J. L. Garrett and A. Cobbel have purchased the brick plant of Cobbel & Boster at Norris City, Ill.

Lakeland, Fla., is to have a first-class brick plant, which will be operated under the management of W. L. Finger.

A charter has been granted the Donley Brick Co. at Washington, Pa. G. E. Lockhart and others are interested.

The C. H. Thomas' Son Brick Co. has been chartered at Buckeyetown, Md. They have a capital stock of $35,000.

The Blackburn Face Brick Co., of Warren, Ohio, has been capitalized at $50,000. The sales office will be in Cleveland.

E. N. Lewis, of Elsinore, Cal., and W. N. Lewis, of Corona, Cal., have formed a partnership to manufacture brick at the latter place.

Fire destroyed the tile factory of Reischstadt & Pettit at Greenford, Ohio, causing a loss of $4,000, on which there was no insurance.

A new brick company, known as the Empire Brick Co., will erect a plant at Randall, W. Va., that will be up to date in every particular.

Kelly Bros. and Frank and Thos. Ferguson have recently erected a brick plant at Cairo, Ill., and expect to be turning out brick in a short time.

The Molino (Fla.) Lumber and Brick Co. has been incorporated by Fred Johnson, Frank Johnson and John Beunmeister, with a capital stock of $20,000.

The Kenton (Tenn.) Brick and Tile Co. has been chartered by George P. Hunt, C. A. Derryberry, P. H. Keathley, Sol Shatz, B. L. Glessan and T. McDonald.

Bartlett Bros., who installed a pressed brick plant in Lead, S. D., last summer, are planning to enlarge and improve it. They are building a new drying room, which is to be heated with steam, to overcome the difficulty they have experienced in drying. It will have a capacity of 30,000 brick. The rapid growth of the town has created a big demand for building brick.

Joseph Cody, a veteran brick manufacturer of Peoria, Ill., died at his home in that city February 5. He had been engaged in the brick business since 1863.

The Columbia Brick Co., of Lake City, Fla., which was almost totally destroyed by fire last month, will be rebuilt at once. C. K. Weller is the principal owner.

J. E. Hornet writes that he has discovered a valuable bed of potter's clay on his farm at Waco, Texas, and will soon be in the market for machinery for making brick.

The plant of the Miller Brick Co., Allegheny, Pa., was almost entirely destroyed by fire February 18, causing a loss of about $5,000, which is partly covered by insurance.

Thos. Ferguson & Co., 1916 Commercial avenue, Cairo, Ill., write us that they are in the market for pallets, and would be pleased to hear from manufacturers of the same.

The plant known as Factory B of the Red Wing (Minn.) Sewer Pipe Co. was burned to the ground recently, entailing a loss of $100,000, on which there was $50,000 insurance.

The Thurber Brick Co., Thurber, Texas, has just booked an order for 6,000,000 brick to be used in the construction of an immense packing house to be erected at Fort Worth.

Joseph Motsch, Galion, Ohio, in renewing his subscription to The Clay-Worker, says he has grown tired of burning brick in old-style clamp kilns and will install two down-draft kilns.

The Boyne Valley Brick Works at Boyne Valley, Manitoba, Canada, will add a plant for the purpose of manufacturing sewer pipe and pottery. George Leary is general manager of the plant.

The Hutchinson-Barnes Brick Co. has been capitalized to manufacture brick at Fairmount, W. Va. C. E. Hutchinson, M. L. Hutchinson, J. H. and M. N. Barnes and A. B. McDonald are interested.

H. M. Merrill, of Webb City, Mo., wishes to dispose of his brick plant in order that he may join Mrs. Merrill at Salt Lake City, Utah, where she has resided for a number of years on account of ill health.

William Beatty, an employe at King & Mulligan's brickyard at Ottawa, Canada, was caught in a cave-in at the clay bank and as a result is now lying in the hospital with a broken leg and a badly injured back.

The Kinston-Clark Brick and Tile Co., of Kinston, N. C., has been incorporated. Capital paid in, $16,000; authorized, $50,000. Incorporators, Samuel H. Abbott, W. G. Jones, Lemuel Harvey, Charles Felix Harvey.

The Brook Terra Cotta Tile and Brick Co. has been incorporated to manufacture terra cotta, brick and tile. J. H. Haynes, L. E. Lyons, E. Hess and others are interested. They have a capital stock of $30,000.

The Virginia Brick Co. has been organized by Henry Warden, W. D. Carter, F. A. Decosta and Dr. J. N. Barney. A plant will be located at Fredericksburg, Va., for the manufacture of front and ornamental brick.

The plant of the Monterey Brick Manufacturing Co., Monterey, Mexico, although now turning out brick at the rate of 100,000 a day, will have a number of improvements made with a view of still further increasing their capacity.

At the annual meeting of the Buckler Brick Co., Annapolis, Nova Scotia, the old officers were re-elected as follows: S. W. W. Pickup, president, and Milledge Buckler, secretary-treasurer and general manager. It is the intention of the company to increase their capital stock to $100,000 and put in a number of improvements, including machinery and appliances. They

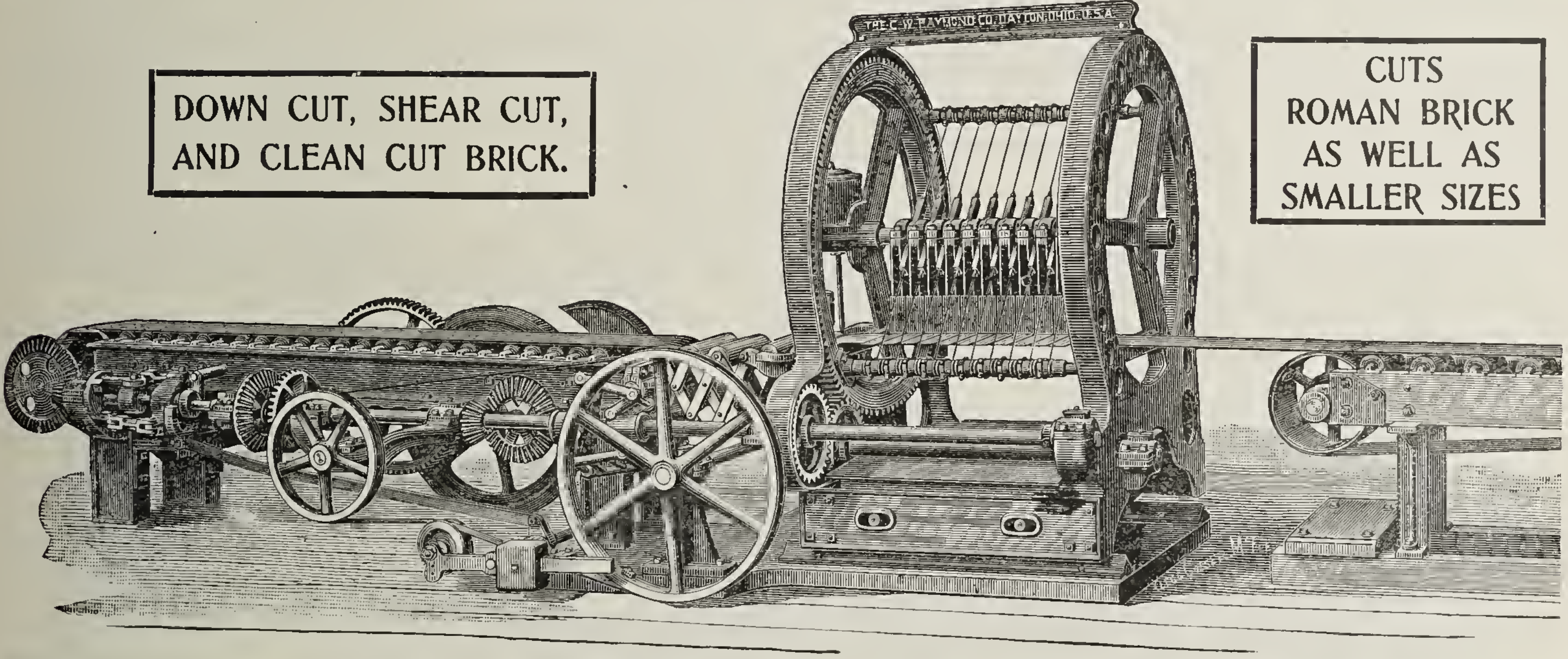
[CONTINUED ON PAGE 258.]

See! See! See!

Our Continous Motion

Down-Cut CUTTING TABLE

The Most Practical Device for Cutting Brick yet Invented. - - - - - - - An Absolutely Down and Shear Cut.


THE C. W. RAYMOND CO. DAYTON, OHIO, U.S.A.

DOWN CUT, SHEAR CUT, AND CLEAN CUT BRICK.

CUTS ROMAN BRICK AS WELL AS SMALLER SIZES

Do you want your brick cut of uniform thickness, perfectly straight from end to end, with smooth clean edges? This Table will do it and it is the only one made that will.

The C. W. Raymond Co.

DAYTON, OHIO.
NEW YORK OFFICE, 39—41 Cortlandt Street.

All Brickyard Machinery

EDITORIAL NOTES AND CLIPPINGS—Continued.

also contemplate the addition of a tile factory and pottery. Last year the output was 4,000,000 brick, and they expect to turn out 10,000,000 this year.

Messrs. Willett & Clymer, of Sellersville, Pa., the enterprising brick manufacturers, are putting in a Martin Union auger machine in combination with an automatic cutting table, compound disintegrator, as well as a Martin steam repress.

J. H. Linkletter, J. C. Hiatt, John Cole and T. F. Hensey have formed a partnership under the name of the Whittier Brick Co. The new firm has purchased a tract of land at Whittier, Cal., on which they will erect a modern brick plant.

A new brick plant of 30,000 daily capacity is to be established at Corning, N. Y., and the promoter writes that he will be glad to receive catalogues, etc., from brick machinery manufacturers. His address for the present is Box 240, Williamsport, Pa.

H. E. West, Stone Point, Texas, writes that he expects to start a brick plant at that point and desires to receive catalogues and price lists of both soft mud and dry press brick machinery and engine and boiler for a plant of 25,000 daily capacity.

The death of John Moses, probably one of the best-known manufacturing potters in the United States, occurred at Trenton, N. J., January 22. Mr. Moses was first president of the United Potters' Association and had been in the pottery business since 1863.

The Metropolitan Paving Brick Co. is the name of a new concern chartered to engage in the paving brick business at Canton, Ohio. Capital, $1,000,000; $600,000 subscribed; $60,000 paid in. Incorporators, H. S. Renkert, C. W. Keplinger and W. E. Keplinger, of Canton; J. J. Sullivan, of Cleveland, and O. W. Renkert, of Akron, Ohio.

The Alphons Custodis Chimney Construction Co., of New York, has leased the plant of the Pittsburg Clay Co. at Pittsburg, Kan., and will at once begin the manufacture of brick especially adapted to the construction of chimneys. The plant will be operated under the firm name of Mueller & Johnson, but will really be a part of the New York company.

The brick plant of Hugh J. Phillip & Co., at Brick Haven, near Salisbury, Md., has been purchased by the Wicomico Brick Co., a new firm recently incorporated by A. J. Benjamin, A. Wootten and F. P. Adkins. Mr. Wootten will have charge of the plant, with headquarters at Salisbury. The new firm contemplates making a number of improvements at the plant.

The Peebles Paving Brick Co. was recently incorporated at Columbus, Ohio, by John Peebles, Charles W. Turner, Adam Buch, W. O. Silcox and Samuel Reed. They will erect a plant at New Boston, a suburb of Portsmouth, Ohio, of 60,000 daily capacity, which will be pushed forward to completion as rapidly as possible. Adam Buch will be the general manager of the plant.

H. W. Caldwell & Son Co., Chicago, Ill., have recently opened a sales and engineering office in New York city, the adddress being Room 410, 95 Liberty street. This office is in charge of Mr. R. T. Pearce, mechanical engineer, and it is the intention of the Caldwell Co. to give the Eastern trade personal attention through this office. Through their extensive acquaintance with their special line of elevating, conveying and power-transmitting machinery, they will no doubt be able to render efficient engineering assistance to any one interested in this line of machinery.

Rockwell City, county seat of Calhoun Co., Iowa, a town of 1,800 population, wants a brick and tile factory. There is a clay vein there three feet and more in thickness, which makes good and durable brick. The country is flat and hundreds of miles of tile are used every year. There is no building stone near. Thousands of brick are used every year in putting up good buildings. A city ordinance prohibits the construction of sidewalks of any other material than brick or cement. Any one specially interested is requested to address the Business Men's Association of Rockwell City.

Mr. Charles M. Smith, of Rutland, Vt., is equipping a new yard to take care of the large orders he is booking, and among the machinery installed are two complete Martin outfits, including a style "B" machine, pug mill, sander, etc. Mr. Smith believes in having everything up to date, and will give his customers the benefit of the lowest possible prices on brick.

H. W. Krug, manager of the Trinidad (Colo.) Brick and Tile Co., writes that his firm has recently booked orders calling for over 2,000,000 brick. The demand for their product has increased to such an extent that the company will spend $20,000 in improving their plant this spring, putting in stiff mud machinery, dryers, kilns, etc., for the manufacture of paving brick.

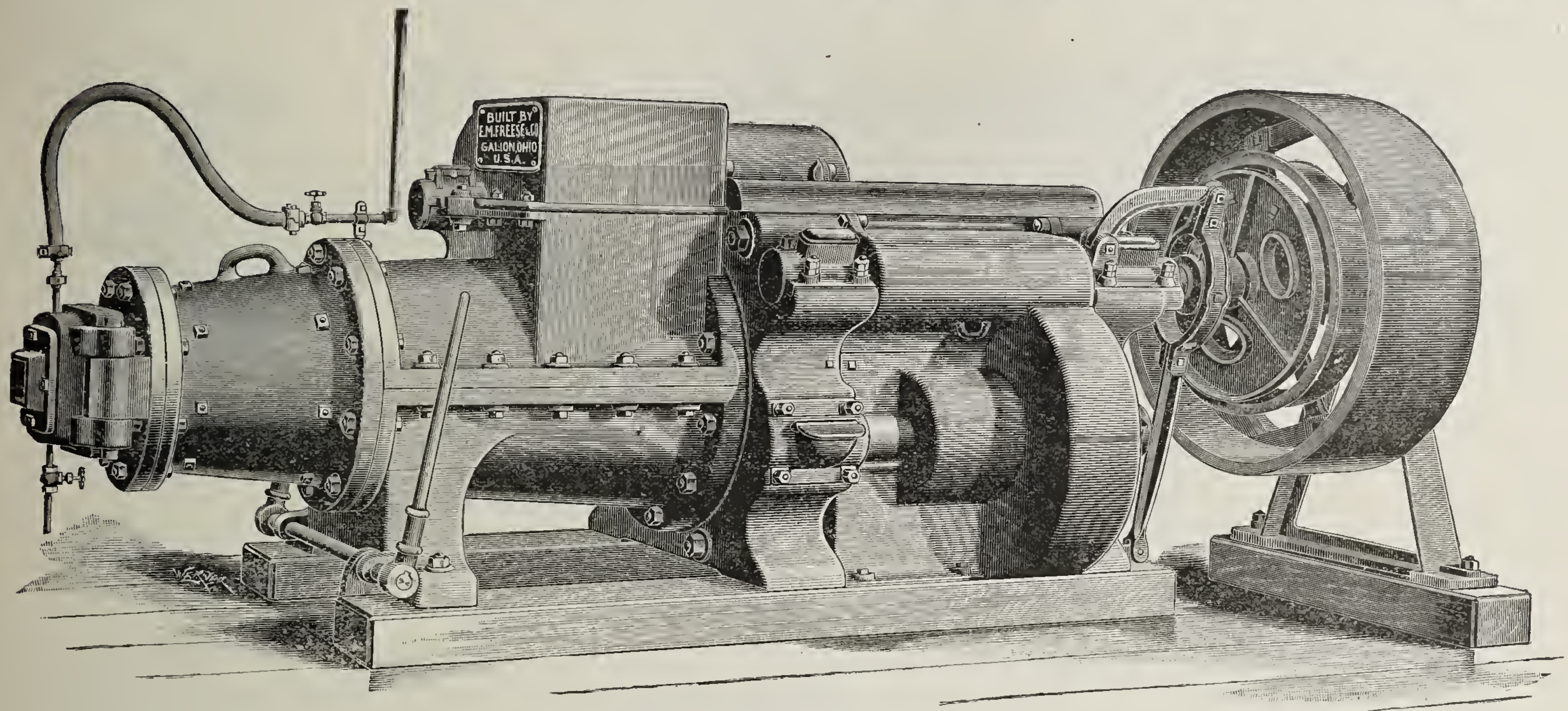
Messrs. J. C. Steele & Sons, manufacturers of "New South" brickmaking machinery, Statesville, N. C., are receiving orders every day coming from all sections of the South. From present indications they expect to do by far the largest business they have ever done. Have recently placed outfits in Bristol, Tenn., Pollard, Ala., Blakeley, Ga., and are shipping outfits to Starrsville, Ga., Athens, Ga., Conway, S. C., and automatic cutters to Lake Charles, La., Concord, N. C., Rock Hill, S. C., and Lake City, Fla. Also recently shipped a carload of double-deck dryer cars to Castleberry, Ala.

The S. S. Kimbell Brick Co., 304 Chamber of Commerce Building, Chicago, Ill., is sending out the following announcement: "The firm of S. S. Kimbell & Co. has been succeeded by the S. S. Kimbell Brick Co. The policy of this company is to handle every kind of brick suitable for facing purposes, and to represent only such factories as can be depended upon for quality and service. We have warehouses in Chicago on the North, South and West Sides, and are prepared to take orders for immediate or future delivery, in large or small quantities. The officers have established reputations for fair dealing which they mean to maintain. As individuals we thank you for past favors, and ask you to remember our company whenever you need what we sell."

The W. S. Dickey Clay Manufacturing Co., Kansas City, Mo., will build a $200,000 plant in Southeastern Kansas within the coming year. This much is decided, but the exact location has not been selected. It will be where the strongest flow of gas and the best brick shale that can be found together are located. The company has options on a dozen sites now and is making tests. The new plant will make vitrified paving brick, building brick, hollow brick for partition walls, farmers' drain tiles and roofing tiles. It cannot make glazed pipe, as the shale is not suited to that sort of product, but the glazed sewer pipe will continue to come from the plants now running. The Dickey Co. owns four large plants for making sewer pipes, drain pipes and other clay products. In all of them the fuel is coal, and though the company owns two coal mines, its outlay for coal is something enormous in the course of a year.

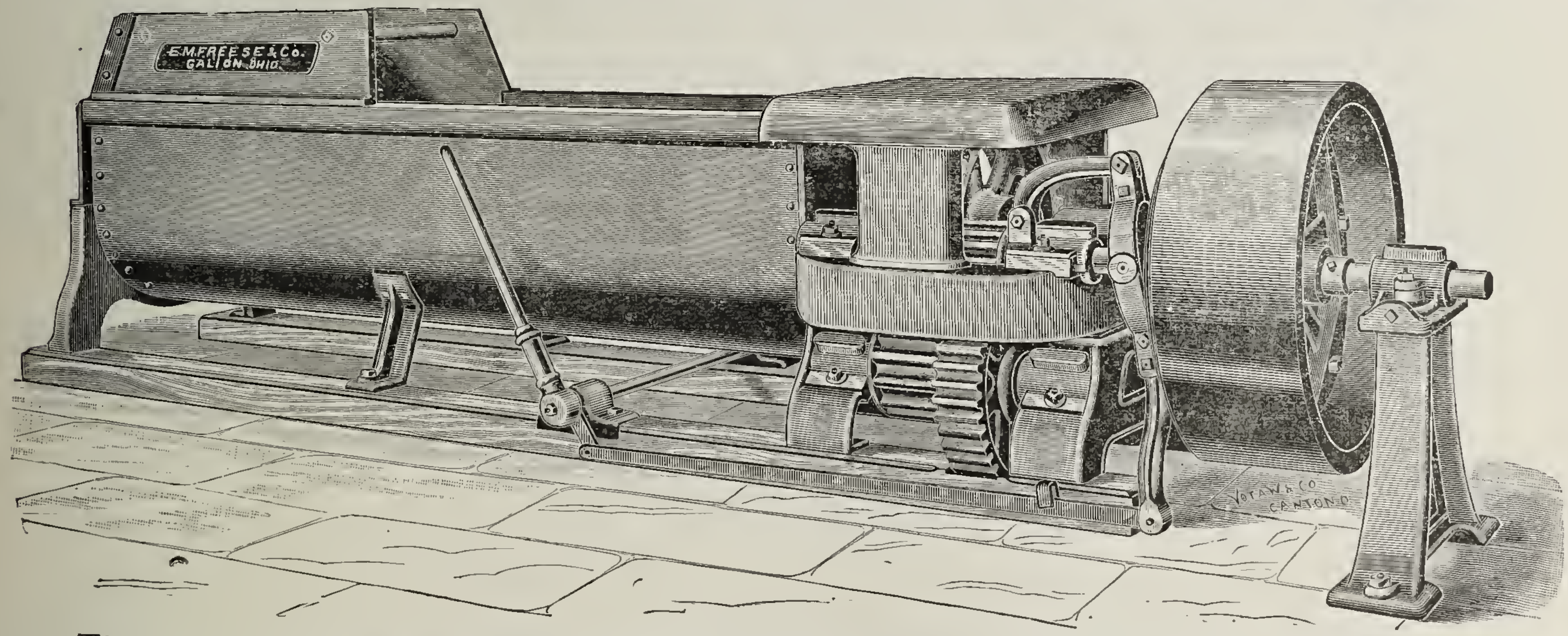
The Crown Potteries Co., of Evansville, Ind., has recently been incorporated by J. M. Weil, Evansville, Ind., president; John B. Cockrum, vice-president; M. B. Wilson, treasurer, and Arthur Davidson, secretary, all of Indianapolis, Ind. The Crown Potteries Co. is a consolidation, it is said, of all the potteries west of East Liverpool, Ohio, and it includes the factory at Evansville, Ind., which is valued at $325,000, and the factory at Peoria, Ill., valued at $275,000. The annual product of these two factories amount to over $600,000, and they employ 600 skilled laborers. The company will increase the capital to $700,000 in a short time by bonding and investing $100,000 in addition in cash. This increase will be used to build a third factory, which will be located at Indianapolis or Terre Haute, Ind. The combination will produce, besides pottery, glassware, fire brick and ornamental tiling.

Our Mammoth Brick Machine



THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug=Mills Have Features of Great Merit.

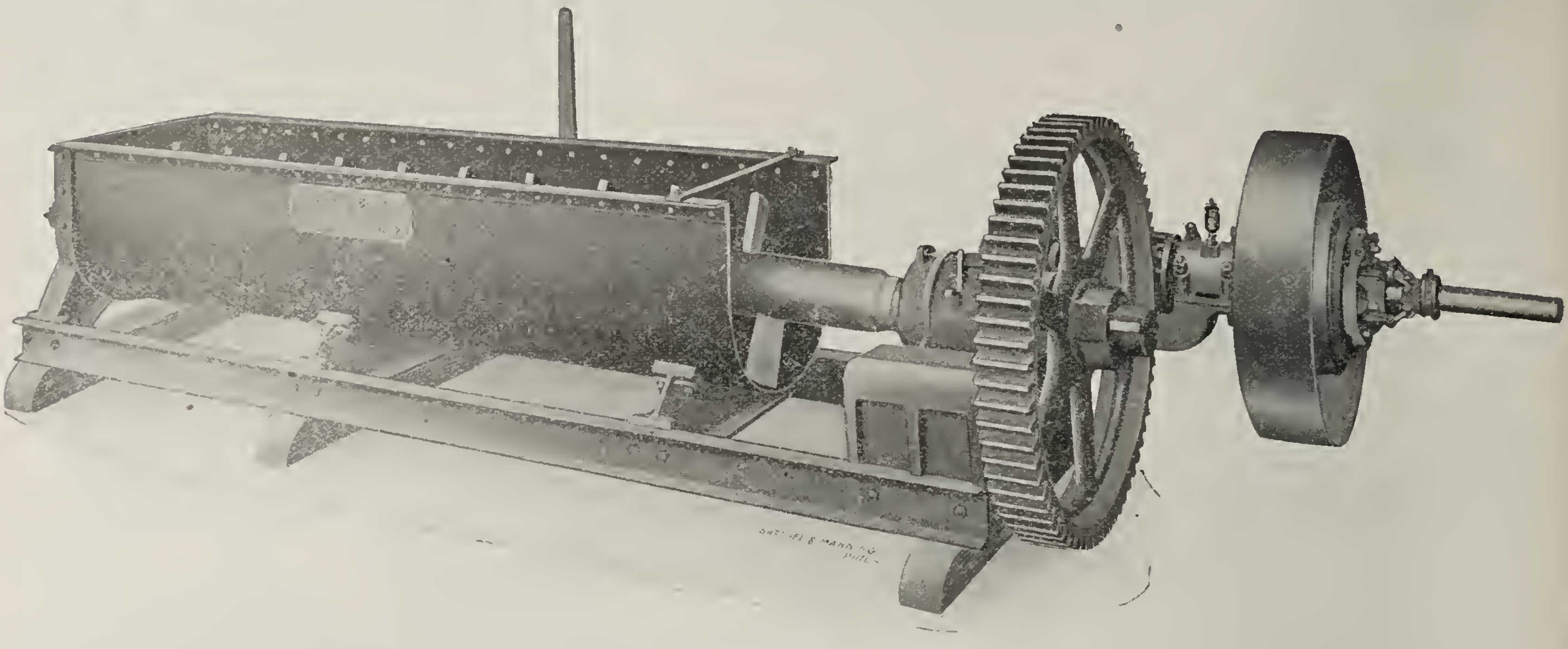


THESE PUG=MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitted for making a fine quality of brick.

E. M. FREESE & CO., = = Galion, Ohio.

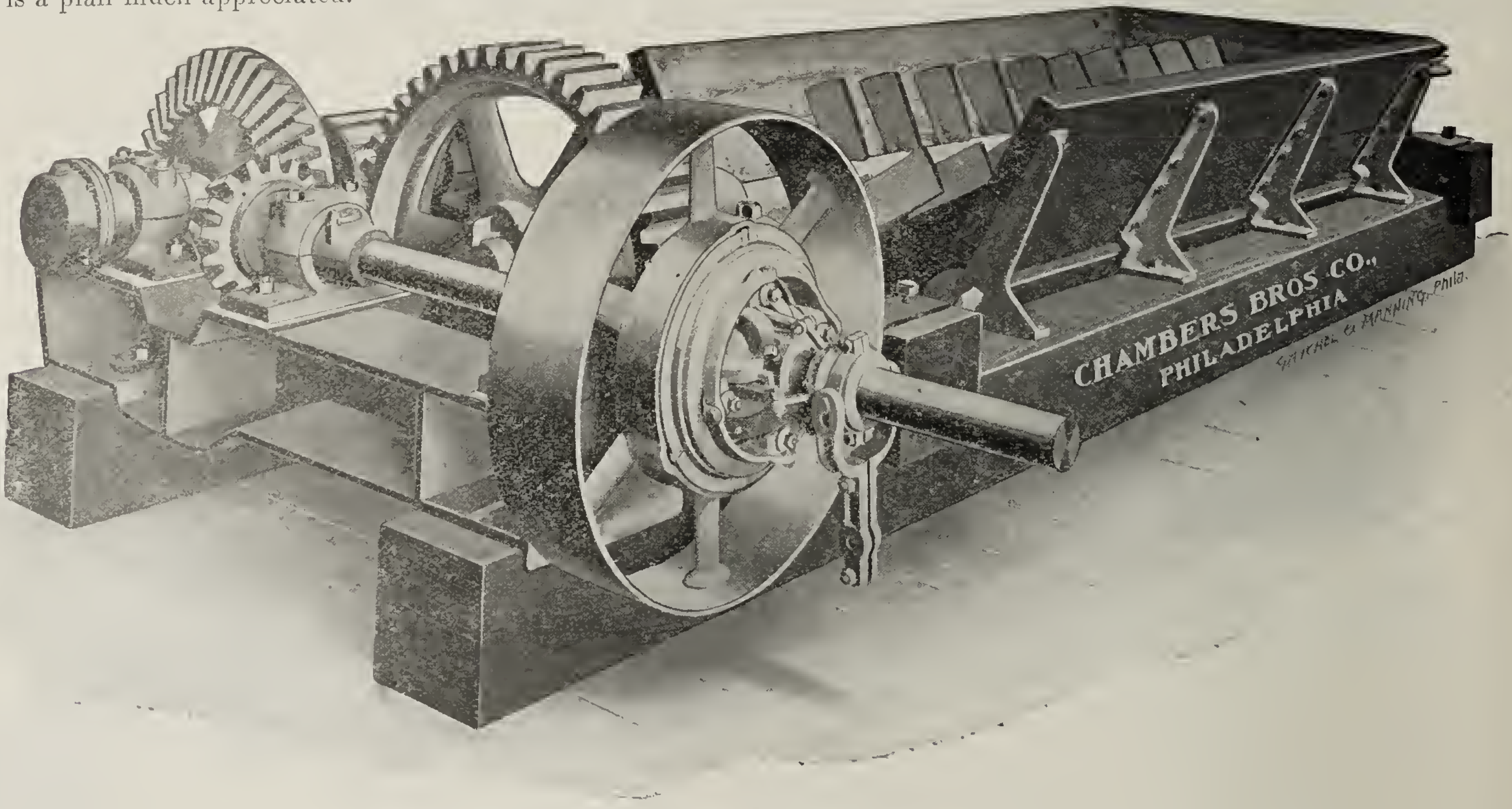
Mention The Clay-Worker.

THE Chambers Brick Machinery



The Chambers No. 8 Spur Gear Pug Mill.

This mill is made with tub 10 feet long or less. It is strong and substantial, but presents great simplicity of construction. Placing the gears where shown removes them from the point at which clay is fed into the mill. All journal bearings are entirely outside the clay tub. The ten-foot length carries forty forged steel knives so secured that they can be set at any desired angle with the shaft. This feature regulates the feed, secures a uniform output and with those who know is a plan much appreciated.

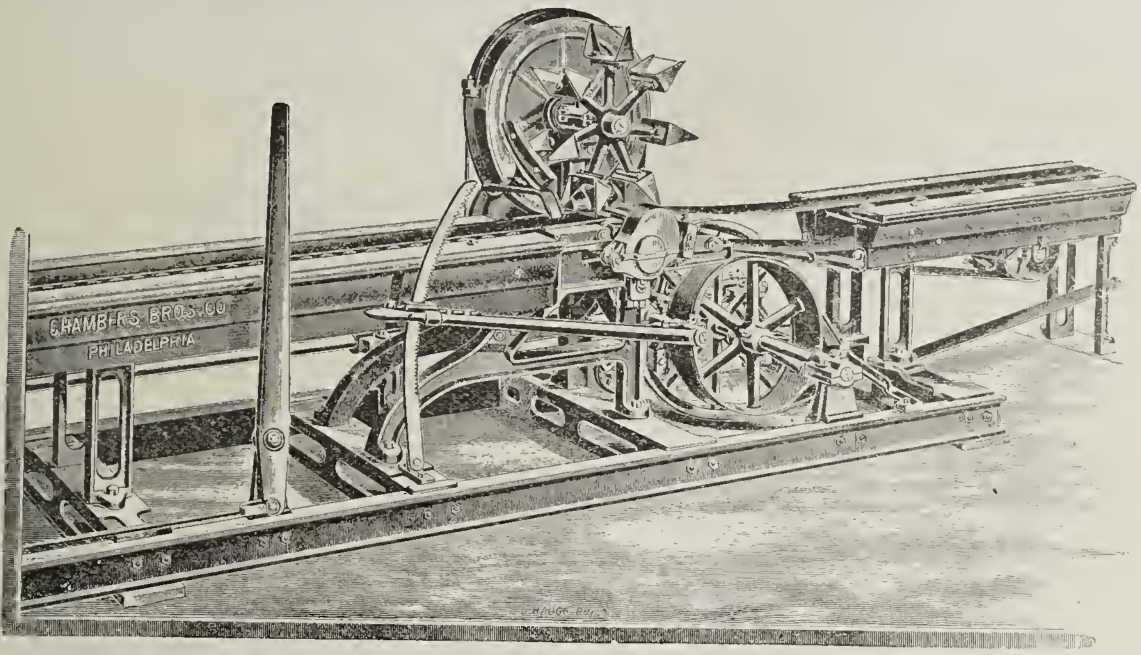


The Chambers Bevel Gear Granulator and Feeder.

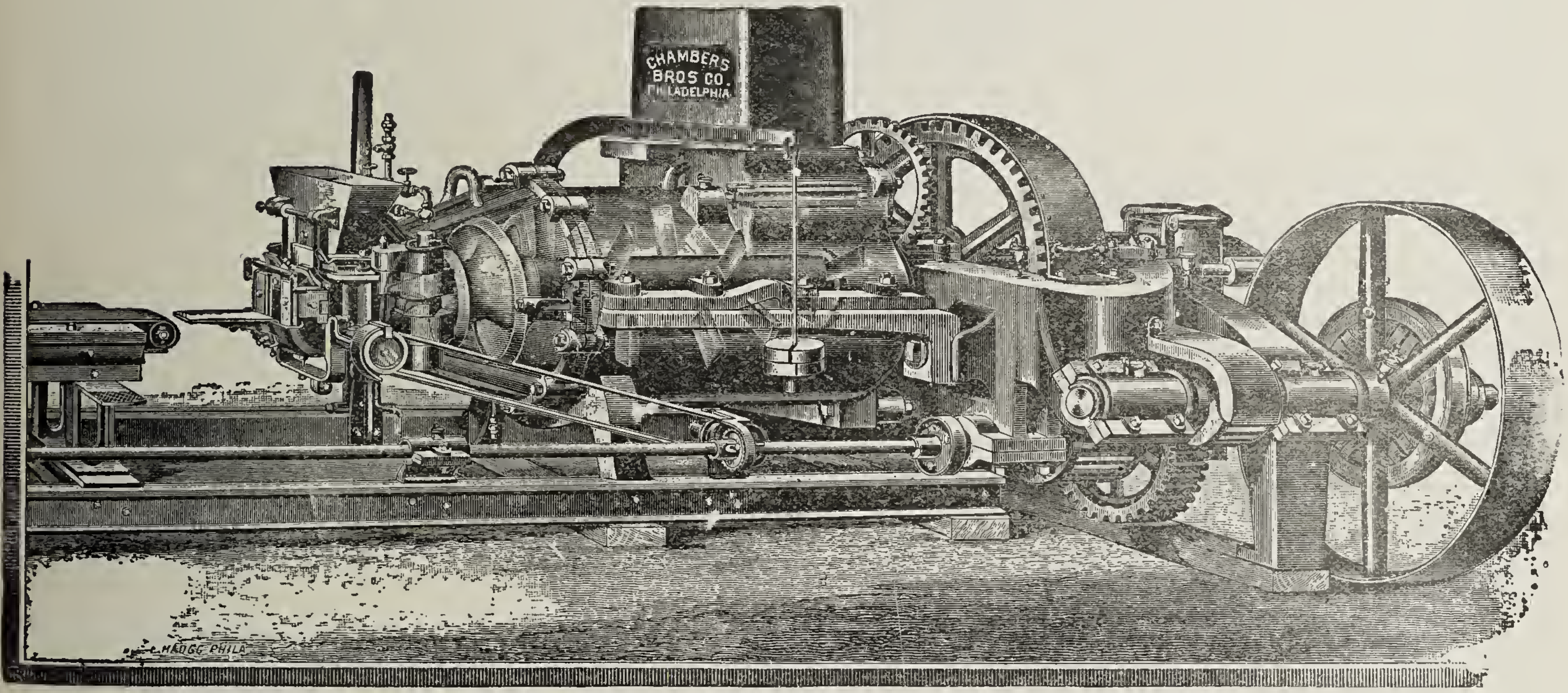
Some of our customers handle clay in wheelbarrows; some in carts, and others in cars drawn by locomotives. All large clay-working plants, and especially those digging clay with steam shovels, find great advantage in having a large, strong machine into which can be dumped a cartload or carload of clay at one time. This machine cuts up the lumps and feeds into the clay grinder a uniform supply of material. It serves as a reservoir between the irregularity of feeding from the clay pit and the continuous consumption of manufacture. It has 9-inch diameter shaft, forged steel knives, adjustable so as to regulate feed.

CHAMBERS BROTHERS COMPANY, - Philadelphia, Pa.

THE Chambers Brick Machinery


CHAMBERS BROS. CO.
PHILADELPHIA
HAUGG PHILA.

THE CHAMBERS AUTOMATIC WIRE CUTTER FOR END CUT BRICKS.
Will cut and separate from the continuously moving clay-bar over two hundred bricks per minute.


CHAMBERS
BROS. CO.
PHILADELPHIA
HAUGG PHILA.

THE CHAMBERS AUTOMATIC END CUT BRICK MACHINE.
Built in five sizes, having capacity from 10,000 to over 100,000 bricks daily, under favorable conditions.

Aside from the inventions and automatic features embodied in this machine and which enable its product to be obtained with a minimum of labor there are many excellent points in mechanical construction. We shall be pleased to explain these in detail to purchasers.

Chambers Brothers Company,
PHILADELPHIA, PA.

Written for The Clay-Worker.

WESTERN PENNSYLVANIA CLAY INDUSTRIES.

A CHARTER has been issued at Harrisburg to the Champion Sanitary Enamel Ware Co., of Blairsville, Pa. The new company starts with a capital of $300,000 and is the result of the recent developments in clay lands which have been going on in the Conemaugh valley about Blairsville. A large plant will be erected at once for the manufacture of all kinds of high-grade clay products. Pittsburg and western Pennsylvania capital is back of the new company.

The molders at the hollow ware department of the plant of Dawes & Myler, of Beaver Falls, who struck some time ago, have gone to work again, and the plant is now running in all departments.

The South Mountain Kaolin Co. has been chartered for the manufacture of pottery, brick and fire clay products. Important clay deposits in the mountains of Pennsylvania will be developed by the new company and a big plant erected at once.

H. C. Rigsby and other New Brighton, Pa., capitalists have purchased the Cooper pottery plant, at New Brighton, and will enlarge the property.

The Union Mining Co., of Mount Savage, Pa., which has been having a big run on the well-known fire and silica brick manufactured by the company, has recently completed some important improvements at its plant, and now has a capacity of 18,000,000 standard fire brick annually. This was one of the first fire brick companies in this section, having begun business in 1841, and now has agencies in all the important cities of the country.

The Dover Fire Brick Co. is an Ohio concern which has been shipping a large amount of its product to this district during the past year or so. This company manufactures the well-known Dover and Buckeye brands of fire brick. An office has been opened in the Times Building, in this city.

The Clinton County Fire Brick Co. is developing important fire clay and silica deposits in Clinton county, Pennsylvania. This company manufactures all kinds of standard and special shapes, and has lately increased its capacity.

W. H. Wynn & Co., manufacturers of high-grade fire brick, who operate plants in Clearfield county, Pennsylvania, have made some big contracts for fire brick during the past month.

The Stuart Fire Brick Co., which formerly operated silica brick plants in Ligonier valley, and which now operates a plant on the Yough river, is booking numerous orders for silica brick and shapes for open hearth furnaces.

The Garfield Fire Clay Co., which operates a large plant in the Conemaugh valley, has made numerous improvements lately, and is now enjoying a big trade on all kinds of brick and shapes for industrial purposes.

The American Clay-Working Machinery Co., of Bucyrus, O., has been installing considerable machinery for different clay-working plants in this district, and the machinery of this company is meeting with universal success.

In addition to the mammoth plant of Reese-Hammond & Co., at Bolivar, Pa., this company is now operating important clay plants in other parts of this district. About three years ago this company came into possession of a valuable property near Fairmount, W. Va., and the Hammond Fire Brick Co. was organized as a subsidiary to the well-known company which has been operating at Bolivar for many years. To-day this company is the leading fire brick concern in the Fairmount field. The company also operates an important plant at Curwensville, Pa.

The Kier Fire Brick Co., one of the principal concerns of the Kiskeminetas valley, has made improvements at its plant at Salina, Pa. This company is a large manufacturer of fire brick for paving purposes.

The Latrobe Brick Co. has lately been shipping a large number of building brick to different parts of this district. The demand for the product will soon necessitate additions to the plant, which are now being planned.

The new fire brick plant recently built at Ninevah, Pa., by Johnstown capitalists, is now in operation. This company owns large tracts of valuable fire clay near the new plant.

The Pennsylvania Railroad has, during the past year or two, been a large purchaser of fire brick. The extensive improvements of the company in this district already made and now under way have required millions of brick of all kinds.

The new plant of the Pennsylvania Rubber Co., which is to be erected at Jeannette, Pa., at a cost of $400,000, will involve large brick contracts, which will be made by the company shortly.

A Pittsburg company is being organized to operate the properties of the Keystone Fire Clay Co., of Akron, the Union Fire Clay Co.'s plant, at Coleman, and the Furnace Fire Clay Co.'s plant, of Salineville, O., recently purchased by the firm of E. D. Gartner, of Pittsburg.

The Federal Fire Brick Co., one of the newest concerns to enter the clay manufacturing industry in the Allegheny valley, is building a plant at Freeport, Pa.

The new fire brick and silica brick plant of the McFeely-Wheeler Co., near Latrobe, Pa., has gone into operation, with a daily capacity of 10,000 fire brick. The company, whose headquarters are in Pittsburg, has orders booked for more than 200,000 brick.

GILBERT.

THE OLDEST BRICK PLANT.

A subscriber has kindly sent us the following notice, which is a translation from a Danish paper: "The second century anniversary can be celebrated this year by the brick plant at Nivaagaard, Denmark. The plant was started in the year 1701 by Queen Louise for the purpose of manufacturing brick and terra cotta to be used in the erection of her castle named Hornholm. It has to-day some of the emblems and dates in the terra cotta work on the walls, which tell the story. The brick plant records an output of only 350,000,000 brick and drain tile in 200 years, about one-half of which was produced in the last twenty-five years." If any of our readers at home or abroad can cite a more ancient plant, we will be pleased to have further particulars.

CHANUTE, KAN.

A big deal was recently closed between the Chanute Vitrified Brick and Clay Manufacturing Co. and the Coffeyville Brick and Tile Co., in which the Chanute south brick plant, with the gas wells which supply it, was sold to the Coffeyville company at a good figure. This means an increase in the brick industry, as the new owners are contemplating increasing the output of the plant from 50,000 to 100,000 daily by putting on a night force and by making several enlargements. The Coffeyville company owns large brick interests at Coffeyville, Independence and Cherryvale, with a total daily capacity of 325,000 brick. The plant sold has been in operation over eighteen months and is located about a mile south of the city. Its output, when in operation, has been 50,000 per day, and it is one of the most modern equipped plants in the State. It was at first supplied with gas by the Forest Oil Co., but lately it has been supplied by the Chanute Oil and Gas Co. The brick company purchased these wells and the lien holdings on the two properties, and turned them over to the Coffeyville company with the plant. The gas plant cost the Chanute Brick Co. $10,000, and will enable the new owners to not only burn their own brick very cheaply, but will enable them to get a revenue from gas if they want to do so. The purchase included 170 acres and the consideration was cash.

The volume of foreign business handled in our country during the year is well shared by the Henry Martin Brick Machine Mfg. Co., of Lancaster, Pa. Among the recent shipments have been complete outfits to Italy, Spain and Mexico, as well as into Canada, and these facts alone are evidence of the favor with which the Martin products are met with in the foreign markets. Our friends abroad will find it to their advantage to secure a copy of Martin's catalogue, which is a most complete book and very valuable for reference.

The Wellington Machine Co.

WELLINGTON, OHIO,

NOW

Make their own brick moulds, and have made improvements in their manufacture. Try a sample lot and place your order EARLY.

STILL

Make the two leading soft-mud Machines. Over 500 upright "Quakers" used. Over 125 horizontal "Monarchs" in use, which have the double pug mills and the double presses.

AND

Are selling hundreds of those roller-bearing Trucks and Barrows that are a genuine improvement, and everybody adopts who try them.

ALSO
A LOT
OF
OTHER
GOOD
THINGS.

Written for The Clay-Worker.

AMONG THE POTTERS.

ALL OF THE POTTERIES of this vicinity report the best year in the history of their respective companies, and this is certainly gratifying to those whose money floats on the wave of the potting industry. Of course, there is more or less talk of poor prices and of the "trust" to come, but none of the potteries are going out of the business and none are certainly falling behind, unless it is in the way of orders. On the other hand, the most of the potteries are making additions to their plants, and, by the looks of things, are getting ready for a still larger year than the one just gone through with.

Several changes have been made in the officers of the East Liverpool Potteries Co., at that concern's last annual meeting the last of January. F. B. Lawrence has succeeded E. J. Owen as secretary, and N. A. Frederick has resigned as purchasing agent, which position will now be filled by Mr. Murphy, the president of the company, along with his regular work. This company is preparing to make extensive additions to its several works, and, it is said, among these will be two new kilns at the Wallace and Chetwynd works. Also a new klin or two at the East End works. The new additions will increase the capacity of the different plants considerably.

The Potters' Mining and Milling Co., of this city, has reelected the following officers: President, B. C. Simms; vice president, John N. Taylor; treasurer, William Cartwright; secretary, Joseph G. Lee.

The Potters' Co-operative Co. has completed two new kilns, which are now ready to fire. The company is also installing two new blunger mills in the slip house. The Patterson Foundry and Machine Co., of this city, is installing the machinery.

The Union Potteries Co., of this city, is also making extensive additions in the way of machinery. It is installing several new blunger mills, and is putting in new filter presses. It is said that the Union Co. will also soon build several new kilns to its already extensive works. The company is also installing several new machines at the Chelsea works at New Cumberland, W. Va.

The National China Co., of East Liverpool, is making repairs on its decorating kilns.

The American Decalcomania Co. has been chartered at Akron, O., to engage in the manufacture of decalcomania prints for pottery use, with a paid-in capital stock of $25,000. Akron parties are interested.

The Roseville Pottery Co., at Roseville, O., recently elected the following officers at its annual meeting: President, G. B. Emerson; vice president, J. F. Weaver; secretary and manager, C. F. Young.

A new pottery company has been incorporated at Philadelphia, Pa., with a capital stock of $75,000, under the name of the New Garden Pottery Co.

At the annual meeting of the East Palestine Pottery Co., at East Palestine, O., W. S. George was again chosen as manager for the next five years.

The capital stock of the Weir Pottery Co., at Monmouth, Ill., has been increased from $25,000 to $80,000.

It is said that the Champion Brick Co., of Wellsville, O., four miles from this city, has decided to remove the works from that location to Bower's Run. The reason given is that the supply of clay is almost exhausted at the present site and the supply at the new site is practically inexhaustible.

The fire brick works of the J. M. Rumbaugh Brick Co., at Pitcairn, Pa., were almost totally destroyed by fire last week, and were damaged to the possible extent of between $15,000 and $20,000. The buildings destroyed will be rebuilt at once.

It is announced that the new works at Irondale, O., of the Eastern Ohio Sewer Pipe Co. will be completed and in running order by the 1st of April. The officers of the company are as follows: William Banfield, president; A. S. Freeman, vice president; F. W. Owensey, secretary, and A. W. Webber, treasurer.

The East Liverpool parties who were interested in erecting a pottery at Youngstown, O., have given up the project and have taken the matter up with Warren parties. Warren had a pottery about a year ago, but, owing to poor management, it was not very successfully operated. However, better results are looked for from the new parties, should they be able to close with the Warren parties.

Mr. John Moses, one of the oldest "boss" potters in Trenton, N. J., and one of the oldest in the United States, died some two weeks ago in that city. He is deeply mourned by all who knew him. Mr. Moses was also prominently connected with the Trenton Watch Co. TOM POTTER.

NOTES FROM TIDEWATER, VA.

MR. R. L. JACOBS, who was so terribly mangled at the plant of the Suffolk Clay Co., on Nov. 1, by being caught in a coupling on a line of shafting, is nearly well, after about nine weeks' treatment at the St. Vincent Hospital, at Norfolk. He comes out about as good as ever, to the great surprise of his doctors and friends.

The Nansemond River Brick and Tile Co., at Reid's Ferry, Va., is putting in two new boilers and making other extensive improvements at its plant.

Mr. John Salgue, formerly general manager of the Nansemond River Brick and Tile Co., has accepted a position with the Bibb Brick Co., Macon, Ga. The latter company is to be congratulated on getting such a man as Mr. Salgue, as he is an expert brickmaker and has put several brick plants on their feet in this section.

Mr. Wesley Goodwin, who lost his finger in an Eagle repress at the Suffolk Clay Co.'s plant, a short time ago, is able to be at work again.

The prospects for 1902 are not as bright here in Virginia as they might be. Many of the yards have a large stock of brick on hand and nothing in sight to relieve the situation. This time last year brick were scarce and the yards all busy. What the future will bring forth we cannot say.

Suffolk, Va., is to have another brick plant. A survey was made last week for a sidetrack from the S. A. L. R. R., and the location will be near the Suffolk Clay Co.'s plant, in West Boston. The proposed new plant is being worked on the quiet, but they say they expect to put in a large plant, with improved machinery and dry kilns.

The S. A. Davis plant was advertised for sale on the 27th of January for taxes by Town Sergeant W. E. Brinkley.

There continues to be a great scarcity of bricklayers in this section, and wages range from four to five dollars per day for eight hours' work. H. L. JACOBS.

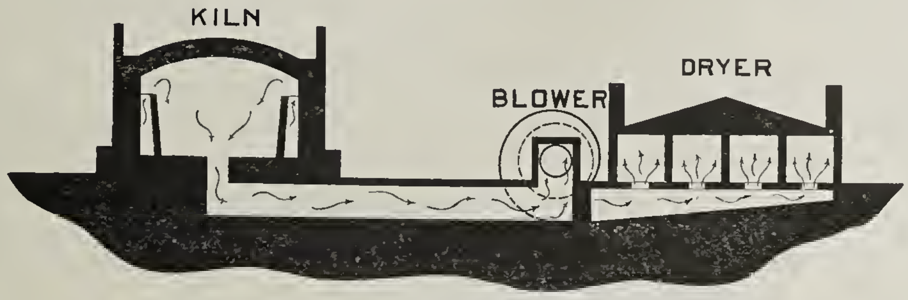
THE GAME OF SKAT.

An illustrated treatise on this popular German game has just been issued by the Passenger Department of the Chicago, Milwaukee & St. Paul Railway. The rules of the game revised to bring them up to date are given, and those interested in Skat will find it an instructive publication. A copy may be obtained by sending ten (10) cents in postage to F. A. Miller, General Passenger Agent, Chicago, Ill.

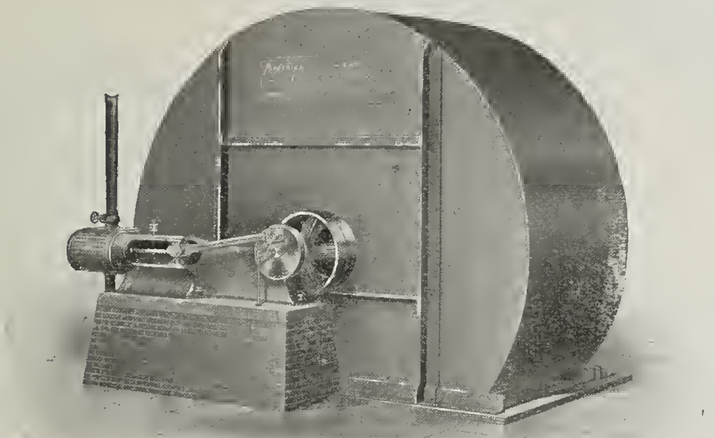
A CRUSHER OF SENTIMENT.

First Beggar—Come on, Bill;—dere's no use begging here! Every kind hearted looking slob dat comes along dem kids nails him back o' de ear wit' a wet snow-ball and knocks all de philanthropy out uv him! Come along!—Puck.

The "A B C" Waste Heat Dryer.



**The Scheme Suggested==
It's Worth Investigating.**



A Partial List of users of the System is given below. They find it "all right," so will you if you will let us put it in for you.

FREDERICK (MD.) BRICK WORKS.
KOUNTZ BROS. CO., Harmarville, Pa.
CLEVELAND BRICK CO., Canton, O.
KITTANNING (PA.) CLAY MFG. CO.
BUCKEYE BRICK CO., Wickliffe, O.
WHITACRE CO., Magnolia, O.
CROWN FIRE CLAY CO., Parrol, O.
W. D. RICHARDSON, Cleveland, O.
DON VALLEY BRICK CO., Toronto, Ont.
HORSEHEADS BRICK CO., Horseheads, N. Y.
SPRINGFIELD (ILL.) PAVING BRICK CO.
GALESBURG (ILL.) PAVING BRICK CO.
NATIONAL FIRE BRICK CO., Strasburg, O.
SUBURBAN BRICK CO., Wheeling, W. Va.
CANTON TILE HOLLOW BRICK CO., New Bethlehem, Pa.
INTERNATIONAL CLAY MFG. CO., Perth Amboy, N. J.
COALDALE PAVING BRICK CO., Birmingham, Ala.
FT. PITT STONE & BRICK CO., Carnegie, Pa.
EXCELSIOR TERRA COTTA CO., Rocky Hill, N. J.
WASHINGTON (D. C.) BRICK & TERRA COTTA CO.
PURINGTON PAVING BRICK CO., Galesburg, Ill.
ROYAL SEWER PIPE & FIRE BRICK CO., Akron, O.
REESE-HAMMOND FIRE BRICK CO., Bolivar, Pa.
PITTSBURG TERRA COTTA LUMBER CO., Port Murray, N. J.
EASTERN PAVING BRICK CO., Catskill, N. Y.
BESSEMER LIMESTONE CO., Youngstown, O.
KITTANNING BRICK & FIRE CLAY CO., Pittsburg, Pa.

American Blower Company,

DETROIT, MICH.

NEW YORK, 141 Broadway. **CHICAGO, Marquette Bldg.** **LONDON, 70 Gracechurch St.**

Written for The Clay-Worker.

ST. LOUIS BRICK AND BUILDING NOTES.

BUSINESS AMONG the clayworking industries has been much better the past four weeks than during the same time last year, and everything points to a splendid trade and a rush of business as soon as spring opens up.

Prices remain the same as last month, namely: Merchantable brick, $7.25; ordinary brick, $7.75; strictly hard, $8.25; red pressed, $17.50, and sidewalk and paving brick, $8.50.

The very severe weather the past two or three weeks has prevented most of the brickyards from beginning work. Some, however, have found it necessary to do so. The Union Pressed Brick Co. was one of the first to begin. It was started about a week ago because the company was short of brick. They have already got out two kilns.

Because the city has no money the work of extending the sewer system and making certain street improvements must be somewhat delayed. It had been presumed that the charter amendments, which provided that sewer and street improvements shall be made at the expense of the property holders in the immediate vicinity of the improvement, would offer a means of permitting the immediate commencement of certain much-needed work. Although property owners in the Tower Grove Park region of the city are said to be very anxious to have the Tower Grove and Rock Springs joint sewer district work commenced early in the spring, it appears that the bills authorizing this work cannot be legally passed by the Municipal Assembly, because they cannot be certified to by the comptroller, for the reason that the city has no money with which to pay its portion of the cost. The aggregate cost of the construction of the two sewers, it is estimated, will be $220,000. The same difficulty which confronts the sewer commissioner has also to be met by the street commissioner, who desires to improve King's highway, Grand avenue and Lafayette avenue.

The contractors on the World's Fair site are waiting very anxiously for a thaw to resume work on the river channel and sewer, as everything is ready now for quick completion of the work. The sewer ditch for the four-foot brick work is open for a distance of 1,000 feet, and 200,000 brick are stacked up on the grounds ready for immediate use.

The contractor who is building the new City Hospital has had some trouble recently with the building commissioner regarding the terra cotta which he desired to use. The building commissioner objected to the color of the terra cotta, and the contractor insisted that it was all right. The matter now, however, has been adjusted and the terra cotta accepted.

The Illinois Car Service Co. was defeated in a justice's court at Alton, a few days ago, in an effort to enforce demurrage to the value of $165 against the Alton Paving, Building and Fire Brick Co. on two cars of brick. The Car Service Co. replevined the two cars of brick upon which the Alton firm refused to pay the per diem tax on cars used overtime, and the justice ruled that the brick were the property of the Alton firm, and taxed the costs in the case on the Illinois Car Service Co.

The Laclede Fire Brick Manufacturing Co. is putting up an addition to its factory on East Sulphur avenue, between Wilson avenue and the 'Frisco Railroad tracks, at a cost of $4,000.

At the annual meeting of the Christy Fire Clay Co., held the latter part of January, Calvin M. Christy was elected president; W. C. Morris, vice president and general manager; Franklin P. Jones, secretary and treasurer, and these, with Joseph M. Thomas and Charles T. Farrar, directors.

The North Alton brick plant, which has been closed down several weeks while repairs were being made, resumed operations February 1, and will be run steadily the remainder of the year. The plant has been improved while it was closed down, and it will have a larger capacity.

The annual election of directors for the St. Louis Hydraulic Press Brick Co., held a few days ago, resulted in the selection of the following: Festus J. Wade, E. C. Sterling, H. W. Elliot, W. E. Smith, Henry C. Scott, John A. Holmes and William B. Dean. The directors organized by electing Mr. Sterling president and Mr. Elliot secretary and treasurer.

A bricklayer and a carpenter were severely injured last week by the caving in of an arch in a brick kiln being erected at the Laclede Fire Brick Co.'s plant that is being built.

A laborer employed at the Evens & Howard brickyard was instantly killed a few days ago by the breaking of a brick press. He was at work on a press, making sewer pipes, and a lever broke, striking him in the abdomen.

The annual meeting of the stockholders of the Alton Fire Brick and Paving Co. was held last month and officers were elected for the new year.

The St. Louis Vitrified and Fire Brick Co., of this city, filed a statement of increase in capital stock last week. The increase was from $75,000 to $100,000. The assets were stated as $106,612.92 and the liabilities as $30,028.75.

The Jonesburg Clay Co. was incorporated last month with a capital stock of $25,000, all paid up. Charles Dixon, Charles W. Kuntz, T. O. Pugh, Frank F. Blades and Thomas Finn each have 1,000 shares.

Melcheor Waldooger, of Jericho, Mo., an experienced brick and tile factory man, who at present owns and operates a plant at Jerico, Mo., was in Appleton City, Mo., a short time ago, with a view to erecting and operating a factory in that place. He found plenty of good clay, suitable for the manufacture of both brick and tile, and made a proposition to some of the citizens of that place. He did not ask cash, but only the assurance that he can find a home market for his products.

Mr. and Mrs. Anthony Ittner; Mr. Scott, of the Fernholtz Brick Machine Co.; Mr. and Mrs. Milton F. Williams, of the Williams Crusher and Pulverizer Co., and Walter Grath, of the Illinois Supply and Construction Co., were among those from St. Louis who went to Cleveland to attend the National Convention.

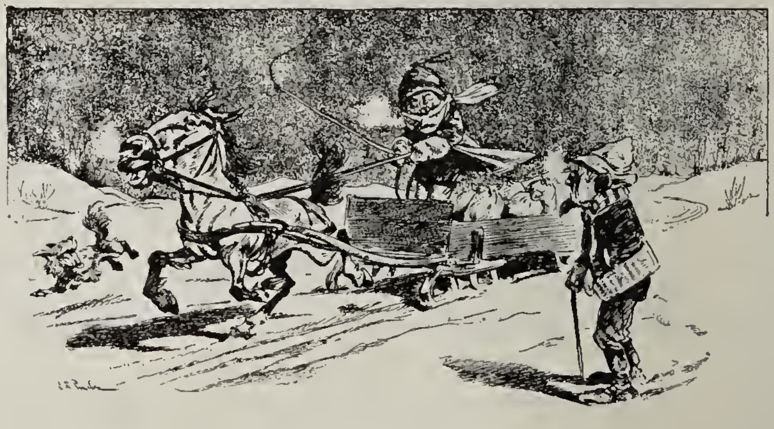
A SAINT.

THE PROVIDENT SAVINGS.

Of the progressive, up-to-date life insurance companies doing business in the United States, none is more deserving of special mention than the Provident Savings of New York, which is represented in Indianapolis by P. M. Dill, agency director (formerly general agent), with offices at 234, 235 and 236 Newton Claypool Building. The report of the Provident Savings for the year 1901 is a very gratifying one to the policy holders, showing assets of $5,116,873.84, a gain of $1,091,538.75; reserve, $4,160,313, a gain of $923,753; income, $3,792,776.49, a gain of $220,888.52; surplus, $765,086.27, a gain of $163,813.79; excess of income over disbursements, $1,100,990.31, with a decrease in the expenses of management of nearly $100,000. The report further shows that not a single death loss is due and unpaid. With such a record, this company may confidently expect a handsome increase of the very liberal patronage it has been receiving. The editor of The Clay-Worker speaks from experience, having settled several death claims for relatives and friends who carried policies in the Provident Savings, and gladly bears witness to unfailing courtesy and just dealing on the part of the officials of this company.

VERY LOW RATES TO THE NORTHWEST.

March 1 to April 30, 1902, the Chicago, Milwaukee & St. Paul Railway will sell tickets to Montana, Idaho and North Pacific coast points at the following greatly reduced rates: From Chicago to Butte, Helena and Anaconda, $30.00; Spokane, $30.50; Portland, Tacoma, Seattle, Victoria and Vancouver, $33.00. Choice of routes via Omaha or St. Paul to points in Montana, Oregon and Washington. For further information apply to any coupon ticket agent in the United States or Canada, or address C. C. Mordough, Traveling Passenger Agent, 12 Carew Building, Cincinnati, O.



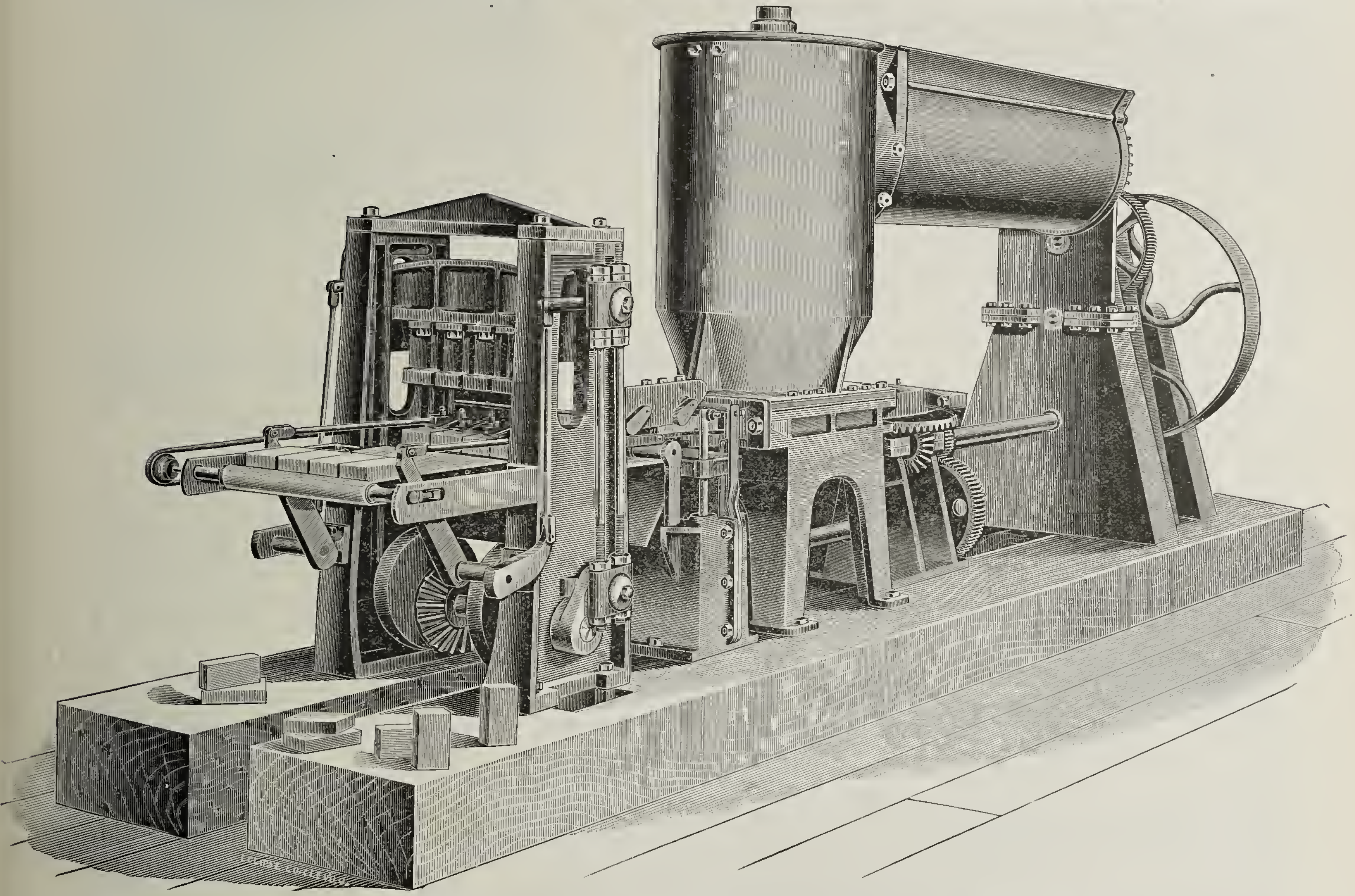
ONE OF MANY.

"Don't this kind of weather suit you?"
"No. I never liked Winter except in Summer!"—[Puck.

"The Dictator"

The only Brick Machine which will Produce "Perfect Repressed Brick Without Lamination."

Strong, Powerful, Simple and Positive.



Capacity from 25,000 to 40,000 Repressed Brick per Day.

THIS MACHINE is guaranteed to automatically produce better repressed Brick both in construction and appearance, at less cost, than any other machine or combination of machinery now on the market. It is especially adapted for making Paving, Fire or Fine Front Brick.

The Battenfeld Mfg. Co.,

Write for Catalogue. *513 Williamson Bldg., CLEVELAND, OHIO.*

WRITTEN FOR THE CLAY-WORKER.

THE NEW YORK BRICK MARKET.

THE MARKET has not developed any new features. Weather conditions have not been of a kind to call for a large consumption of brick. The lower Hudson will no doubt be able to supply the early demand. An account of stock taken under the sheds at Haverstraw on Jan. 16 shows $1,000,000 brick. The stock on the east shore of the Hudson, on Haverstraw bay, will probably make a showing of some millions, which will bring the total above 100,000,000. It is to be hoped that there will be a time in the market that will give the faithful the power to twist, and twist hard, the dealers who are trying so hard to break the organization.

There is a record of a barge that was eighty-three days on one trip, and another that left the yard on the 22d of October, and, on the 18th of January, had not returned, holding the cargo, after being sold for a long time, to try and make shippers desert the other members. It seems there should be established a cast-iron rule to the effect that, when a cargo is sent to discharge, a certain number of days shall be allowed to unload, and after that a demurrage be paid. Some of the middle Hudson manufacturers were so anxious to ship their brick in the late fall that they worked night and day, the men being paid 25 cents an hour for night work.

The present prices for common building brick are from $5.25 to $6.25 per thousand. A. N. OLDTIMER.

CAREER AND CHARACTER OF ABRAHAM LINCOLN.

An address by Joseph Choate, Ambassador to Great Britain, on the career and character of Abraham Lincoln—his early life—his early struggles with the world—his character as developed in the later years of his life and his administration, which placed his name so high on the world's roll of honor and fame, has been published by the Chicago, Milwaukee & St. Paul Railway, and may be had by sending six (6) cents in postage to F. A. Miller, General Passenger Agent, Chicago, Ill.

REDUCED RATES WEST AND NORTHWEST VIA PENNSYLVANIA LINES.

One way second-class colonist tickets to the West and Northwest will be sold at special fares via Pennsylvania Lines during March and April, 1902. Particular information about fares, through time and other details will be furnished upon application to Passenger and Ticket Agents of the Pennsylvania Lines.

A RAY OF HOPE.

The Rabbit—If this makes him as nervous as it does me, he can't hit the side of a barn —[Puck.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than $1.00.

WANTED—A small second-hand dry pan; state price and condition. Address
2 1 d O. T., care Clay-Worker.

FOR SALE—One three-mold Boyd brick press, but little used. Address
GLOBE IRON WORKS,
2 tf d Erie, Pa.

FOR SALE—Two large size disintegrators; have been used only one season and are in perfect condition. Full particulars to
2 1 d BOX 13, Clay-Worker.

WANTED—A good brick burner, one who is sober and industrious, and one who could take entire charge if necessary. Address A. L. M.,
2 1 c Care Clay-Worker.

FOR SALE OR TRADE—Brick and tile factory at Union City, O. Machinery all in good condition, ready to operate. Address BOX NO. 11,
1 1 cm Care Clay-Worker.

WANTED—A manager; practical brick man; one who would purchase an interest preferred. Address
BUTLER BRICK & TILE CO., Ltd.,
2 2 c Butler, Pa.

WANTED—First-class press brick sorters and setters, in up and down-draft kilns. State wages wanted and references.
STONINGTON BRICK CO.,
2 1 d Stonington, Miss.

FOR SALE—One second-hand 40-inch Stedman disintegrator; good as new; cheap for cash. Address
THE JACKSON SAND MINING CO.,
1 3 cm Jackson, Ohio.

FOR SALE—Two double Columbian Raymond represses, in first-class condition, and one Raymond hand press, never used. Price low. Address REPRESS,
2 3 c Care Clay-Worker.

WANTED—Superintendent for a successful fire brick plant; a man capable of making fire brick for malleable iron and steel furnaces. Address, stating age, etc.,
2 1 50p S., care of Clay-Worker.

FOR SALE—One hundred and fifty single-deck cars, in good order, for stiff or soft mud brick, 6 feet 11 inches long by about 30 inches wide; capacity, 500 to 600 brick. Also a lot of 1-inch pipe, in good condition.
2 1 d S. D. W., care Clay-Worker.

FOR SALE—One horizontal C. & A. Potts & Co. stock brick machine, wood frame, in good condition, with several duplicate parts, new and unused. Will be sold at a bargain. Address
SUBURBAN BRICK COMPANY,
2 1 d Wheeling, W. Va.

SITUATION WANTED—A continuous kiln burner, with twenty years' experience with various continuous kiln systems and wares, abroad (especially Germany) and in this country; capable to cope with difficulties, etc., offers his services. Address
2 1 cm EXPERT, care Clay-Worker.

WANTED—Situation as foreman in brick plant; can burn with coal, wood, gas or coking furnace, up or down-draft; can furnish information how to burn any common up-draft kiln with all coal; can set up plants. Soft mud machine preferred. Good reference. Address
2 1 c "J.," care Clay-Worker.

WANTED—A man capable of running two Simpson dry press machines; one who thoroughly understands the machines and who can operate and keep same in repair. Good wages and steady work. Address, with references,
COLUMBUS FACE BRICK CO.,
Room 24, The Ruggery,
2 1 d Columbus, O.

WANTED—Superintendent; a man capable of making the best grades of fire brick for malleable iron and steel furnaces, also silica brick; thoroughly practical and experienced in the manufacturing and burning, also handling men. State experience had in brick and tile, age and salary wanted. Address SILICA,
2 1 1p Care of Clay-Worker.

WANTED—A party to take working interest in brick plant, two miles from Oak Grove, Pa., where fifteen million brick will be used in construction of shops. Can sell all I can make. Capacity, 30,000 per day. New equipment, complete. Big building boom in spring.
Address LEWIS,
2 4 d Care Clay-Worker.

TERRA COTTA SUPERINTENDENT WANTED—Must be capable of handling a moderate sized shop and thoroughly understand his business. Applicants will please state age, salary desired, experience and give reference, which will be treated confidentially. Address
S. K. R., care Clay-Worker,
2 2 d Indianapolis, Ind.

FOR SALE—A combined tile plant and saw mill, in Boone county, Indiana, both well equipped. Good demand for small tile and a fair line of custom trade in mill line. Will sell cheap for cash or trade for improved property or good farm land. For full description, reasons for selling, etc., address J. C. SILVER,
2 1 cm Rural Route 2, Argus, Ind.

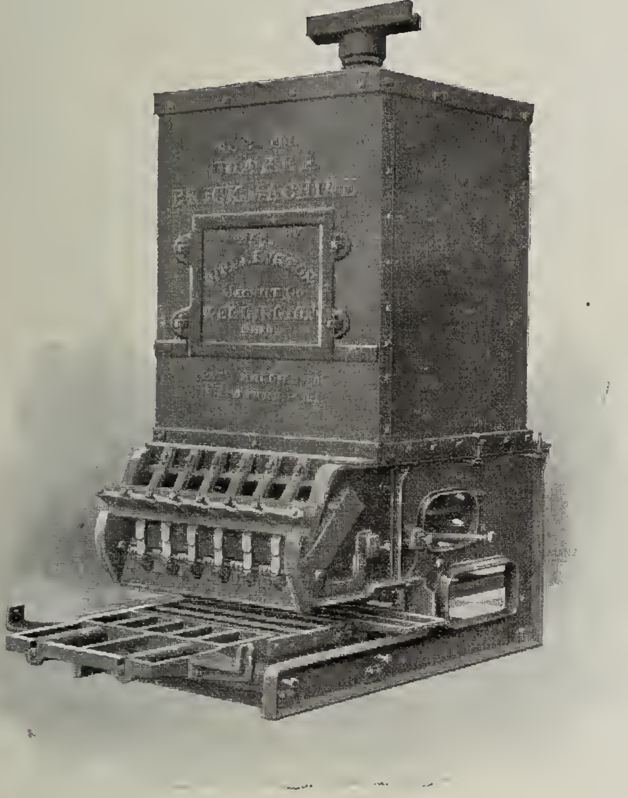
FOR SALE—One brick and tile machine, with clay crusher attached, and in good condition. Tile dies, from 3-inch to 12-inch, and cut-off tables and two brick dies, one side cut and one end cut, with side cut-off table. F. o. b. cars at Shelby, O., for $125. Eight kiln bands, 75 feet long, for $25.
Address J. J. SABIN,
2 1 1p Shelby, Ohio.

FOR SALE CHEAP—Soft mud outfit, rigged complete, with steam power iron Quaker boiler, engine, clay elevators, Wellington sander, capacity 2,000 per hour; racks, pallets, trucks, barrows, grates and doors for twenty arches, with or without lease on yard, located at Joplin, Mo. Also one-horse power iron Quaker machine. Address
H. M. MERRILL,
2 2 c Webb City, Mo.

FOR SALE OR LEASE.

Tons or acres of porcelain clay; shaft just dug, in hard pan 18-feet strata; level mile to siding on Big Four railroad; coal under gas and timber. Egg-shell porcelain baker wanted. Address A. R.,
2 1 d Care Clay-Worker.

The NEW IRON HORSE POWER QUAKER.



THIS is indeed a model machine; it is the best machine for equipping small yards at a moderate expense that has ever been put upon the market. It is built for the attachment of steam gearing whenever desired.

* * *

IT WILL PAY YOU TO SEE MY NEW CATALOGUE.
BEFORE PLACING YOUR ORDER.

In it you will find illustrations of the best and most durable **Brick and Tile Barrows, Brick Moulds, Clay Carts, Etc.**

Everything Used About a Brickyard.

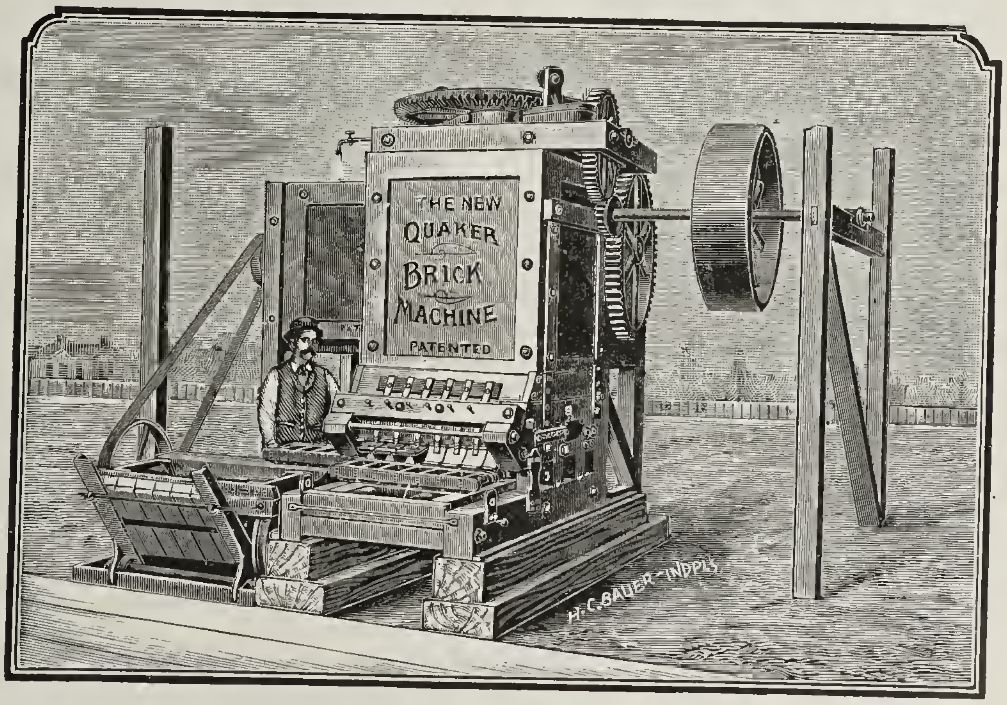
The Best for the Least Money.

Complete Combined Outfit, Consisting of the Extra Heavy Iron Quaker, Spiral Pug Mill and Mold Sanding Machines.

THIS OUTFIT is intended for fire brick, common brick, or street pavers. Its capacity is only limited by the ability to handle the product.

As will be seen, the manner of gearing has been simplified to the utmost extent, thus reducing the power required, so that a fifteen to twenty horse-power engine will run it with ease. No line or counter shafting necessary. No extra pulleys or belting.

I carry in stock a full line of first-class brickyard supplies at a very reasonable price.



No 1 Spur Geared Style, Capacity 40,000 or More per Day.

JAMES W. HENSLEY,

Successor to
S. K. FLETCHER.

Indianapolis, Ind.

Mention The Clay-Worker.

WANTED—From 100 to 250 iron or steel cars for drying soft mud bricks. Address
ADAMS BROS.-PAYNES COMPANY,
1 2 d Lynchburg, Va.

WANTED—A second-hand pulverizer for reducing bones, cinders and breeze. Address
CARROLL SMITH,
1 2 cm Canton, Miss.

WANTED—A No. 1 sewer pipe burner; one who can burn in Eudaly kilns; state wages and reference.
BOX 44,
Care Clay-Worker.

WANTED—Any one having any second-hand soft mud or stiff mud brick machinery, in good order, please write us.
BRANDT CLAY PRODUCT CO.,
1 2 dm Binghamton, N. Y.

FOR SALE—SWIFT'S WONDER OF THE AGE, the grateless coking table furnace kilns, lately patented. Come on followers. Write for particulars.
F. E. SWIFT,
12 tf d Washington, Iowa, U. S. A.

FOR SALE—Best located brick plant in Florida. Abundance of good clay. Never been able to supply the demand. Will sell cheap. Owner engaged in other business.
1 tf dm A. E. DAVIS, Ripley, Miss.

FOR SALE—One Tiffin steam power soft mud brick machine, in good condition, capacity from 20.000 to 40,000 per day. F. o. b. cars at Fostoria, O., $125. One heavy crusher, in good condition, f. o. b. cars at Fostoria, $125. Also a lot of line shafting (2-inch) at 20 cents a foot.

Address J. J. SABIN,
2 1 1p Shelby, Ohio.

WANTED—Parties having small capital wishing to engage in the manufacture of all kinds of brick, tile, fire clay products; good plant; 65-h. p. engine, 80-h. p. boiler, cars, trucks, etc. Abundance of wood; fine clay bed; best of water; excellent health; good schools and churches, in the growing town of Bluff Springs, Escambia county, Florida, thirty-nine miles from Pensacola, sixty miles from Mobile, Ala. Good market, fair freight rates, and prices for common brick will give the right party a good chance. One to look after the business and keep the books preferred. Write to
J. O. CRARY,
2 1 1pd Bluff Springs, Fla.

FOR SALE—Splendid brickyard property, located on a large river, consisting of 240 acres, all clay, several houses and barns and a nice farm. Brick can be made nine months of the year, and sell from $5.50 to $9.00 per thousand on vessel at yard; can be made for $2.50 per thousand loaded on vessel. Brick are shipped entirely by water to several good markets, with steady demand for all brick made. A general store pays large returns and same is located in center of large oyster industry. This property must be sold to close an estate, and to make a quick sale will be sold very low and on easy terms. For a practical party this is a splendid chance and a very safe one. Address
JOHN W. PHILLIPS,
2 1 cm 102 Asylum St., Hartford, Conn.

SUPERINTENDENT WANTED.

Wanted, a strictly sober, reliable man as superintendent on a Southern brick plant of 10,000,000 brick per annum capacity; must understand thoroughly burning with both wood and coal and handling negro labor. A Southern man preferred. Address
SUPERINTENDENT,
2 1 d Care Clay-Worker.

FOR SALE.

One 40-foot and one 14-foot rubber apron clay conveyor, complete with pulleys and 20-inch apron; operated about fifteen days.

One second-hand Wellsville hand power cutting table.

One 20-inch Buhr mill for grinding tailings from dry pan; operated successfully in shale alone.

All of the above made by The American Clay-Working Machinery Company.

Will be sold cheap, as we have installed heavier machinery.

THE HARPER-NORTON SHALE BRICK COMPANY.
2 1 d Conneaut, Ohio.

BUSINESS OPPORTUNITY.

Secretary of New Jersey company, making fine white vitreous floor tile, would borrow $40,000 to enable him to buy out the other stockholders, or would join business man with $25,000 and erect new plant. Address
L. M.,
2 1 dm Care Clay-Worker.

FOR SALE CHEAP.

A Little Wonder brick machine and end-cut brick table; also tile dies to make tile from four to eight inches; also one tile table. This is all in good condition, as it has been used but part of two seasons. Reason for selling, going out of the business. Write for prices to
E. M. COMBS,
2 1 d Mechanicsburg, Ill.

BRICK PLANT FOR SALE OR RENT.

A complete and well-equipped brick plant, including land with good bed of clay, is for sale or rent. Clay burns a beautiful red; Chambers machine; good market for brick, as yard is tributary to copper and iron districts; an excellent opportunity and a rare bargain for the right party. Address
LOCK BOX "C,"
2 2 cm L'Anse, Baraga Co., Michigan.

FOR SALE—COAL AND SHALE LAND.

A track of 150 acres of shale land, located near the C. & E. I. railroad, will be sold cheap and on favorable terms to parties who will build a brick and tile plant. Will take a reasonable amount of stock with a good, strong company. The first stratum of shale runs from 15 to 20 feet in depth, then a 20-foot vein of coal, below this shale, to 80 feet or more. Running water; good building site; cheap fuel; 6½-foot vein of coal at depth of 95 feet; shale suitable for vitrified brick, tile, terra cotta, etc. Address
GOOD SIGHT,
1 2 1.50p Care Clay-Worker.

FOR SALE AT A BARGAIN.

The following brick machinery, which is practically new, having been used only a few months:

One "Hercules" extra heavy Soft Mud Brick Machine.
One Horton Mfg. Co. Mold Sander.
One 5-leaf Dumping Table.
One Double Transfer Car.
One Combination Transfer Car and Turntable.
One Raymond Victor Repress.

Address
THE CLINTON COUNTY FIRE BRICK COMPANY,
2 3 cm Mill Hall, Pa.

FOR SALE.

One iron Quaker brick machine, nearly new.
One 20-h. p. portable engine and boiler.
One 20-h. p. stationary engine and boiler.
One tile machine.
One winding drum.
Brick racks.

E. BIGLOW & SON.,
2 1 cm New London, O.

A SPLENDID OPENING IN TEXAS

For some competent pressed brickmaker, who can command some capital. Clay and magnificent sand in abundance and railroad facilities are first-class. Last year all the fine brickmakers in Texas were behind on their orders, and ordinary brick were bringing $12 per thousand. A tempting opportunity for the right man. Address for particulars
BRICK, Room 605,
2 1 dm No. 26 Broadway, N. Y.

FOR SALE.

One 9-foot Dry Pan, iron frame.
One 4-mold Semi-Dry Press, almost new.
One Arnold Steamer.
One Revolving Screen.
One Miller Hand Press.
One 15-H. P. Portable Engine and Boiler.
One 20-H. P. Ajax Engine.
One 25-H. P. Boiler.

THE T. B. TOWNSEND BRICK & CONTRACTING CO.,
9 tf d Zanesville, Ohio.

FOR SALE.

One Penfield auger machine.
One iron frame hoist.
Three Monarch brick machines (horizontal).
Three iron standard horse power brick machines.
One Brewer crusher.
One Martin steam power brick machine, with pug mill.
One Anderson brick machine, with pug mill.
One wood frame standard horse power brick machine.
One wood frame standard steam power brick machine.
Two 80-h. p. boilers; fine condition.
One 40-h. p. boiler; good order.
One 20-ft.x42-in. two-flue boiler.
One hundred and eighty feet ⅝-in. wire cable.
One second-hand Raymond repress.
One Anderson disintegrator.
Fifty dryer cars.

Address HORTON MFG. COMPANY,
Painesville, Ohio.

Evens & Howard Fire Brick Co.

ST. LOUIS, U. S. A.

Sewer and Culvert Pipe. Locomotive Tile.
Furnace and Boiler Tile. Fire Brick and Cupola Blocks.
Flue Lining and Chimney Pipe.
Sanitary Earthenware. All kinds of Fire Clay Products.

Make Your Own

BRICK CUTTING WIRES

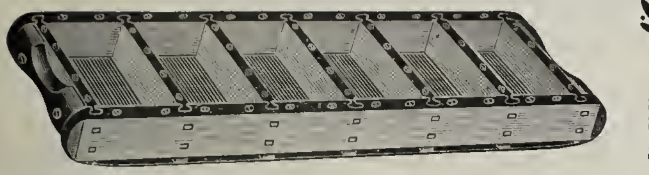
AND SAVE MONEY, TIME AND ANNOYANCE. Twist both ends of wires without removing from machine. Every Brickmaker should have a machine of his own. For particulars and prices, address

M. E. GREGORY, - - Corning, N. Y.

S. B. GRAY, Manufacturer of

Brick Moulds,

Of Every Kinds and Description.



Six-Brick Machine Moulds	$1 50
Six-Brick Hand Moulds	2 00
Four-Brick Hand Moulds	1 50
Three-Brick Hand Moulds	1 00

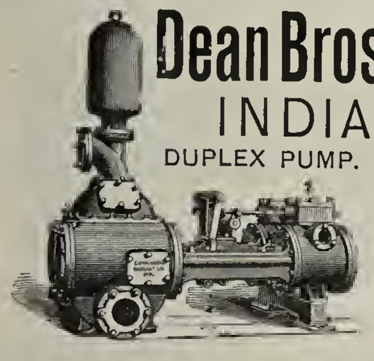
These Moulds are well made of the best materials and are up to anybody's standard. If they are not so send them back.

Telephone 1084. 1510 West Washington St., INDIANAPOLIS.

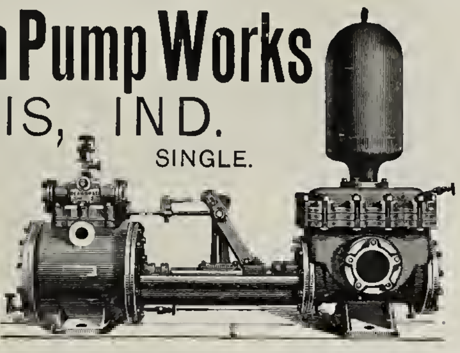
Dean Bros.' Steam Pump Works

INDIANAPOLIS, IND.

DUPLEX PUMP.



SINGLE.

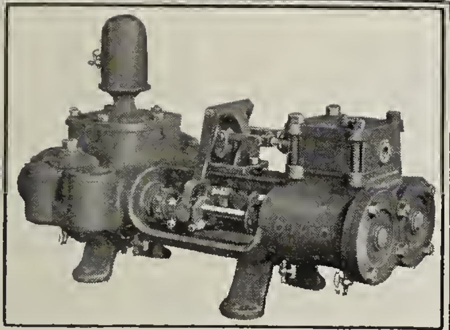


PUMPING MACHINERY FOR ALL PURPOSES.

SEND FOR CATALOGUE AND PRICES.

THE OHIO STEAM PUMP

FOR BOILER FEEDING AND EVERY OTHER POSSIBLE SERVICE

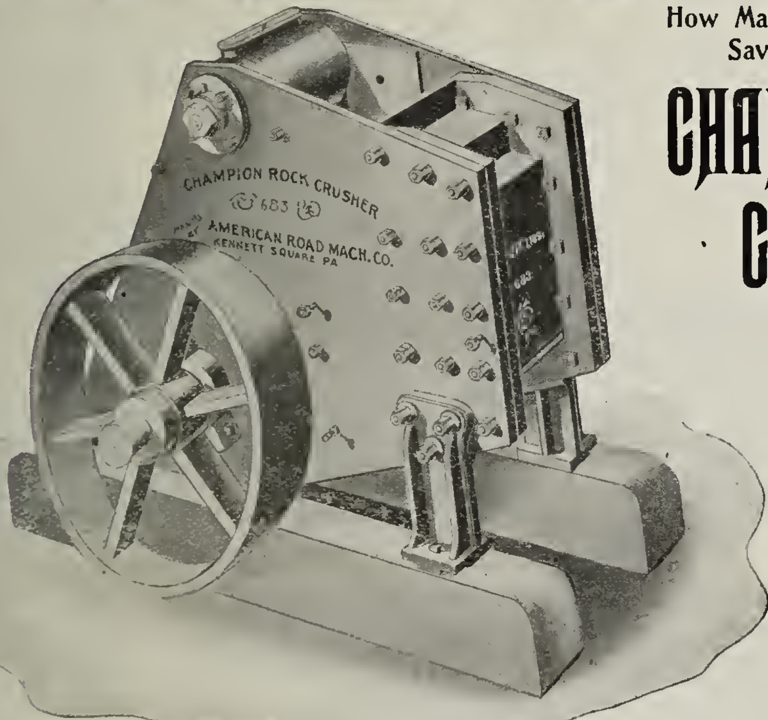


ALL VALVES AND INTERNAL WORKING PARTS ARE QUICKLY ACCESSIBLE MOST CONVENIENT FOR THE ENGINEER

THE OHIO STEAM PUMP CO.
CANTON, OHIO.

How Many $$$ Can You Save by Using a

CHAMPION CRUSHER?



You can save the cost of sledging.

You can save power.

You can save the wear and tear on the pan.

You can save the cost of the machine in a few months.

The Champion is unequalled in crushing rock, shale, fire clay and other material.

Suppose we figure with you.

Catalogue is free.

AMERICAN ROAD MACHINE CO., Kennett Square, Pa.

WANTED—A good dry press brick setter; give references and state number of bricks you can set per day. Address
THE LAKE SUPERIOR POWER CO.,
Brick plant, Sault Ste. Marie, Ontario.
1 2 c

WANTED—Position as manager or superintendent of brick plant; twenty years' practical experience in the manufacture of fire brick, pavers, tile, etc. First-class testimonials. Address
1 2 c FIRE BRICK, care Clay-Worker.

WANTED—A competent, energetic and experienced man to handle the sale of vitrified paving brick for an eastern company having a large and established business. Address
BOX 99,
1 2 d Care Clay-Worker.

WANTED—Position as foreman or head burner of paving or dry press brick plant, by a man who thoroughly understands the business. Can also build kilns. Best of references. Address HENRY,
1 2 d Care Clay-Worker.

FOR SALE—$100.00 will buy second-hand No. 40 Steadman disintegrator, used very little.

$100.00 will buy two Grand automatic soft mud brick machines; have seen considerable service. Address
JAMES F. GRAHAM,
1 3 cm 3 Madison St., Memphis, Tenn.

FOR SALE—One No. 8 Carlin wet pan, automatic discharge; has not been used seven days and is exactly as good as new. Price, $650. Three Carnell steam represses and four Crabtree hand represses. These presses are also new. Will sell the lot for $500. Address GRAY,
12 3 dm Care Clay-Worker.

SITUATION WANTED—As superintendent of brick or tile works by practical brickmaker. Twenty years' experience. Handle any modern plant, soft or stiff mud. If satisfactory, will invest some cash and accept stock for part of salary. Can give best of evidence as to ability and industry.
12 3 cm Address F., care Clay-Worker.

FOR SALE—One Quaker horse power soft mud brick machine, capacity 10 to 20 thousand per day. One Anderson 12-foot pug mill, soft mud. One Anderson upright brick machine, soft mud, capacity 20 to 30 thousand per day. One 35-horse power boiler. All machinery in first-class repair. Will sell cheap for cash. Address
1 3 cm J. D. W. H., care Clay-Worker.

FOR SALE.

One 3-mold Andrus Brick Press.
One 6-ft. Dry Pan.
Three Hoisting Engines, double drums, with boilers.
One Simpson 4-mold Press.

Address F. C. FROST,
701 Phoenix Building,
12 3 cm Minneapolis, Minn.

FOR SALE.

—Paving or Building Brick Plant, at Bucyrus, Ohio.—

Consisting of twelve acres of land, with buildings and good railroad facilities. 1 100-h. p. engine. 2 80-h. p. boilers. 9-ft. dry pan. elevators. winding drum. 8-ft. pug mill. No. 2 Bucyrus Giant brick machine. 16-track Bucyrus steam tunnel dryer, with 170 single deck cars, 25,000 feet 1-in. and 1½-in. pipe. 15 tons T rails, transfer cars and turn-tables. 11 round down-draft kilns, with good bands, fire brick, floor brick, etc., etc.

Will be sold as a whole or in part. Inquire of
L. P. BATTEFELD,
Room No. 7. Fair Bldg.,
1 3 c Indianapolis, Ind.

FOR SALE.

ONE NEW FOUR-MOLD DRY PRESS BRICK MACHINE; 20,000 CAPACITY PER DAY.

JOHN RAMMING MACHINE WORKS,
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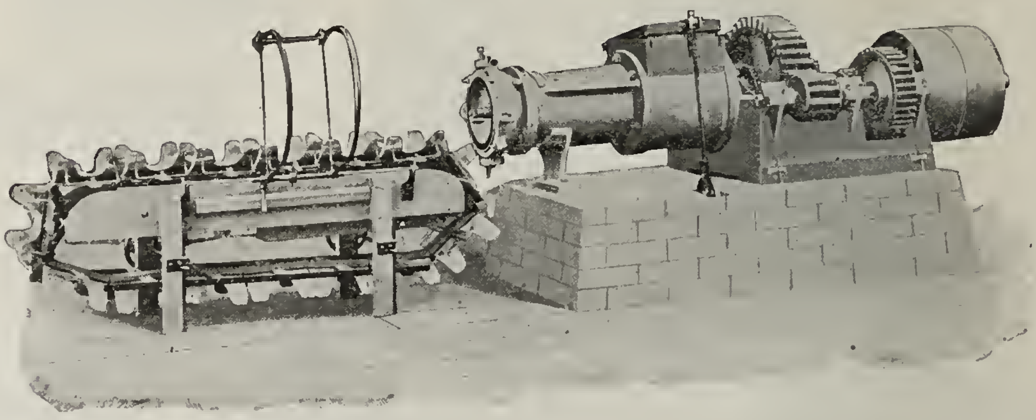

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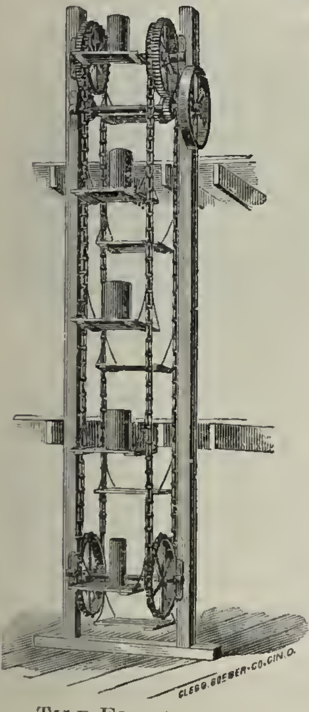

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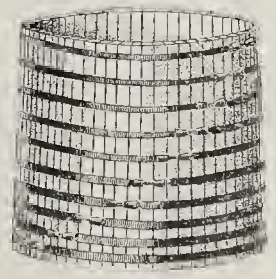

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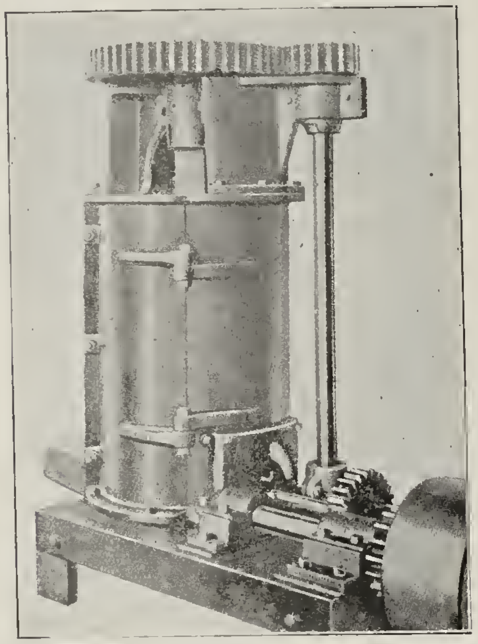

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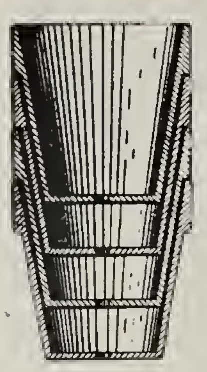

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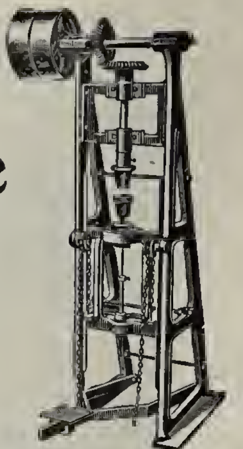

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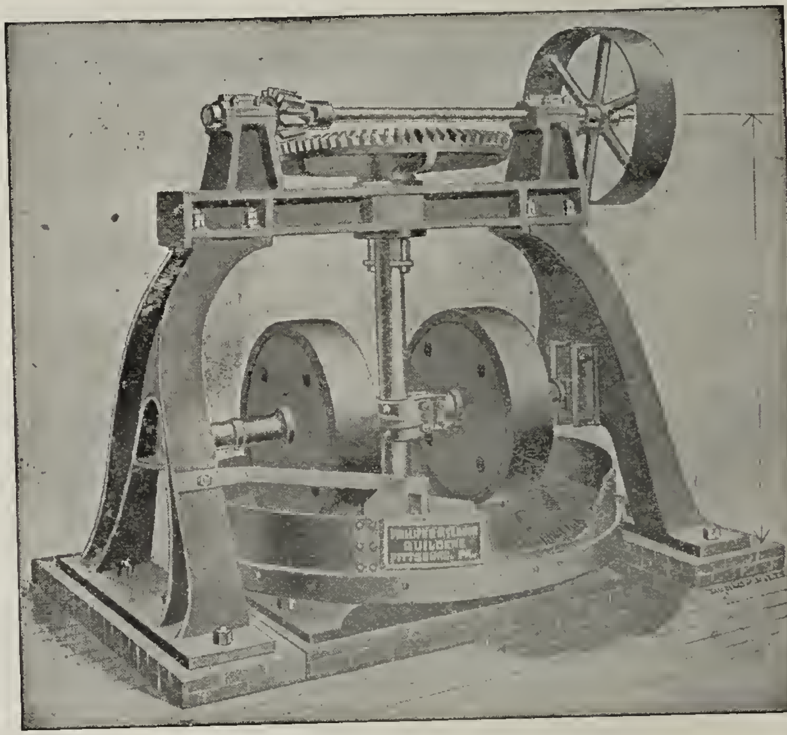

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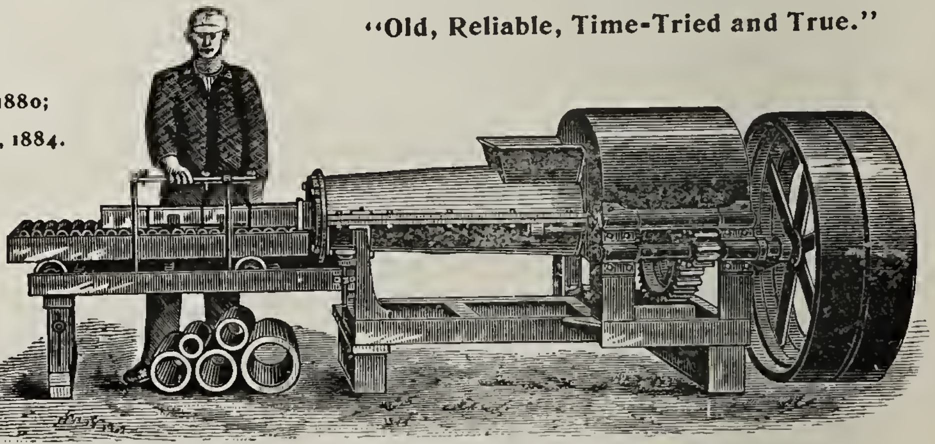

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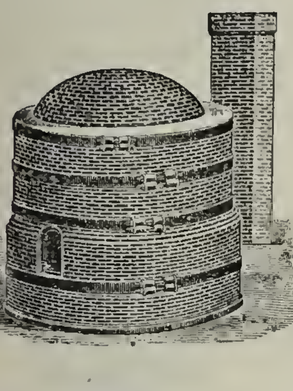

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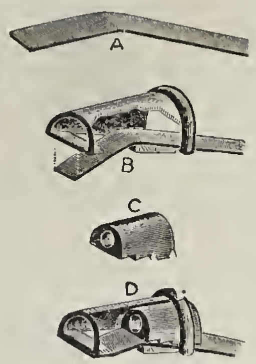

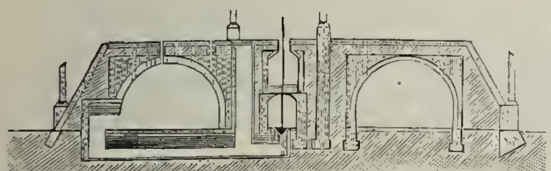

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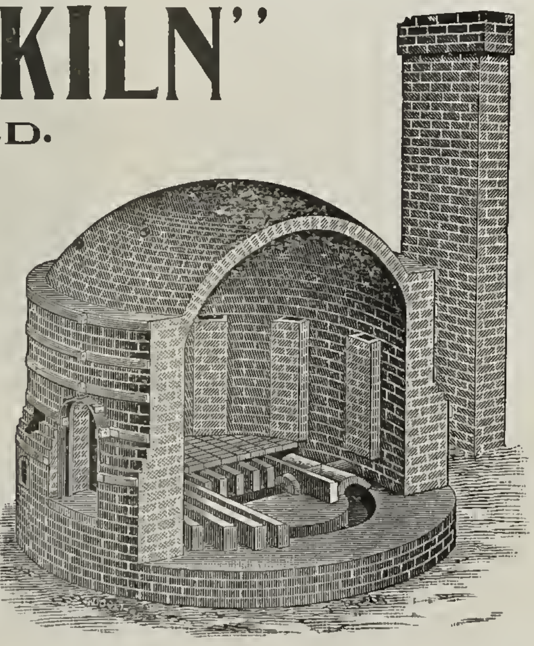

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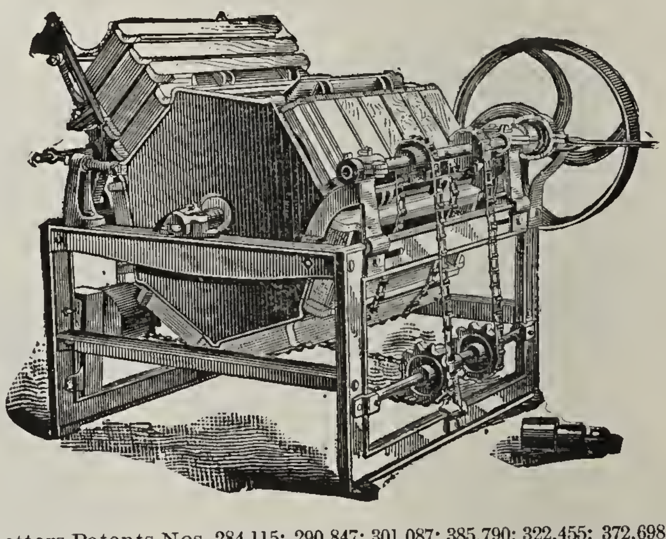

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Mention the Clay-Worker
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50 YEARS' EXPERIENCE

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PUBLISHERS,
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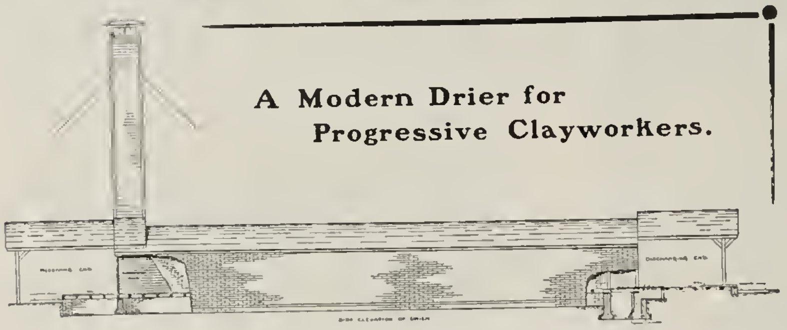

A Modern Drier for
Progressive Clayworkers.

C. H. BEALE, Mangr. Southern States, MONTGOMERY, ALA.
JNO. McKAY, Representative at Large.

Is not loaded with age and complicated Features. If you want IMPROVED METHODS put in the modern up-to-date

NATIONAL DRIER

Let us send you a circular, it will interest you.

The National Dry Kiln Co.,
No. 33 West South St., INDIANAPOLIS, IND.

The PERFECT CLAY SCREEN.

◆ ◆ ◆

This Screen positively Saves one man.

Increases grinding capacity.

Gives a finer grade of clay

Does the work as well in cold weather as in warm.

Screens cold moist clay as well as dry.

It will more than save its cost in one Winter.

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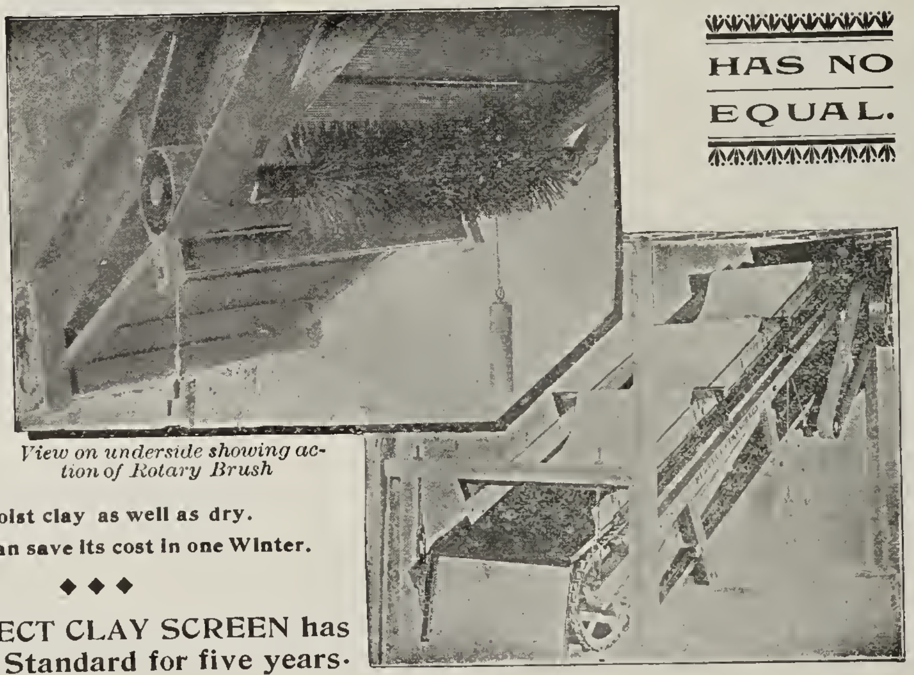
The PERFECT CLAY SCREEN has been the Standard for five years.



View on underside showing action of Rotary Brush

HAS NO EQUAL.

WERE YOU AT the Convention, did you hear it said every Paving Brick used in Cleveland was screened on The Perfect Clay Screen. We think fully 90 per cent. of the paving brick made in the Cleveland district are made over our screen They all make good brick. We can do as much for you no matter what your product, so it is made from clay. WE GUARANTEE to do it, why not give us an opportunity. Let us tell you about it.

The Dunlap Mfg. Co.,
Bloomington,
Illinois.

THE
Smidth Ballmill

THE
Davidsen Tubemill

Excel all others for Grinding Cement Rock, Clinker, Ore, etc.

WE DESIGN and COMPLETELY EQUIP Portland Cement Manufacturing Plants. Twenty years experience devoted exclusively to the Engineering of Portland Cement Plants, Lime and Brick Works.

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66 Maiden Lane, Cor. William St.,
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The Carmichael Clay Preparing Outfit is the
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The Carmichael Improved Screen is the
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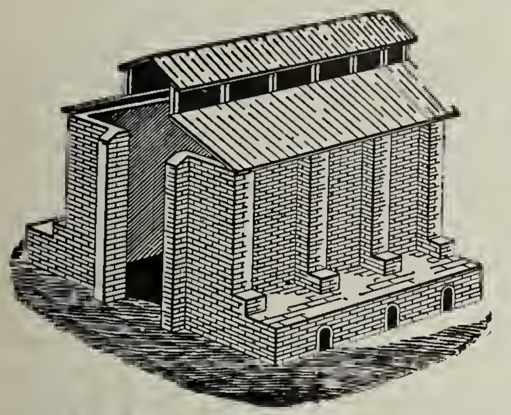
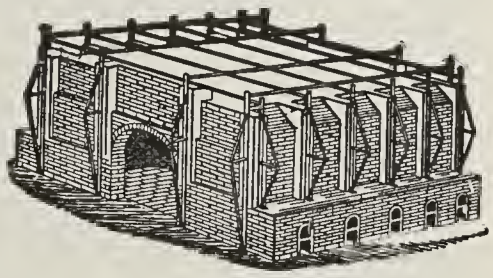
BEST

For Information, Write

T. W. CARMICHAEL, Wellsburg, W. Va.



Up-Draft Kiln.



Down-Draft Kiln.

LOUIS H. REPPELL'S

IMPROVED-KILNS

For Burning all Kinds of Wares.

Having had years of practical experience in the management and actual burning of all kinds of kilns, claim it to be THE BEST Up-Draft KILN IN THE MARKET.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns.

For further particulars and full explanation, address

LOUIS H. REPPELL, 2,422 Chestnut St., *Kansas City, Mo.*

HAIGH'S NEW SYSTEM OF CONTINUOUS KILN.

Arranged to suit all Locations.

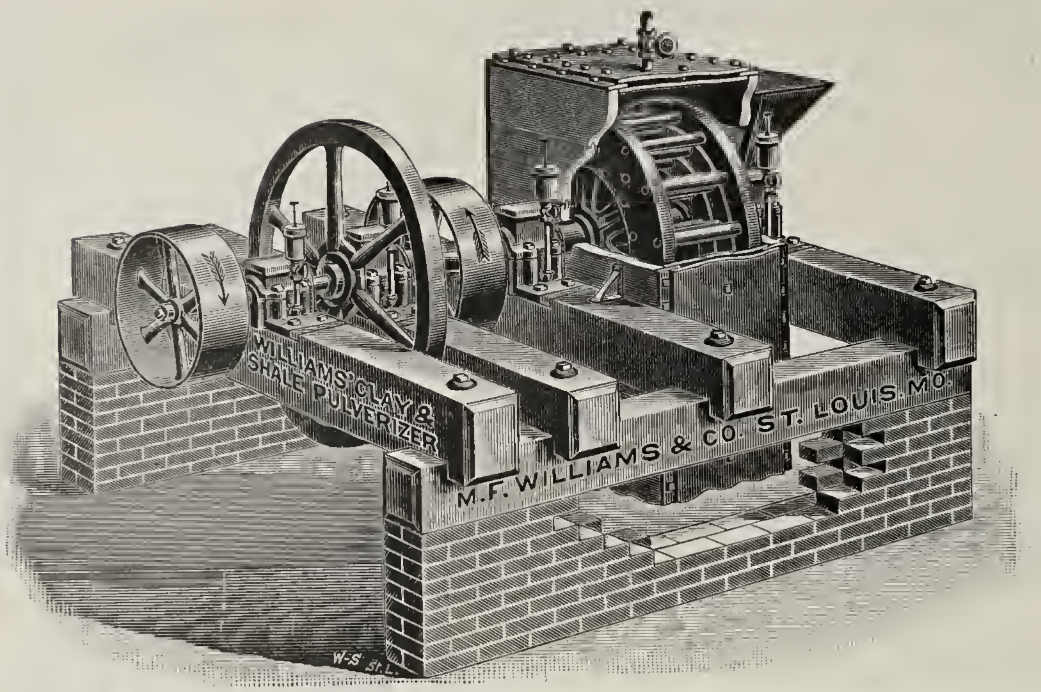
These Kilns Can be Seen Burning

Roofing Tile, Dry Pressed Facing, Paving and Common Building Brick.

Points of Superiority. Cheapness in Construction. Easy to Understand and Operate. Perfectly free from any Nuisance. Will save more than one-half of the fuel used on others Kilns. Specially adapted for Utilizing Waste Heat for Drying Purposes, and which is being done most successfully.

A more Successful Kiln for Burning Paving Brick will be hard to find than the one at the Works of the Eastern Paving Brick Company, Catskill, N. Y. For Further Particulars Address,

H. HAIGH, Catskill, N. Y.


WILLIAMS' CLAY & SHALE PULVERIZER
M. F. WILLIAMS & CO. ST. LOUIS, MO.

Williams

IS HEADQUARTERS FOR

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  The Fernholtz Patent Mold Box for all Brick Presses.
- **WILLIAMS** Brick Trucks. Brick Barrows.
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- **WILLIAMS** Sizing Machine for Arch Brick.
- **WILLIAMS** Keeps Brickyard Supplies.

M. F. WILLIAMS & CO.,
Broadway and Montgomery Sts.,
ST. LOUIS, MO., U. S. A.

Read This---It Will Repay You.

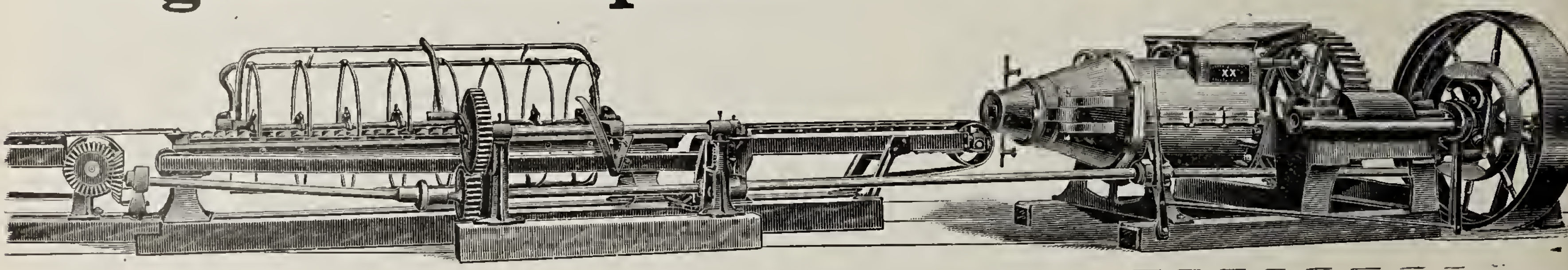
The Simplest. The Least Expensive. The Best

Brick Hacking and Trucking System.

The practical man will see at a glance the advantage which this system has over any other, new or old. It is equally as efficient in large or small yards. One man can take 25,000 to 40,000 green brick from the machine and place them upon the hacks to dry, and the same amount from the hacks to the kilns, and place them in easy position for the setters to handle them. It has been thoroughly tested. It costs less than one-half the money to equip a yard with my system than any other efficient system. Drying capacity unexcelled. By using my complete system 100,000 brick can be hacked in a space 25′ x 160′. If you are using any of the old systems of open air drying such as the rack and pallet system for instance, the change can be effected with very little expense.
Write me for full information.

B. E. BECHTEL, Waterloo, Ontario.

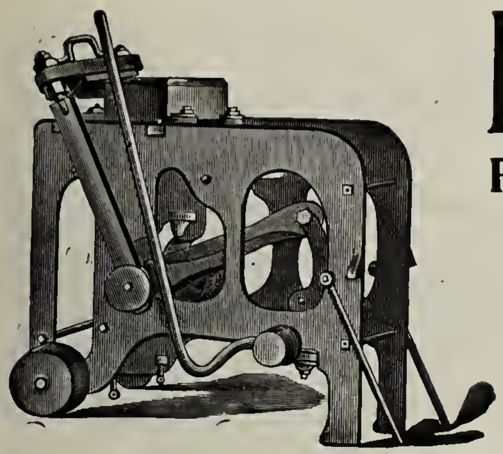
Highest Development IN THE ART OF Brick Making.



BRICK MACHINES.

Three sizes, capacities ranging from 12,000 to 50,000 per day. Complete equipments for the most economical yards. All kinds of brickyard supplies.
Write for Catalogue and Prices.

J. C. STEELE & SONS, Manufacturers "NEW SOUTH" Brick Machinery,
STATESVILLE, N. C.



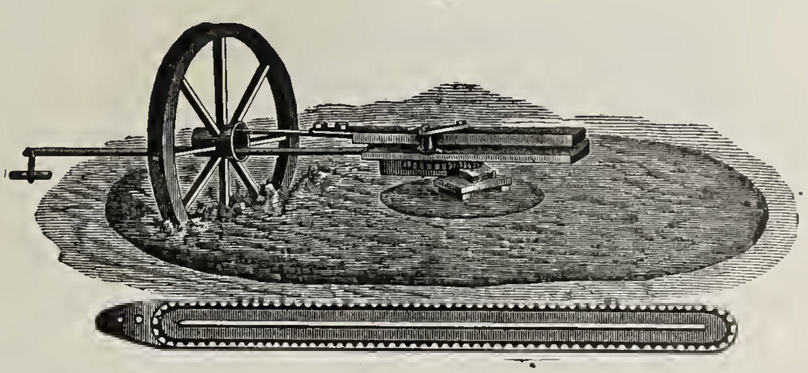
RED BRICK PRESS.

PHILADELPHIA BRICK MACHINE WORKS

Fire and Red Brick Presses all sizes.
....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.

GEORGE CARNELL,
Nos. 1,819, 1,821 and 1,823 Germantown
Avenue and Fifth Street,
PHILADELPHIA, - - - PENN.



☞Send for Circular and Price-List.

These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

The Standard Brick Machines,

MANUFACTURED BY

A. M. & W. H. WILES CO.,

Grassy Point, Rockland Co., N. Y.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.] CORRESPONDENCE SOLICITED.

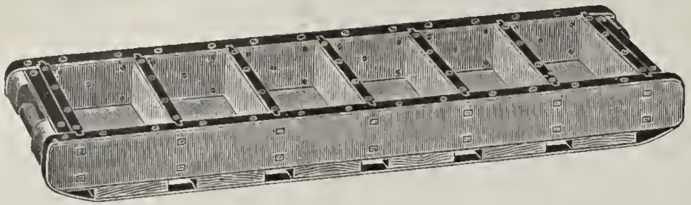
The
ROESSLER-HASSLACHER
CHEMICAL COMPANY,
100 William Street,
NEW YORK.

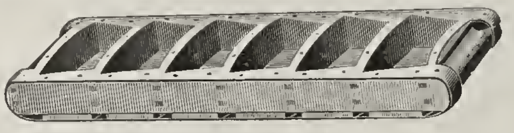
As a Preventative of Scums Use

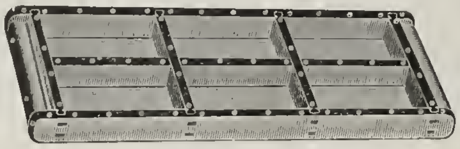
CARBONATE OF BARYTES

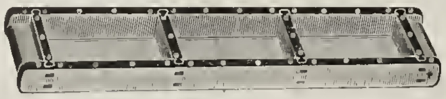
R. & H. PRECIPITATED.

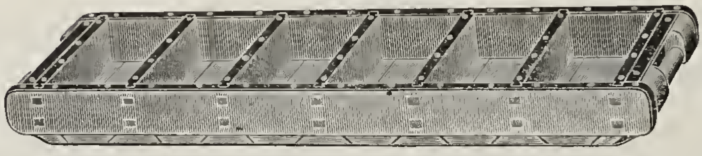
Oxide Tin,
Oxide Cobalt,
Red Oxide Iron,
Green Oxide Chrome,
White Oxide Antimony,
Black Oxide Manganese
and all Chemicals used by the Clay Trades.


Six Brick Machine Mould.


Circle Mould.


Hand Mould, Six Brick.


Hand Mould, Three Brick.


Roots Patent Bottoms.

DO IT NOW.

PLACE YOUR ORDER for 1902 brick moulds with Arnold. You can have them made and shipped any time between now and May 1st, 1902, and if you have the order placed ***there*** you know you will get the best there is made, and will get them promptly and when you want them. We make moulds to fit "any old machine" that uses moulds and guarantee satisfaction if you will give us the following particulars:

1st. Size of the brick.
2nd. Number of brick in a mould.
3rd. Thickness of partition or distance from center to center of bars in die.
4th. Length of mould over all allowing 1½ inches at each end for handles if possible.
5th. Style of handle by number, (see our catalog).

We also make hand moulds any number of brick and any size desired.

Machine moulds with Roots Patent Bottom. We have made quite a number of these moulds in 1901, they are designed for making a better quality of brick than ordinary molds, and cost but little more. In addition to moulds we make a full line of Trucks and Wheel Barrows, also make special Trucks and Wheel Barrows to order, and a full line of Furnace Fronts, Kiln Doors, Grate Bars, Ventilators, etc.

Let us know what you will need and get our price before you place your order elsewhere. Get our catalog. Address

D. J. C. ARNOLD, NEW LONDON, OHIO.

See Ad. on Page 286.

THE DUNN CONTINUOUS BRICK KILN.

H. C. DUNN,
Patentee.

It is constructed on correct principles.
Its drafts are strong and combustion perfect.
Its methods of operation are natural.
The firing is all done from the top.
It has no furnaces, inside or out.
All flues are in the walls, above ground.

Any intelligent burner can operate it and only one burner at a time is required.

It always burns all the brick hard.

It is in full operation daily.

It is guaranteed to burn 8,000 brick with one ton of good coal slack.

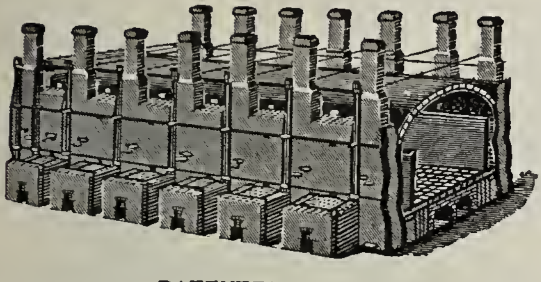
Its cost of construction is not more than for any other kind of well built kilns of the same daily capacity.

It is the most economical and successful kiln of its class ever offered American Brickmakers.

Write for circulars and full information.

I. M. JUSTICE, Sole Agent, 250 W. 19th St., Erie, Penn.

The Bushong Down Draft Kiln.



PATENTED JUNE 1896.

BURNS any kind of fuel.
USES less fuel than any other Kiln.
RESULTS are uniform.
NO damaged wares.
SAVES time and labor.

USED by some of the largest plants.
NO experiment.
IT'S success has been proven.
FULL control of drafts.
ONLY Kiln built that has Double Draft.
REDUCES burning time 24 to 48 hours.
MOST economical in construction.

Streator, Ill., October 3, 1900.
M. M. BUSHONG, Esq.,
Phoenixville, Pa.

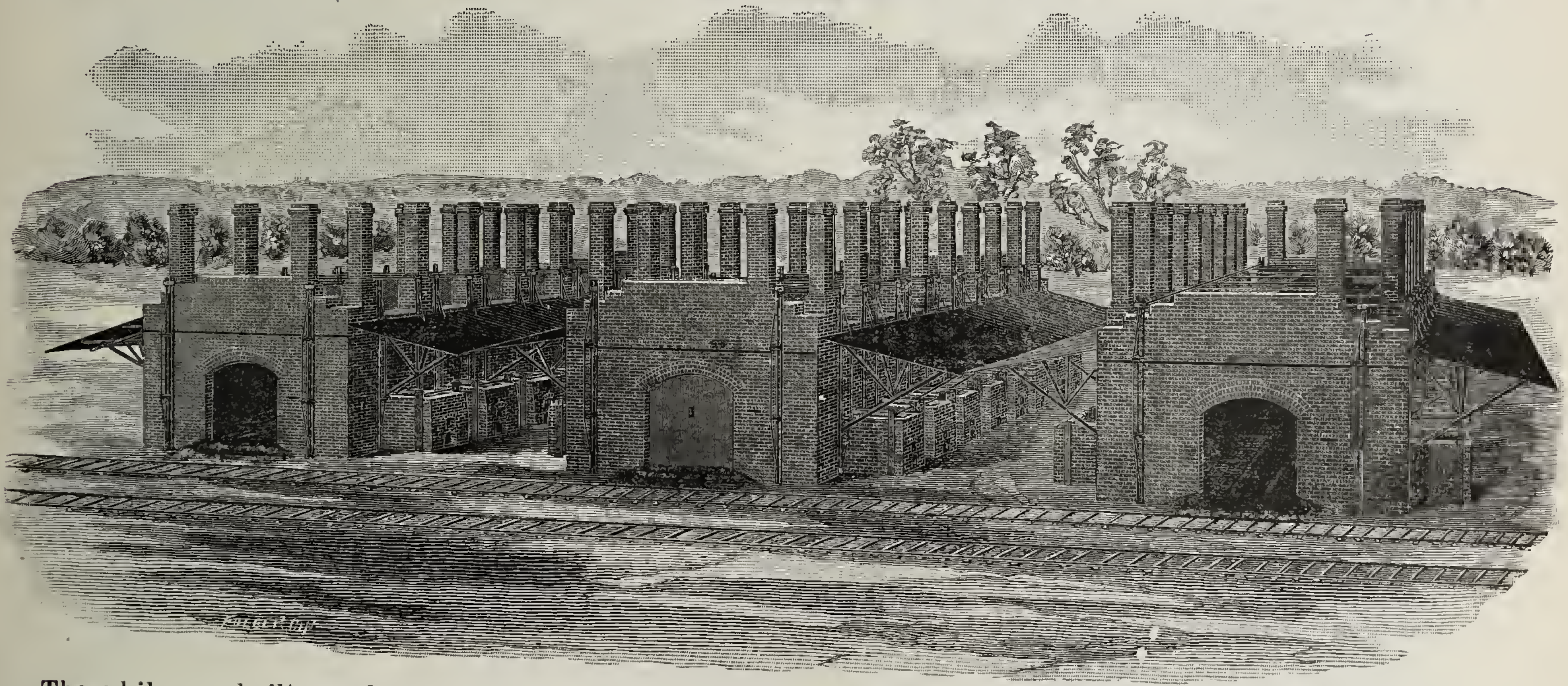
Dear Sir:—Answering yours of September the 27th, we have been using one of the Bushong Down Draft Kilns the past fifteen months and are well pleased with it. We get a larger percentage of No. 1 pavers with a little less fuel than any other kiln on the yard.

Yours truly,
THE BARR CLAY CO.,
Per C. C. Barr, Treas.

M. M. BUSHONG, - Phoenixville, Pa.

The EUDALY DOWN DRAFT KILNS.

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM.



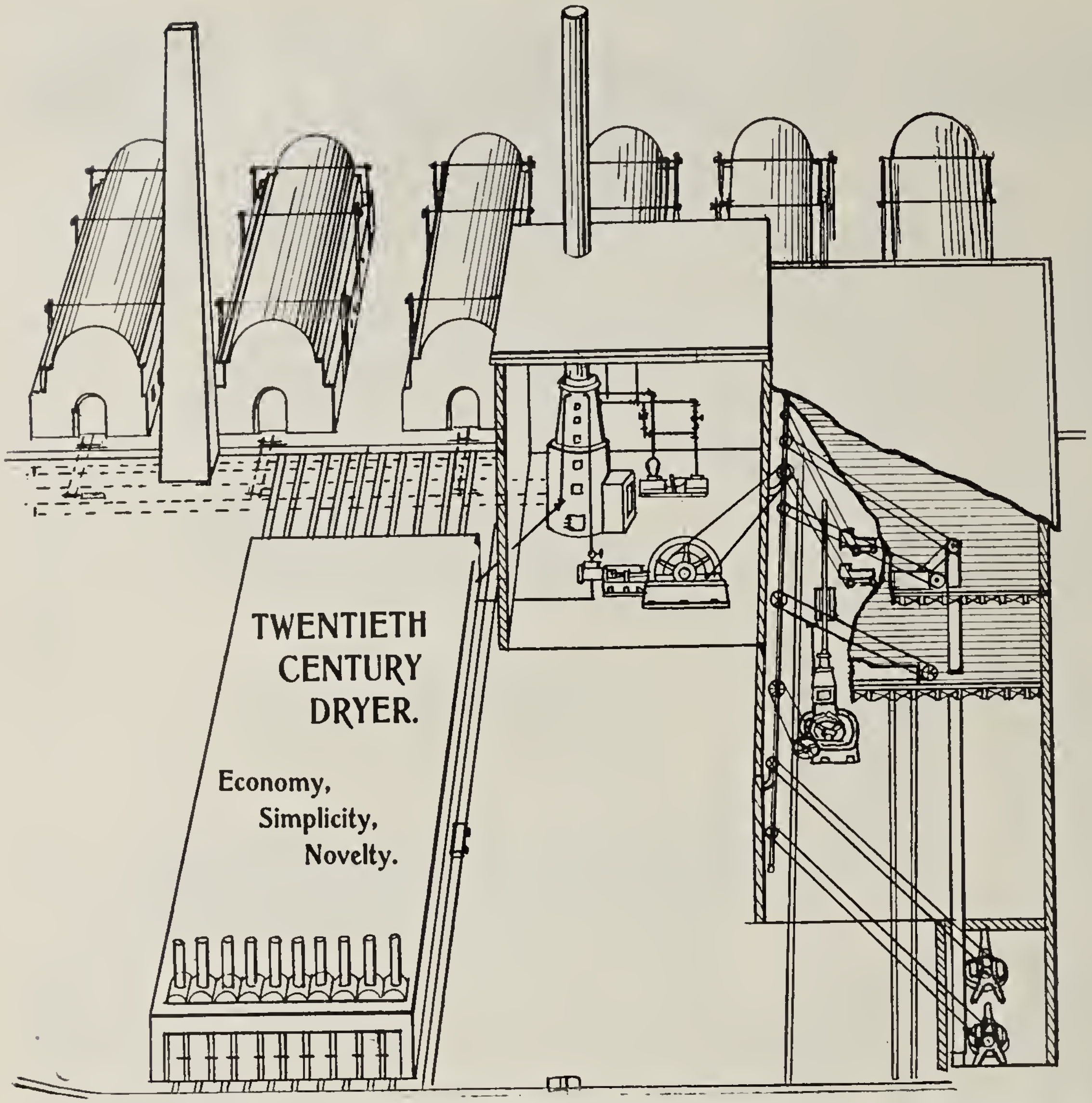
These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

W. A. EUDALY, 509 Johnston Bldg. Cincinnati, Ohio.



Read This for Time is Money.

Frey's System For Using Waste Heat

Will save you both, when you can run your machinery and dry your brick free of Cost.
Why not write to

Frey & Engineering Co.

415 Chamber of Commerce,
CLEVELAND, OHIO.

—•—

We make full Plans for Factories.

Steam Shovels for Brickyards.

Model "80," 3 1-2 Yard Machine.

During the month of December, 1901, we sold 26 shovels to Brickmakers, Railroad Companies and Contractors.

We have all sizes from the Model "98," a 6½ yard machine, down to the Model "20" and the Style "C," a ¾ yard machine. The Model "90," 4½ yard machine, and the Model "80," a 3½ yard machine, are sizes well adapted where large capacities are required and also for excavating hard material. Very many of the prominent brickmakers of the country are using these machines to their advantage and profit.

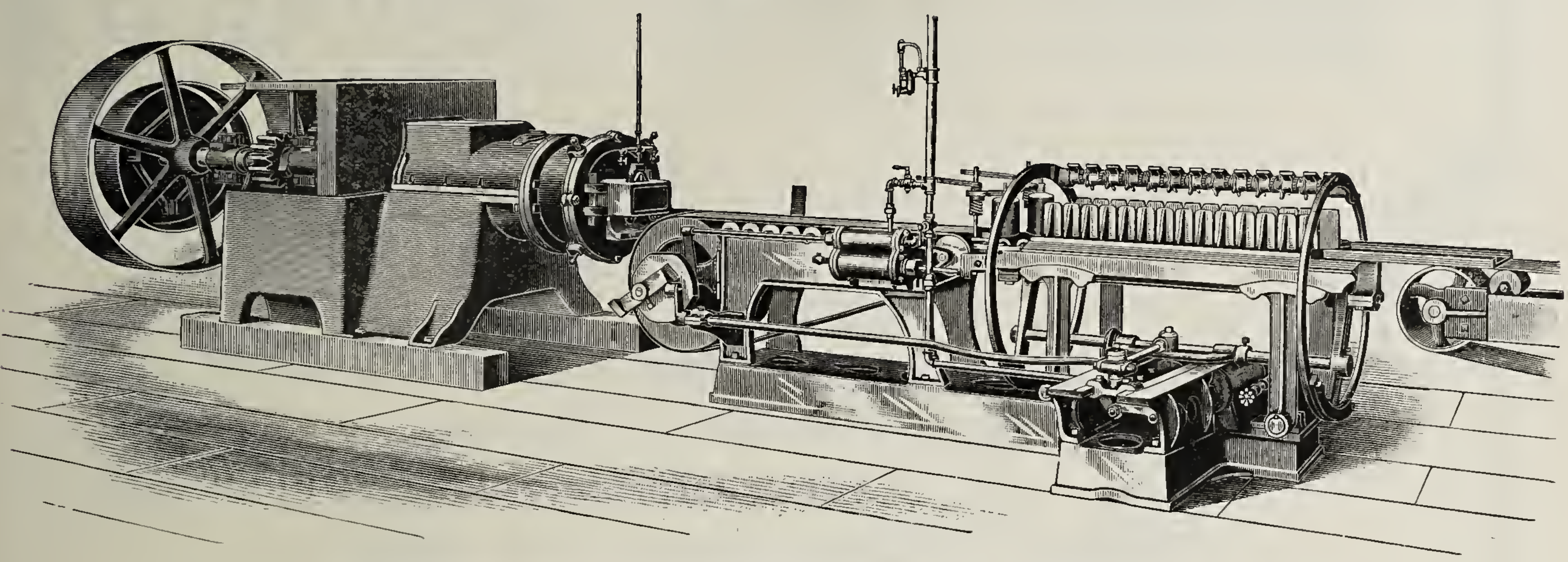
Ask the users what they think of them.

THE MARION STEAM SHOVEL CO., Marion, O.

NOT BETTER THAN THE BEST!

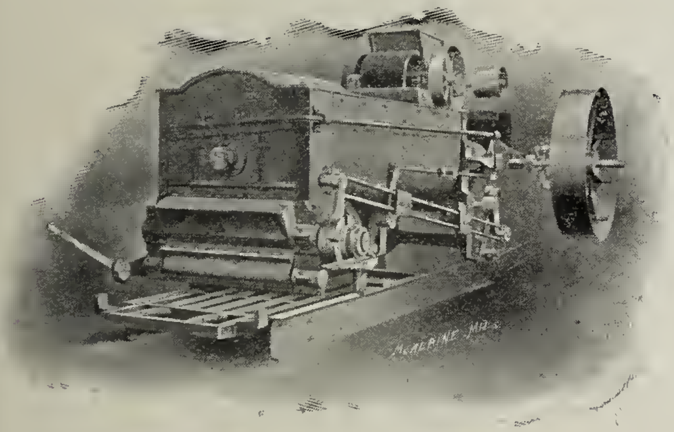
But Better Than the Rest!

AND THE PRICE IS RIGHT!



LEADER No. 25, With Side Cut Die and Automatic Cutter.

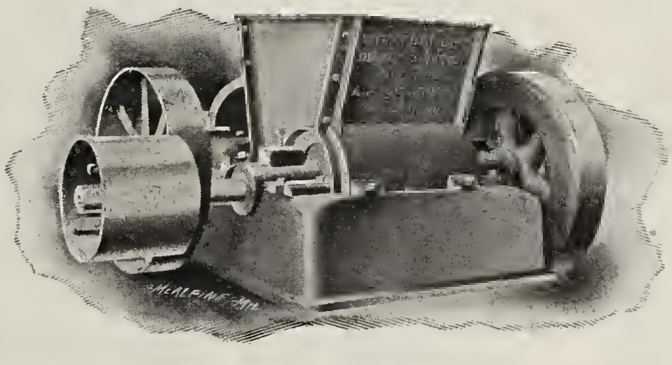
LEADER MANUFACTURING COMPANY, = Decatur, Ill.



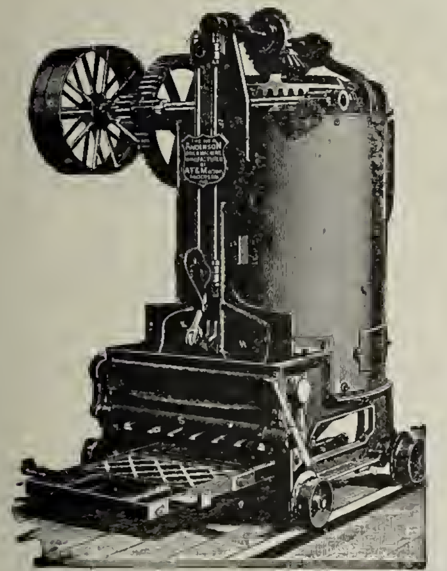
Horizontal Anderson Brick Machine.

DON'T PURCHASE UNTIL YOU WRITE US.

We can save you money.



Best Disintegrator on the Market.



Steel and Iron Upright Stock Brick Machine.

MANUFACTURERS OF . . .

New Departure Tile Machine,

The only machine for making Tile from 3 to 24-inch Diameter.

Pug Mills, Molds, Trucks and Barrows,
And all Brickyard Supplies.

1899 Horse Power Machine.

The Anderson Foundry and Machine Works,
—Anderson, Ind.

IF IT IS

Brick Yard Supplies

You are looking for, Arnold's is the place where they have them, and when you get them there you will find they are all right.

Brick Moulds all **kinds, sizes** and **shapes** desired, including "Roots Patent Bottoms" for making a better class of brick than the ordinary without extra expense. Several sizes of moulds carried in stock, all standard grade; special grade and odd sizes made to order, also a great variety of **Trucks** and **Barrows** carried in stock. **Special Trucks** and **Barrows** made to order from designs furnished by customers when desired. All kinds of iron work for kilns, such as bands, band tighteners, ventilators, grate doors, etc.

And do not forget to inquire about the new **Spring Brick Wagons** made of steel and iron which are all right and will carry 1,000 ordinary brick at a load.

ADDRESS

D. J. C. ARNOLD,

New London, Ohio.

Mention The Clay-Worker.

See Ad. on Page 282.

Handle Your Clay With One Man and

The Thew Steam Shovel.

ESPECIALLY ADAPTED for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

Only One Operator Required.

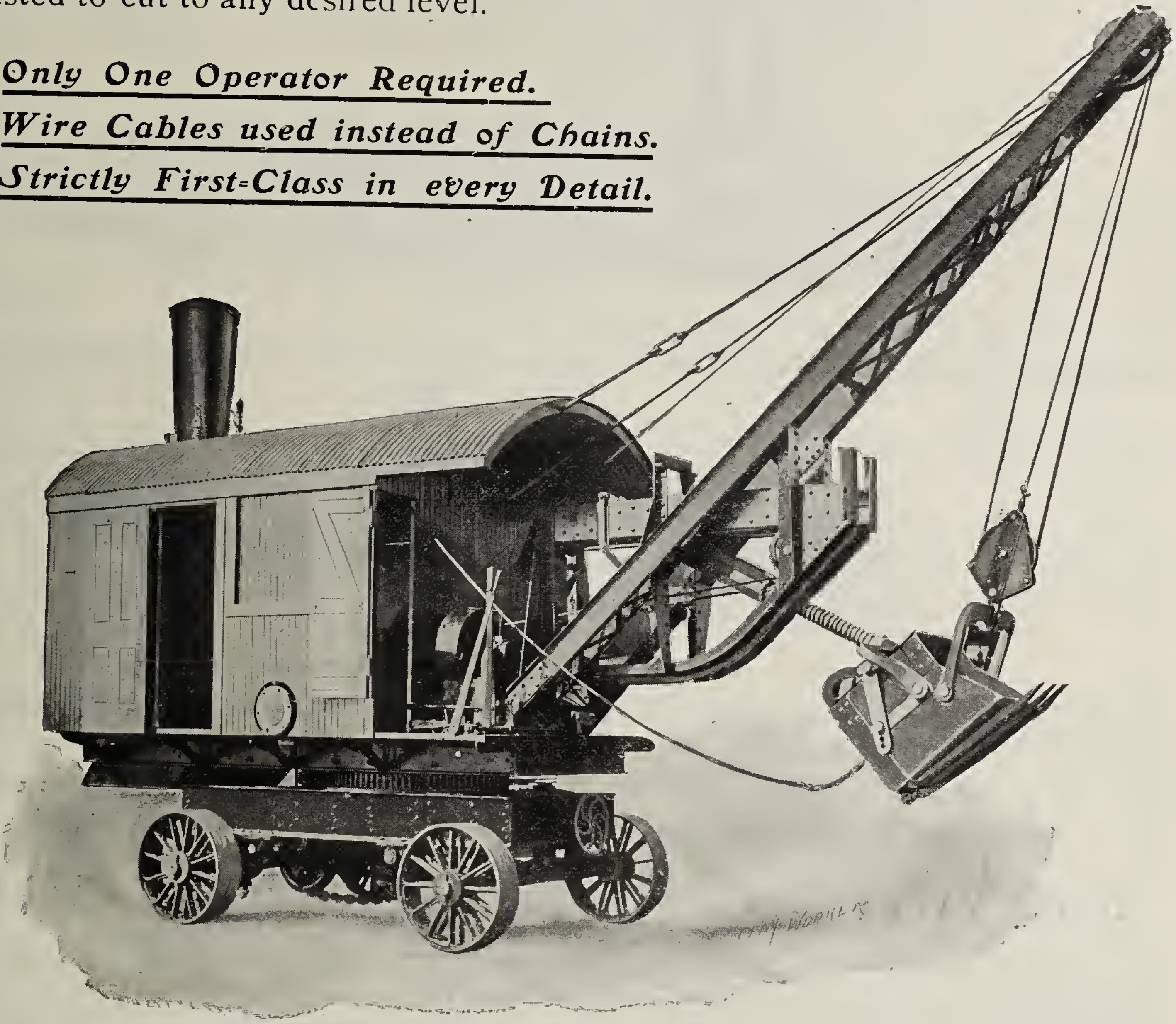
Wire Cables used instead of Chains.

Strictly First-Class in every Detail.

Made in All Sizes.

◆

Mounted on Car Wheels or Traction Wheels.



OUR IMPROVED TYPE No. 1 SHOVEL. Three-fourth Yard Dipper.

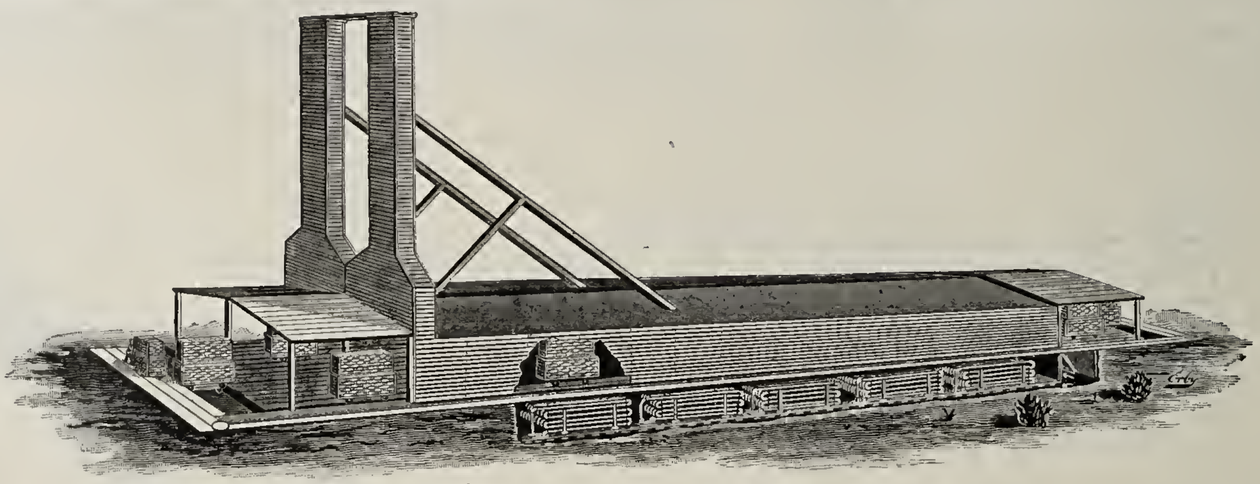
Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 150,000 brick per day.

WRITE US FOR CATALOGUES OR INFORMATION.

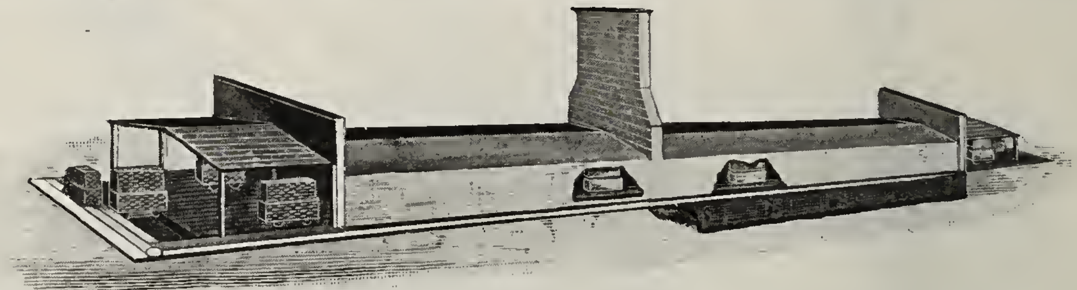
The THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.

The Chicago Iron Clad and Barron's Tender Clay Dryers.

The most perfect and economical system of drying brick in the world.
It performs wonderful feats in the largest plants, and equally as well in small plants.



The Up-to-Date Iron Clad Dryer Adapted to Rapid Drying.



The Barron Tender Clay Dryer, Adapted to Drying Tender Clay Products.

Read The Following Expression from a Successful Concern:

THOS. CAREY, Pres. and Treas. JOHN SHELHAMER, Vice-Pres. WM. A. SULLIVAN, Sec'y.

AMERICAN BRICK COMPANY,
Manufacturers of
COMMON AND SEWER BRICK.
Office and Yards 45th and Robey Sts.
Telephone, Yards 128.

MR. A. F. BARRON, CITY. CHICAGO, ILL., January 8, 1902.

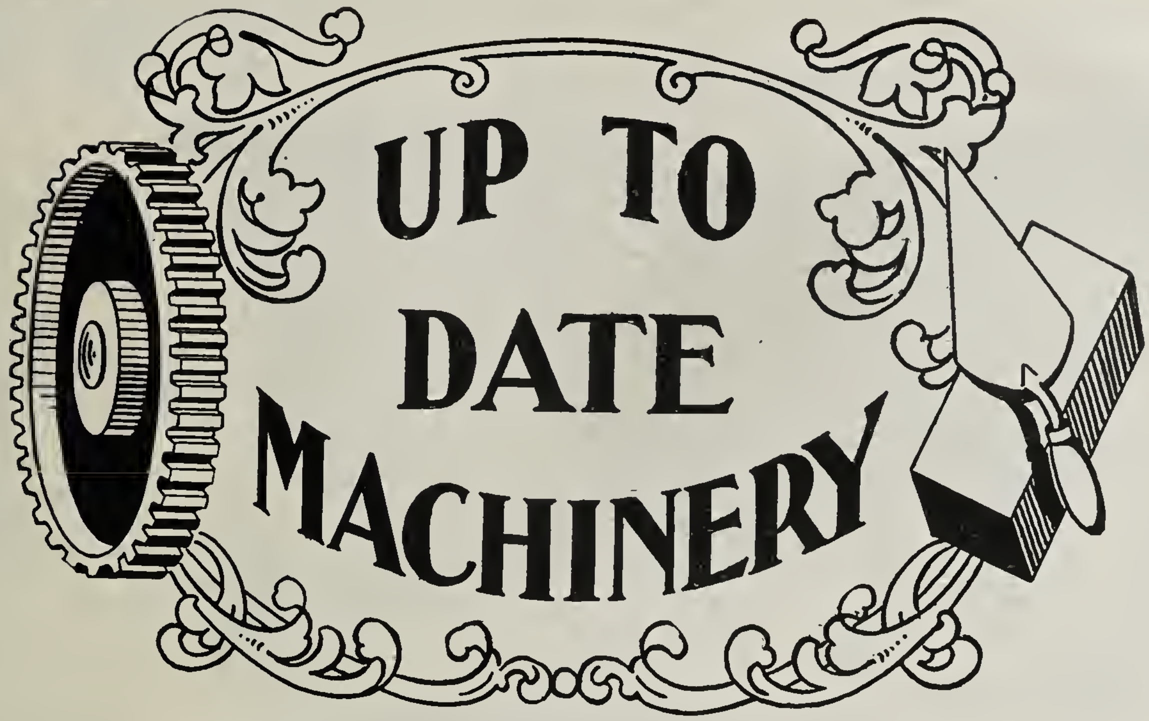
Dear Sir: The Four-tunnel Dryer which you installed at our plant last summer, guaranteed to dry one hundred and sixty-seven thousand (167,000) brick every twenty four hours, is proving a wonderful success. While Jack Frost has been making ice thirteen iches thick in the pond opposite, our Dry House has averaged one million brick every six days with apparent ease, and is capable of doing much better providing our machinery was capable of turning out a greater capacity. We have proven this by running two hundred thousand through the dryer in one day.

Last summer we dried our brick outside, a comparison of the two systems prove that the expense for labor in handling the brick outside amounts to about the same as the cost for fuel required to supply steam for the dry house. Taking the loss of brick caused by rain and storms in outside drying, leaves a large margin in favor of your system of drying, besides this we are making a saving of 20 per cent, on fuel for burning the brick, and turning out a better brick in every respect. Our brick now all burn hard from bottom to top. Your improved dry house is certainly a perfect and economical system of drying brick.

AMERICAN BRICK COMPANY,
JOHN D. SHELHAMER, Vice-President.

Send for Information, Estimates, Etc., Address

A. F. & A. E. BARRON,
Room 630, 225 Dearborn Street, CHICAGO, ILL.



Modern Brick Plants Call for Modern Machinery. Old Time Plants should be modernized with Up-to-Date Machinery and methods. **Improvement** is the order of the age. All machines go out of date soon enough, without buying a back number to begin with.

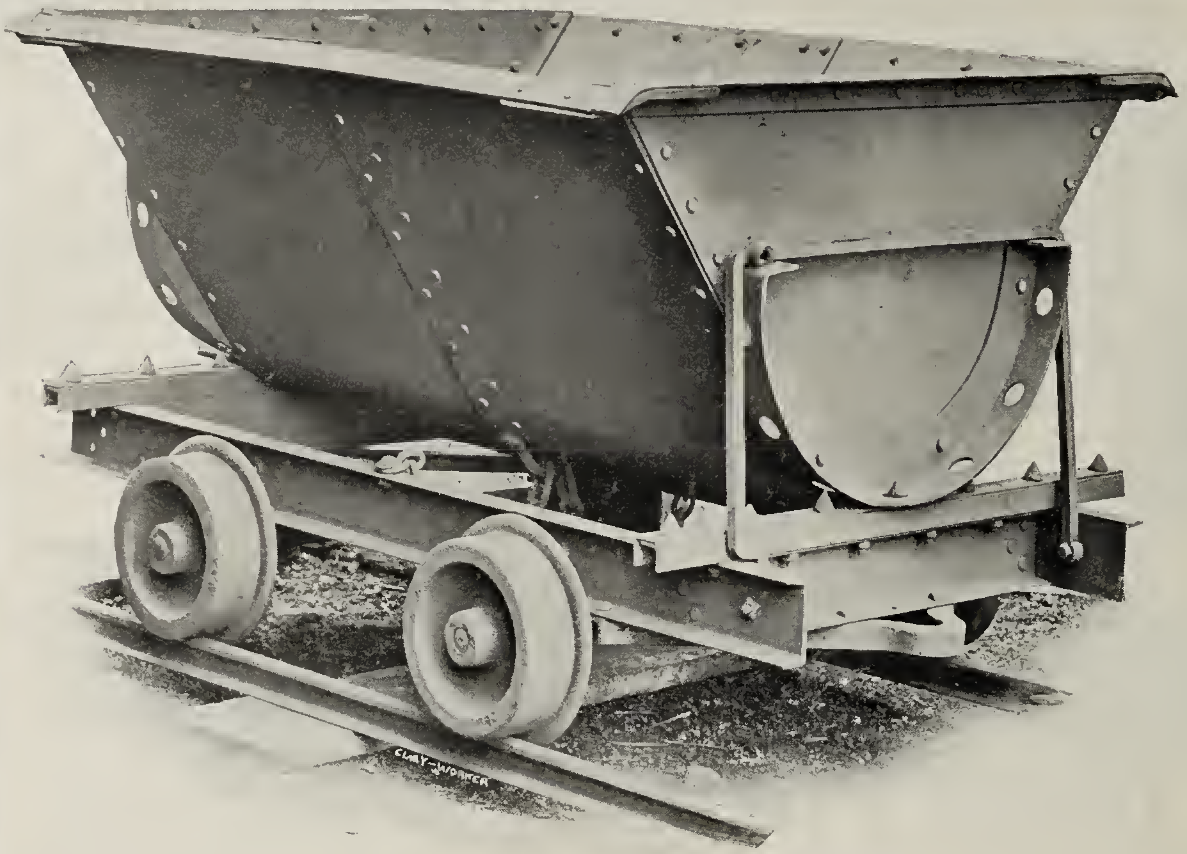
Dry Press Machinery. To have been first in any line indicates simply Age. To **become** first indicates Merit. Our Berg Press is the youngest of the Dry Press family—but it went straight to the front and is still there. No machine can be too good for a Dry Press. The Berg is the highest grade machine built to-day.

Stiff Clay Machinery. Our **Wonder Machine** succeeds where others fail; works clays that others cannot; overcomes cracking, destroys lamination, turns loss into gain; hence its name.

Soft Clay Machinery. **Horizontal Combination Machine** for working clay direct from bank. **Upright Machine** for use with pug mill or soak-pits. **Improved Horse Power Machine** for small yards. Latest designs and all improvements.

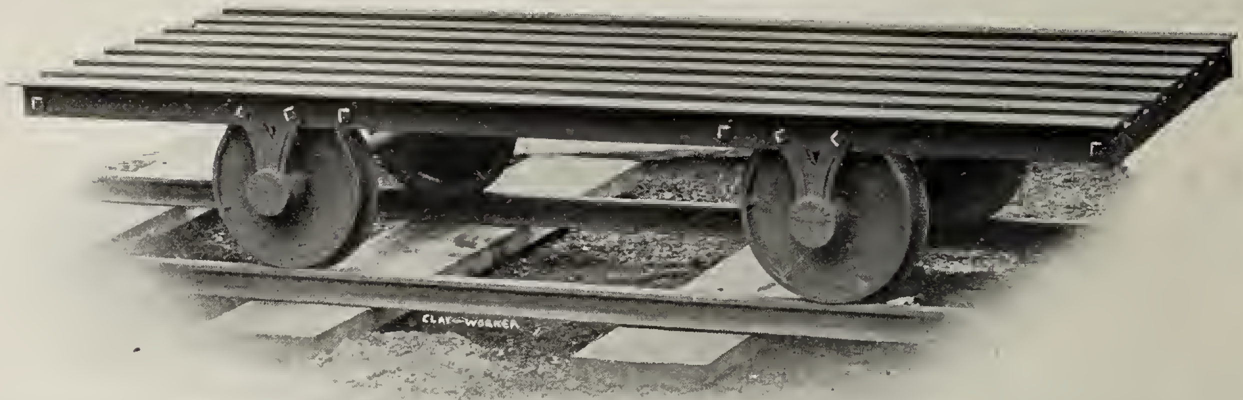
Send for **Up=to=Date Catalogue** of Machinery and Appliances.

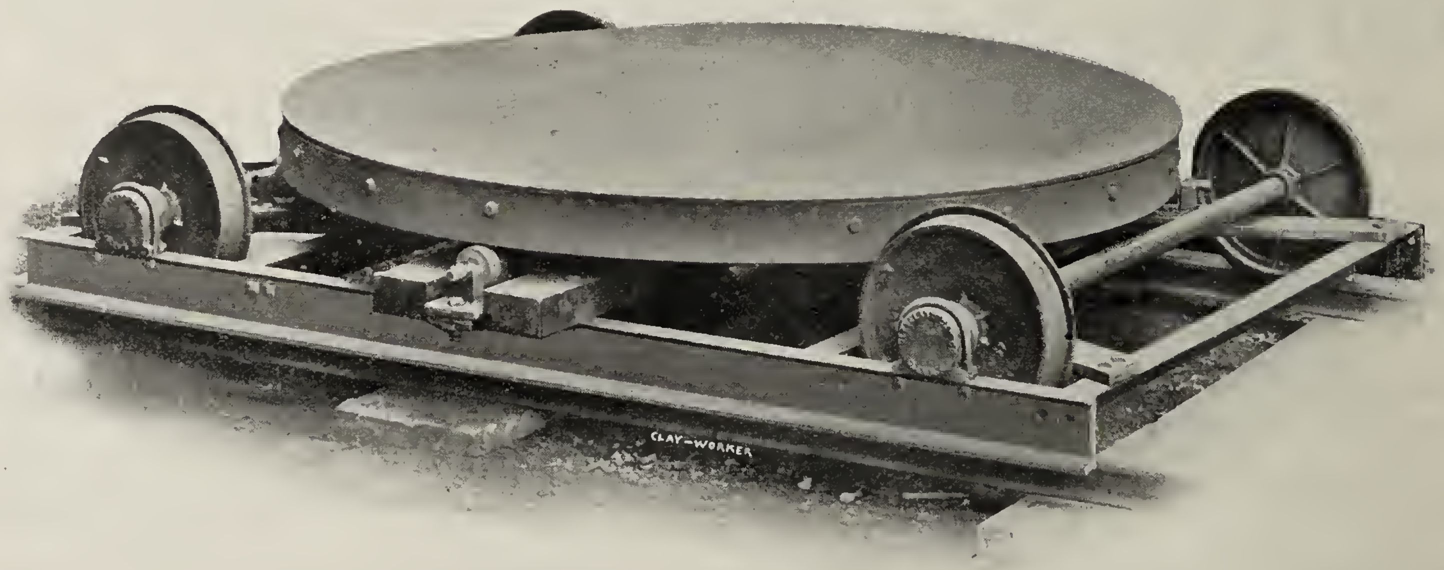
Chicago Brick Machinery Co.,
225 Dearborn Street, CHICAGO, ILLINOIS.



No. 301,
STEEL SIDE
DUMP CAR.

No. 222,
STIFF MUD
FLAT CAR.
Steel Deck,
Angle Frame.

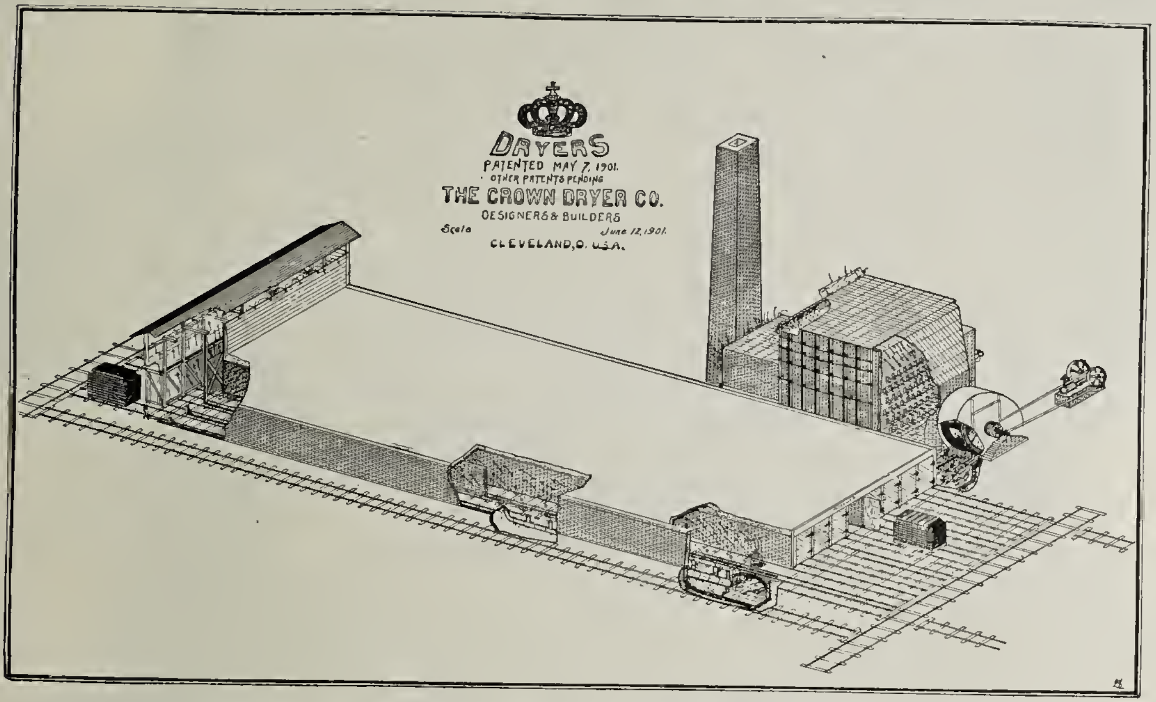




No. 278, Combination TRANSFER and TURNTABLE. Steel Plate Top.

The Cleveland Car Company, 148-152 Scranton Ave.,
CLEVELAND, OHIO.

How Do You Dry Your Brick?



This illustrates the CROWN SYSTEM of Drying.

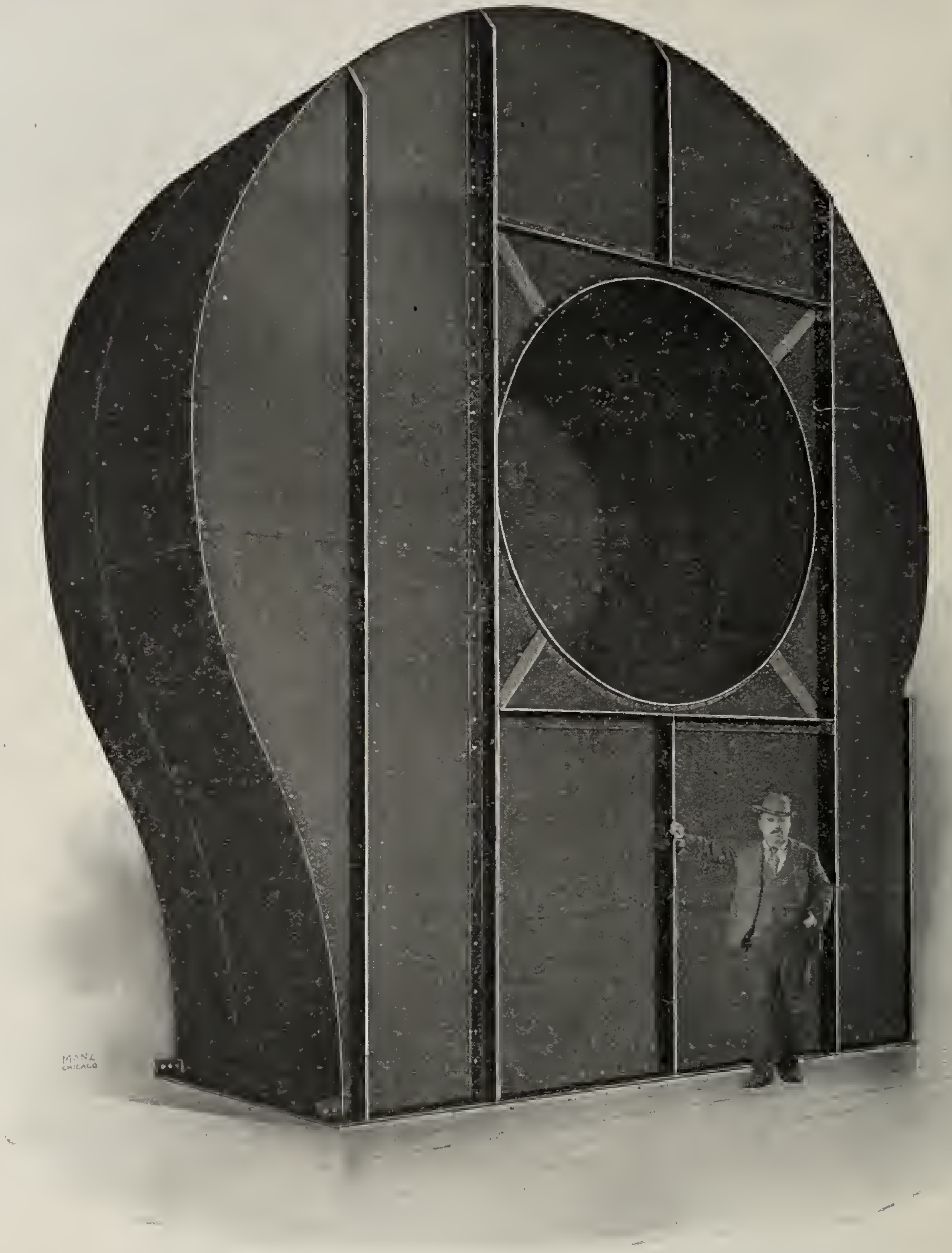
Don't You Need a Dryer?

If so, study the above Cut and let us figure with You. You want to cut down expenses. We can help You. The fuel consumption of The CROWN DRYER is one-third that of others. Write us.

The Crown Dryer Co.,

914 and 915 New England Building, CLEVELAND, OHIO.

Mention THE CLAY-WORKER.



Waste Heat Drier.

This Dryer coins waste into money.

Saves expense on first cost.

Dries brick better and quicker than other dryers.

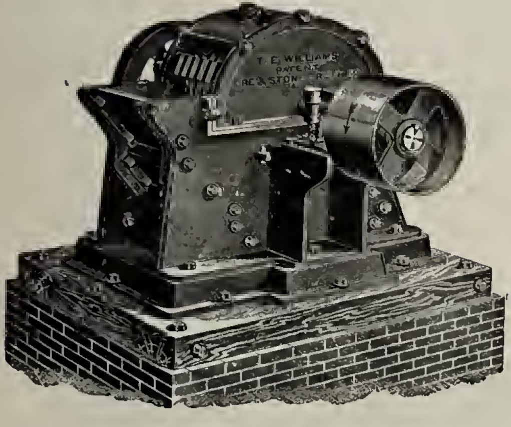
It's the saving that we are all striving for. The turning of the waste heat from your cooling kilns into money means a big dividend at the end of the year. We have installed many of this class of dryers, all are more than satisfactory. The accompanying cut shows a 240-inch full housed fan which we have just installed in the largest waste heat dryers in the country. This fan is 20 feet high and is the largest ever built. We guarantee satisfactory operation and a big saving. Write us.

We build Dryers, Blowers, Exhausters, Engines, Fans and Heating and Ventillating Apparatus.

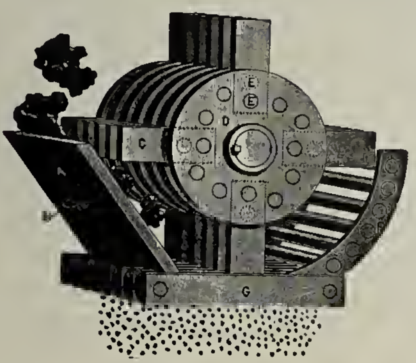
The New York Blower Co., BUCYRUS, OHIO.

The Williams Patent Crusher and Pulverizer Co.

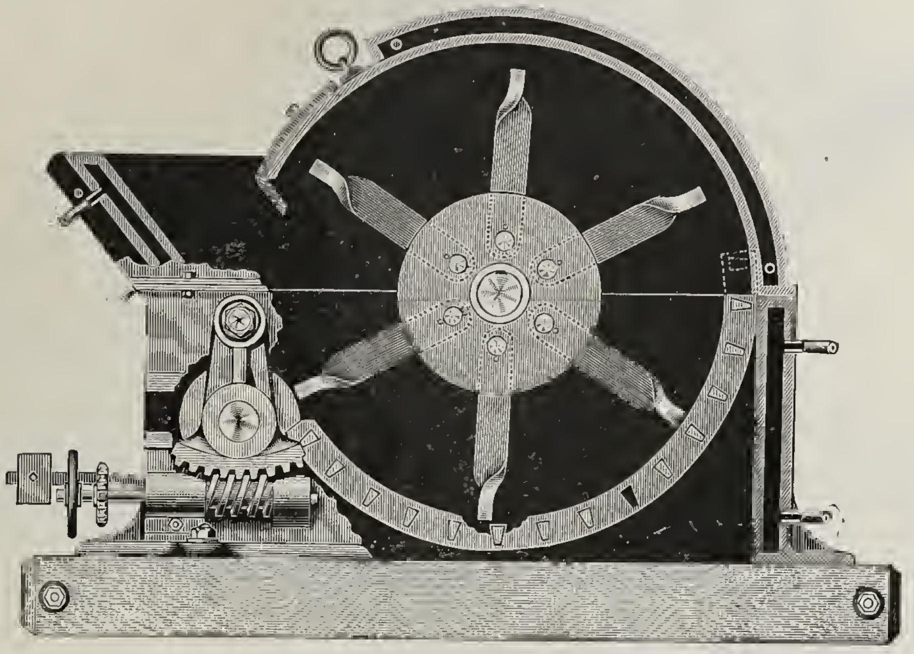
St. Louis, Mo., U. S. A.



SHALE CRUSHER ahead of a Pan. 5 Sizes.

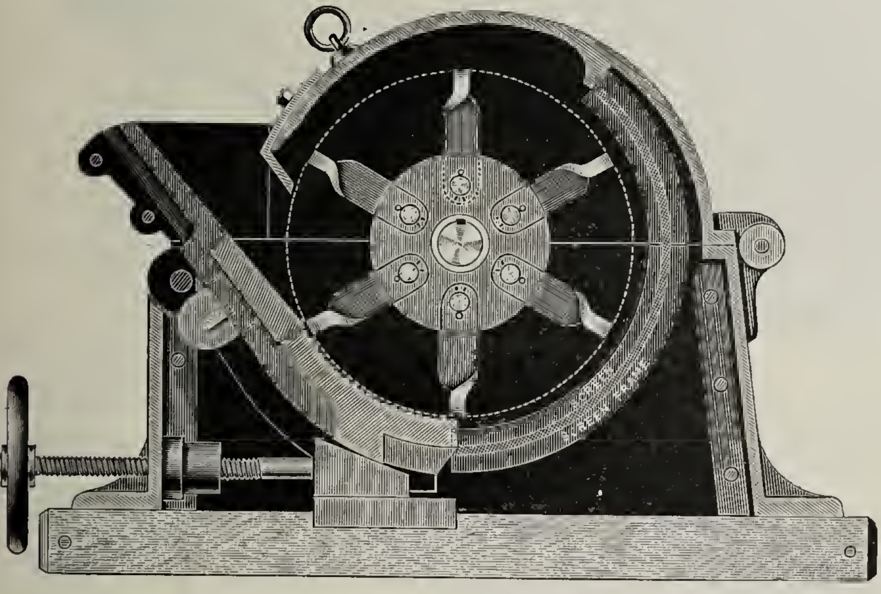


Interior of Same.

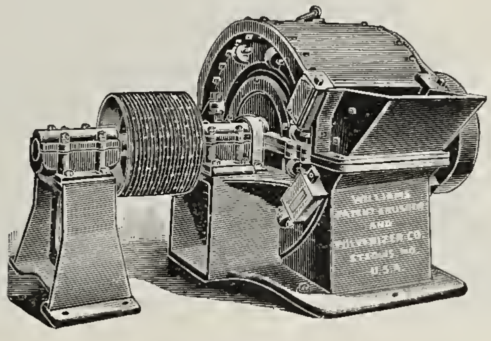


WET and DAMP CLAY DISINTEGRATOR, from the Bank. Five Sizes.

WE NEVER FOLLOW BUT ALWAYS LEAD. Our Steam Screen leads them all. We guarantee to work satisfactorily any clay that will make a Brick, wet or dry, with less cost than any other machine on earth. : : : : : :



TAILINGS GRINDER (which finishes without additional Screening). Five Sizes.

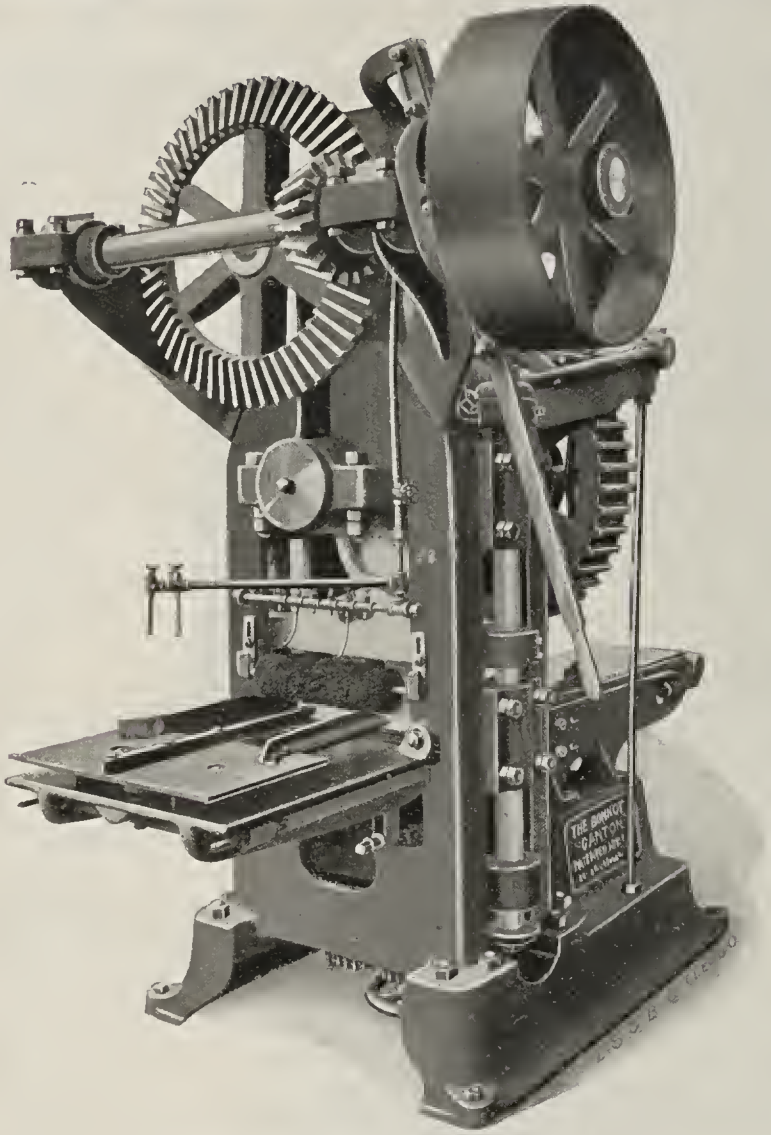


SHALE and CLAY PULVERIZER. Five Sizes.

Branch Offices:

NEW YORK OFFICE: Singer Building.
WEST VIRGINIA OFFICE: Bramwell.
PHILADELPHIA OFFICE: Stephen Girard Bldg.
LOUISVILLE OFFICE: 1301 West Main Street.
CHICAGO OFFICE, 741 Temple Court Building.
SAN FRANCISCO: Partridge Building.

Modern Brick Machinery.



Double Die Repress.

MACK MANUFACTURING CO.
Paving, Building and Fire Brick,
Sewer Pipe, Fire Clay.

WORKS:--New Cumberland, W. Va.

New Cumberland, W. Va., Feb. 28, 1901.

The Bonnot Company,
Canton, Ohio.

Dear Sirs:—

Replying to yours of the 13th, asking if we can still speak as favorably of your machinery as when it was first introduced, we beg to say that we can repeat and add to what we have already said. The Automatic Cutting Tables have given us no trouble from the day they were put in. The mechanism is very simple and everything about it is substantailly and intelligently arranged. We can change from a larger to a smaller brick and vice versa, in five minutes.

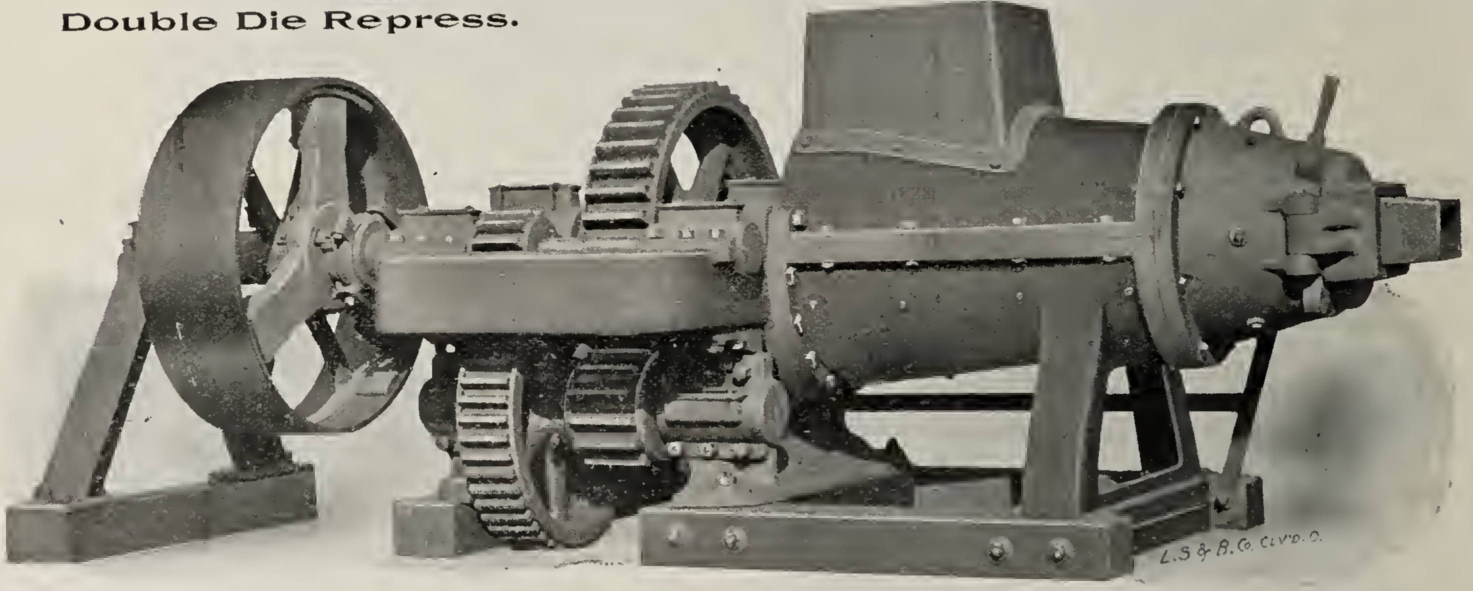
We have four of your double Represses and three Automatic Cutting Tables and they have been in constant use for over three years and they are capable of as good service as when first put in.

As an evidence of our opinion of your machinery, we now give you an order for another cutting table for our No. 6 plant.

We take great pleasure in exhibiting the merits of your machinery to anyone interested.

With assurance of continued regards, we are,

Yours very truly,
MACK MANUFACTURING CO.,
S. G. Gaillard, Mgr. & Secy.


L.S.& B.Co. Clv'd.O.

Brick machines from 10,000 to 100,000 daily capacity.
Automatic Cutting Tables, Dry Pans, Pug Mills, Screens, Etc.

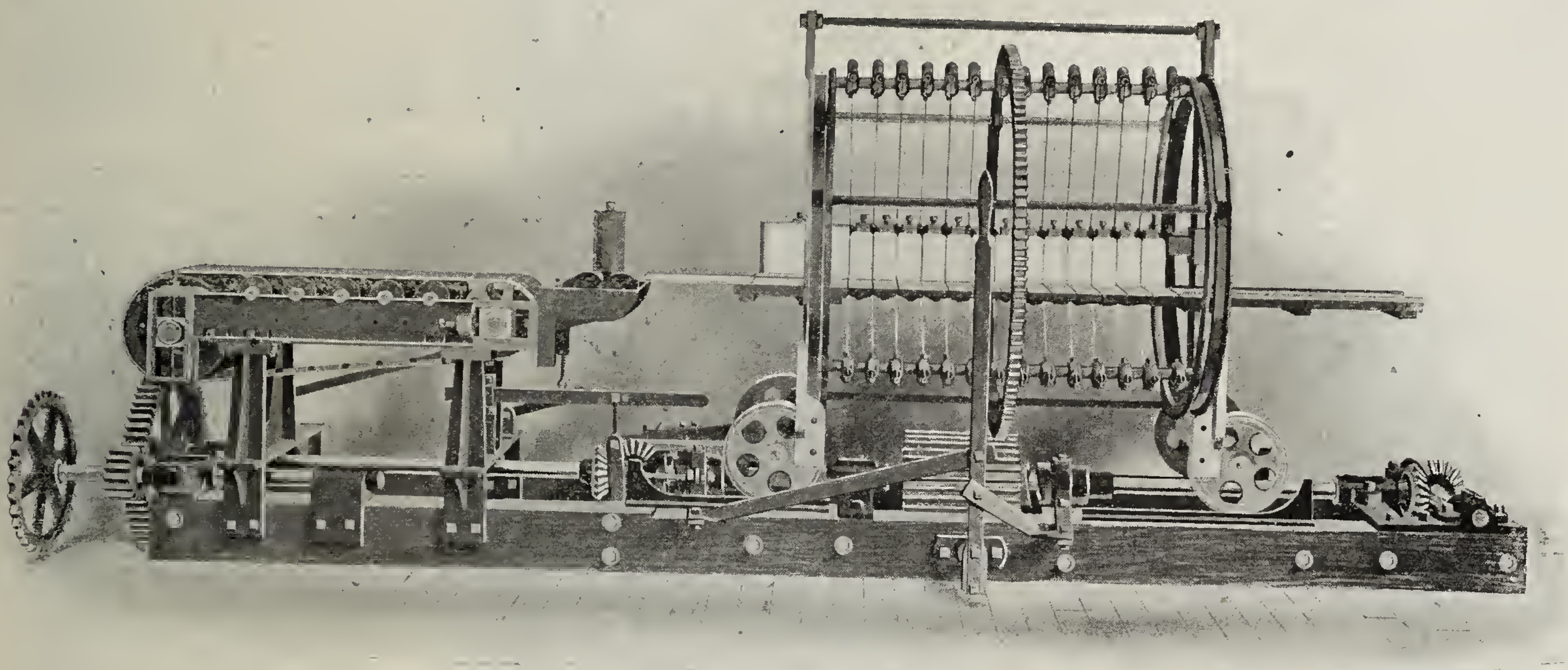
We manufacture a Complete Line of
BRICK, POTTERY and CEMENT
MACHINERY.

The BONNOT CO.,

Write for our Catalogue
of Brick Machinery.

CANTON, OHIO, U. S. A.

The Wonder Brick Machinery.



Semi-Automatic Side-cut Brick Cutter.

Fall in Line==Order Quick.

LEST YE BE TOO LATE.

Owing to the phenominal demand for our Cutter, it will be impossible for us to fill orders for same unless ordered at an early date in as much as we are now working our entire capacity on these Cutters. Nothing is as good as the **Wonder,** if it was, other machines would sell as well. Learn more about it. We want those who will investigate and weigh the facts. Sold on its merits only. Price within reach of all.

Write us for Description and Prices.

The Wallace Mfg. Co.,

FRANKFORT, IND., U. S. A.

SOUTHERN AGENTS:
Atlanta Brick Machinery Co.,
403 Prudential Building, ATLANTA, GA.

WESTERN AGENTS:
Chicago Brick Machinery Co.,
225 Dearborn Street, CHICAGO, ILL.

The STEVENSON CO.,

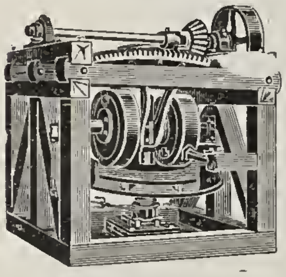
WELLSVILLE, OHIO, U. S. A.

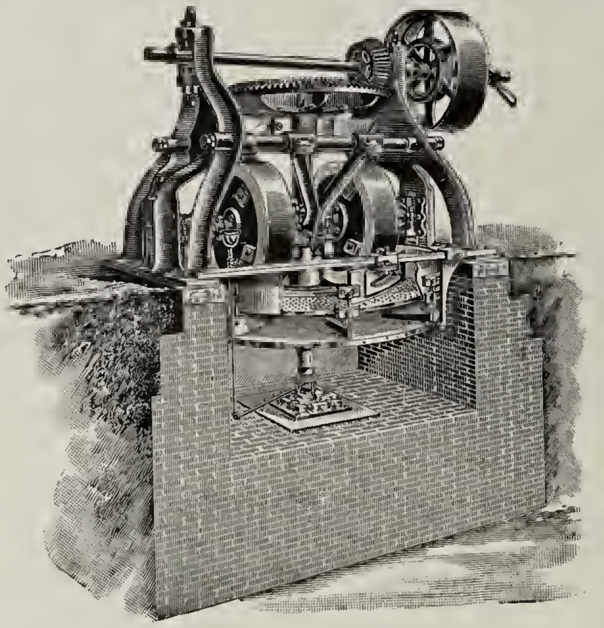
(Successors to Stevenson & Co.,)
MANUFACTURERS OF

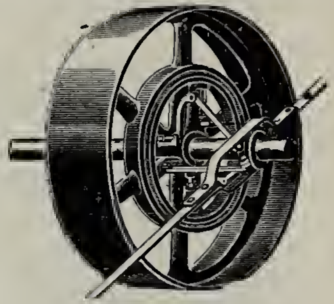
Brick Machinery.

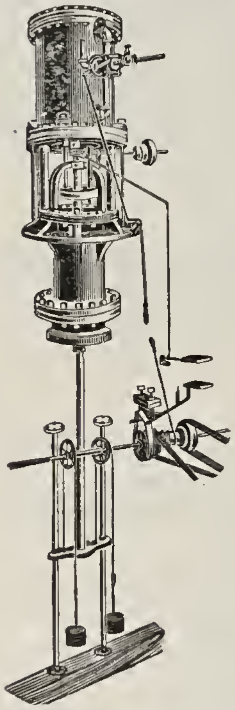
COMPLETE EQUIPMENTS.

Tile Machinery.

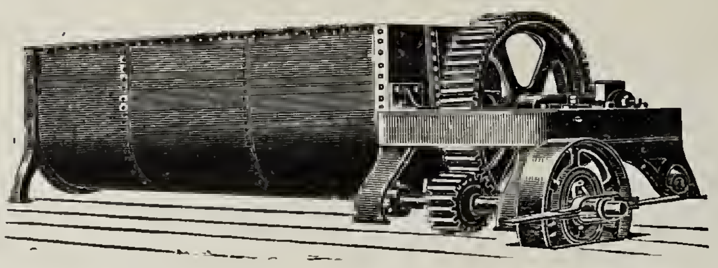


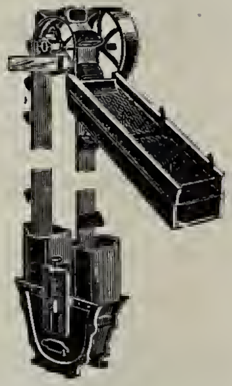






Best Dry Pan on the Market,
See our Customers.





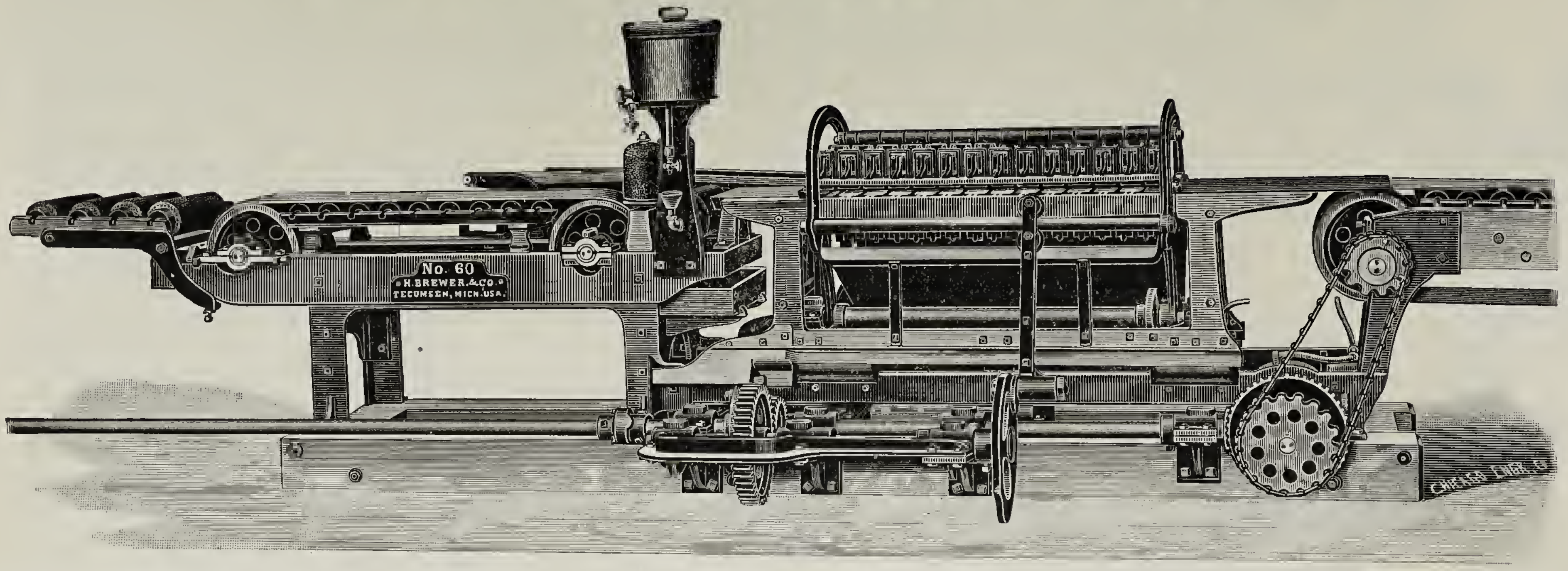
Equipment for Sewer Pipe, Terra Cotta, Brick and Tile Factories, Steam Sewer Pipe Presses, Terra Cotta and Sewer Pipe Dies, Dry Grinding Pans, Tempering Pans, Pug Mills, Elevators for Brick, Pipes, Clay and Trucks, Engines, Boilers, Heaters, Pumps and all Pipe Fittings and Fixtures for Steam Equipments. Shafting, Bearings, Plain Iron Friction Clutch and Wood Split Pulleys . . . .

NEW CATALOGUE NOW READY.

The STEVENSON CO., Wellsville, Ohio.

The Brewer No. 60

Automatic Brick Cutter.


No. 60
H. BREWER & CO.
TECUMSEH, MICH. USA.

IT IS THE SIMPLEST. A glance at the machine shows the total absence of complex mechanical devices and small delicate parts. There are no adjustments to make, no slip bolts to watch, no friction devices to care for and yet every movement of the whole machine is controlled by the column of clay. **IT IS THE MOST EFFICIENT.** Repeated expressions of satisfaction from the practical user dispel any possible doubt in this regard. It cuts brick all alike, all the time and all you can handle; does not cut stubs, thick or thin brick. It will cut the brick on a curve if you want to counteract warp. It uses a smaller wire and a shorter wire than any other cutter.

IT IS THE MOST DURABLE. Actual brickyard demonstrations covering a period of two years show repairs to have cost less than one-fifth of a cent per thousand and for many cutters doing lots of hard work we have yet to furnish the first repair. It is not a big, heavy machine; it only weighs 2,400 pounds but the weight is in the right place and more than that it doesn't jar itself to pieces when working. It works quietly and smoothly. To show the confidence we have in the machine we offer it to any responsible party under guarantee of **SATISFACTION OR NO SALE.** ⌀ ⌀

H. BREWER & CO., Tecumseh, Michigan.

The
Eagle Repress.

◆ ◆ ◆

The Peer of Presses.

◆ ◆ ◆

It is "BUILT RIGHT and RUNS RIGHT."

◆ ◆ ◆

PARTICULARS FOR A POSTAL.

**Stiff Mud,
Soft Mud,
Dry Press,
Pottery
and
Cement
Machinery.**

BUILT RIGHT RUN RIGHT
AMERICAN CLAY WORKING MACHINERY CO.
BUCYRUS, O. U.S.A.

The American Clay-Working Machinery Company,

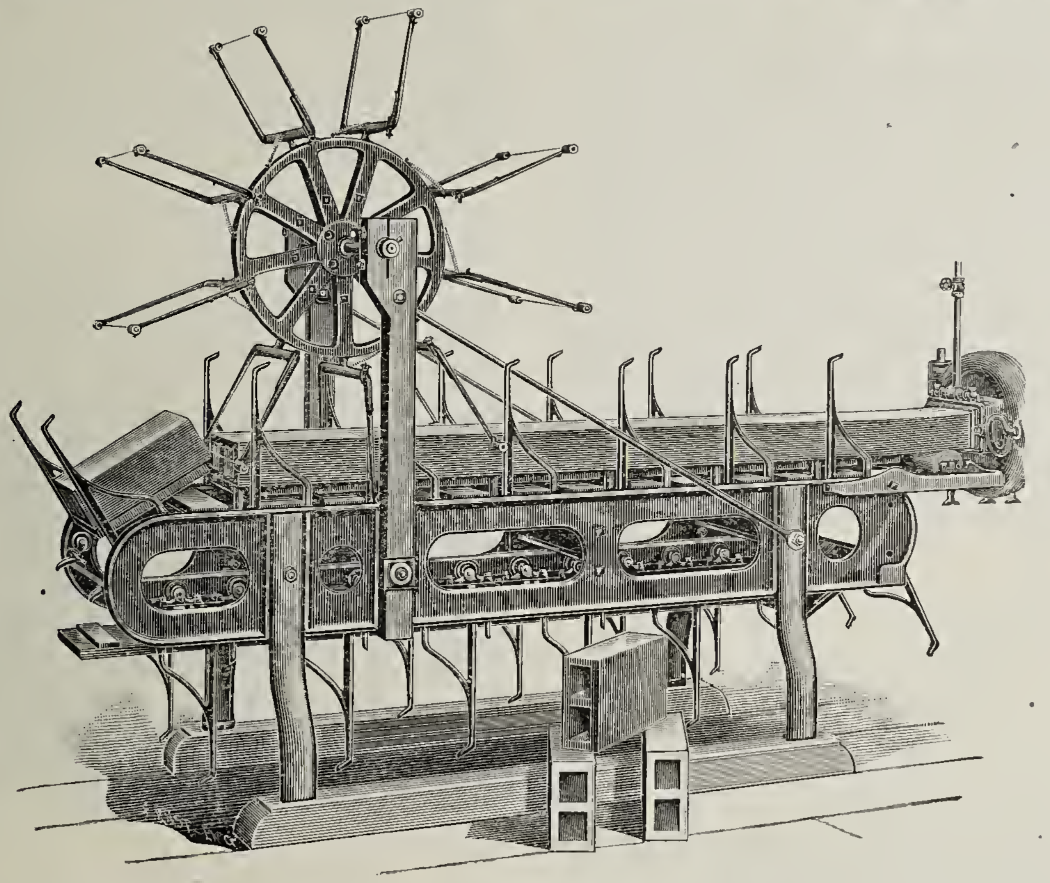
NEW YORK OFFICE:
39 and 41 Cortlandt St.,
Rooms 101 to 106.

BUCYRUS, OHIO, U. S. A.

See Ad. on Page 176.

Do You Make Hollow Block?
What do You Cut Them With?
Are They Cut Perfectly Square?
And All of One Length?

BENSING'S AUTOMATIC TILE TABLE



Arranged to cut Hollow Blocks, is the finest thing made to do this work. Every block is exactly of the same length and cut perfectly square, and it cuts the Drain Tile in the same manner.

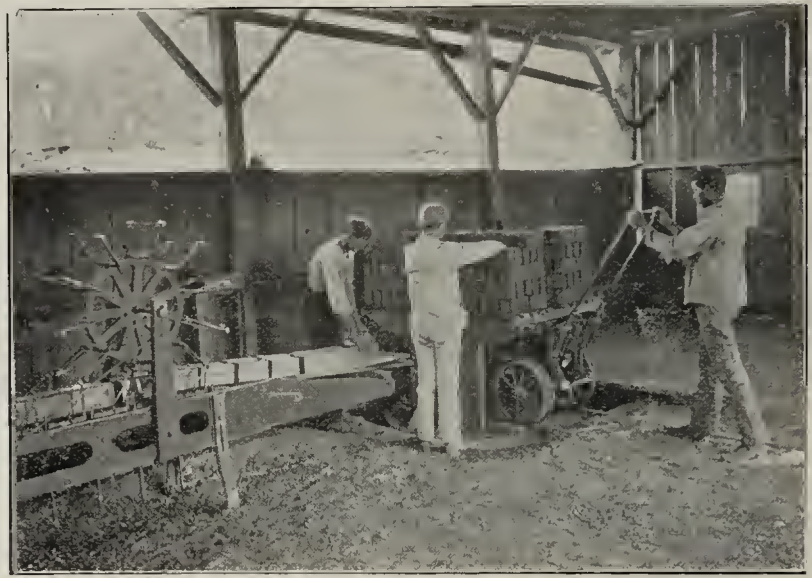
We would like an opportunity to more fully explain this Table to you and also some of the rest of our machinery.

A Postal Card will bring our Catalog.

J. D. FATE & COMPANY,
PLYMOUTH, Richland Co., OHIO.
B. E. LaDOW, 1210 Chamber of Commerce, Chicago, Ill.

A PERFECT CAR SYSTEM

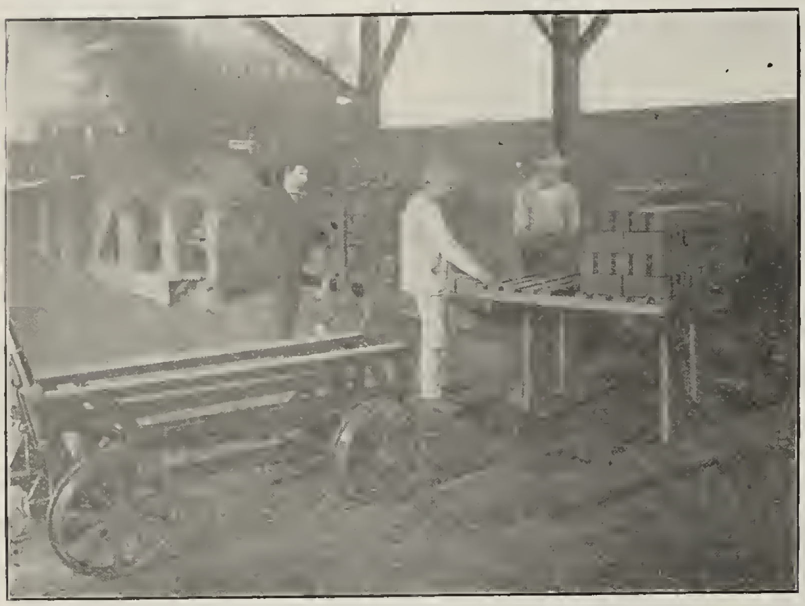
For Either Soft or Stiff Mud.



With only TWO CARS

One man will handle 40 M brick per day.

No Fan to Run. No Boiler to Steam.
No Pipes to Burst. No Fireman to Pay.
No Dryer. No Fuel.



We Guarantee This to be the cheapest, best and only out-door car system ever offered the brick manufacturer. We guarantee to handle from the machine and put on the yard in good condition, from thirty to forty thousand green brick per day, with one man, and same amount to kiln. We guarantee our patent car and system to perform the work for which they are built, and all the workmanship and quality of material to be first class. Our Covers and Storm Curtains give absolute protection from rain and storms and also protects tender clays.

THIS SYSTEM consists of two elevating and lowering brick cars for a thirty to forty thousand capacity brick plant; these take the place of several hundred common cars. The car is made of channel steel, with movable deck, which is raised and lowered by a compound lever. From two to five hundred brick are taken from the machine and placed on a pallet, the lever lowered, raising pallet off the rests. The load is then on car, which is run on the yard to the rests along each track; the lever is again raised, thus lowering deck of car which places load on the rests.

Scott's Patent Brick Car Co.,

Write for Catalogue. Knoxville, Tenn.

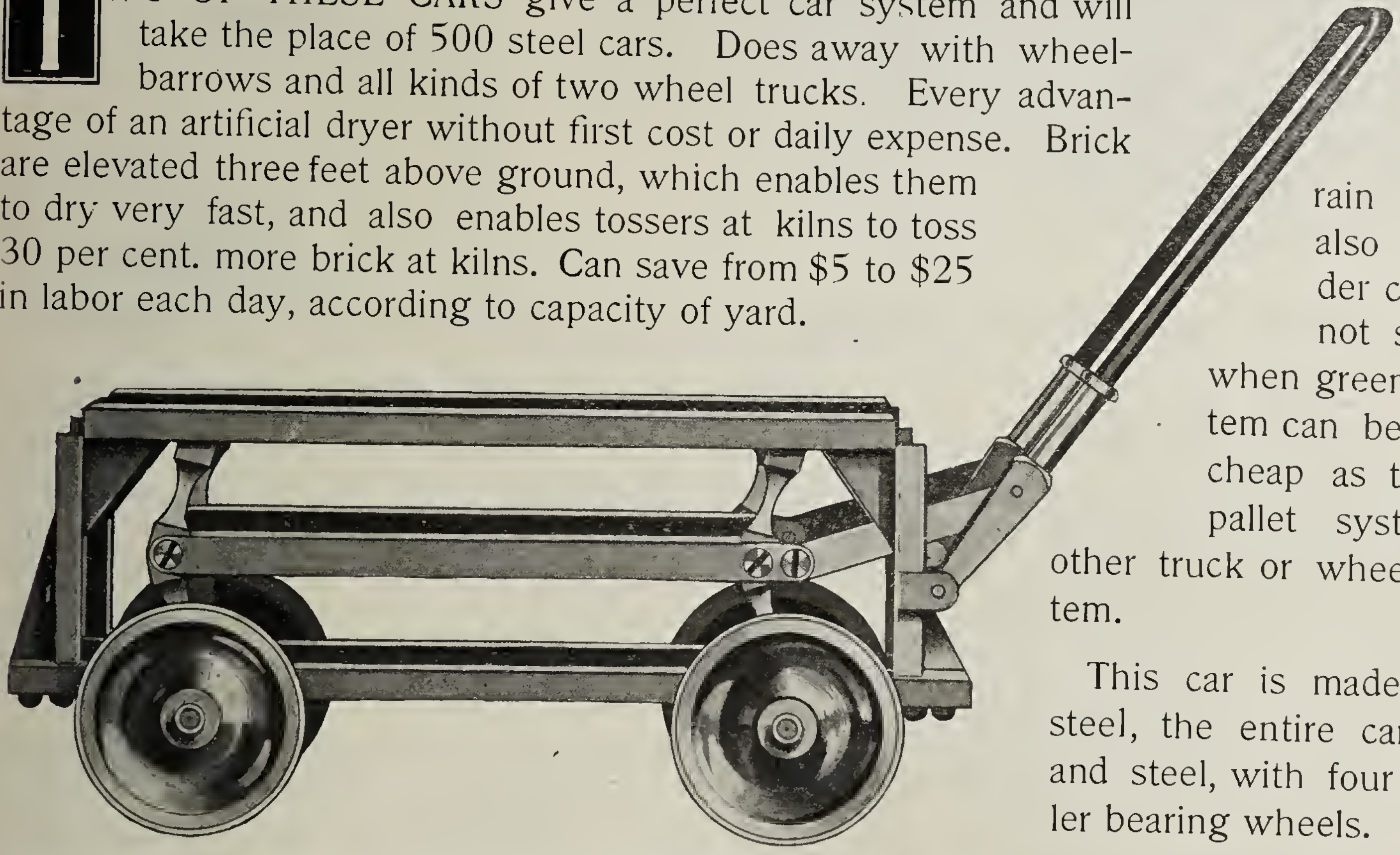
Soft Mud Process.

THESE CUTS show our Leg Pallet System, in which we use one large pallet and a number of small pallets, such as used by soft mud machines. These small pallets have a block nailed on each end which acts to separate each pallet of brick. This system is the favorite among the soft mud brick men, and will be found lacking in nothing. Any size pallets can be used by nailing a block on each end of pallet. The Leg Pallet system has been used in connection with artificial dryers for years, and works equally as well with our system

Showing Manner of Handling Brick at Machine.

Showing Brick on Drying Racks.

TWO OF THESE CARS give a perfect car system and will take the place of 500 steel cars. Does away with wheelbarrows and all kinds of two wheel trucks. Every advantage of an artificial dryer without first cost or daily expense. Brick are elevated three feet above ground, which enables them to dry very fast, and also enables tossers at kilns to toss 30 per cent. more brick at kilns. Can save from $5 to $25 in labor each day, according to capacity of yard.



Our covers give absolute protection from rain and storms; also protects tender clays that will not stand the air when green. This system can be installed as cheap as the rack and pallet system or any other truck or wheelbarrow system.

This car is made of channel steel, the entire car is of iron and steel, with four 18-inch roller bearing wheels.

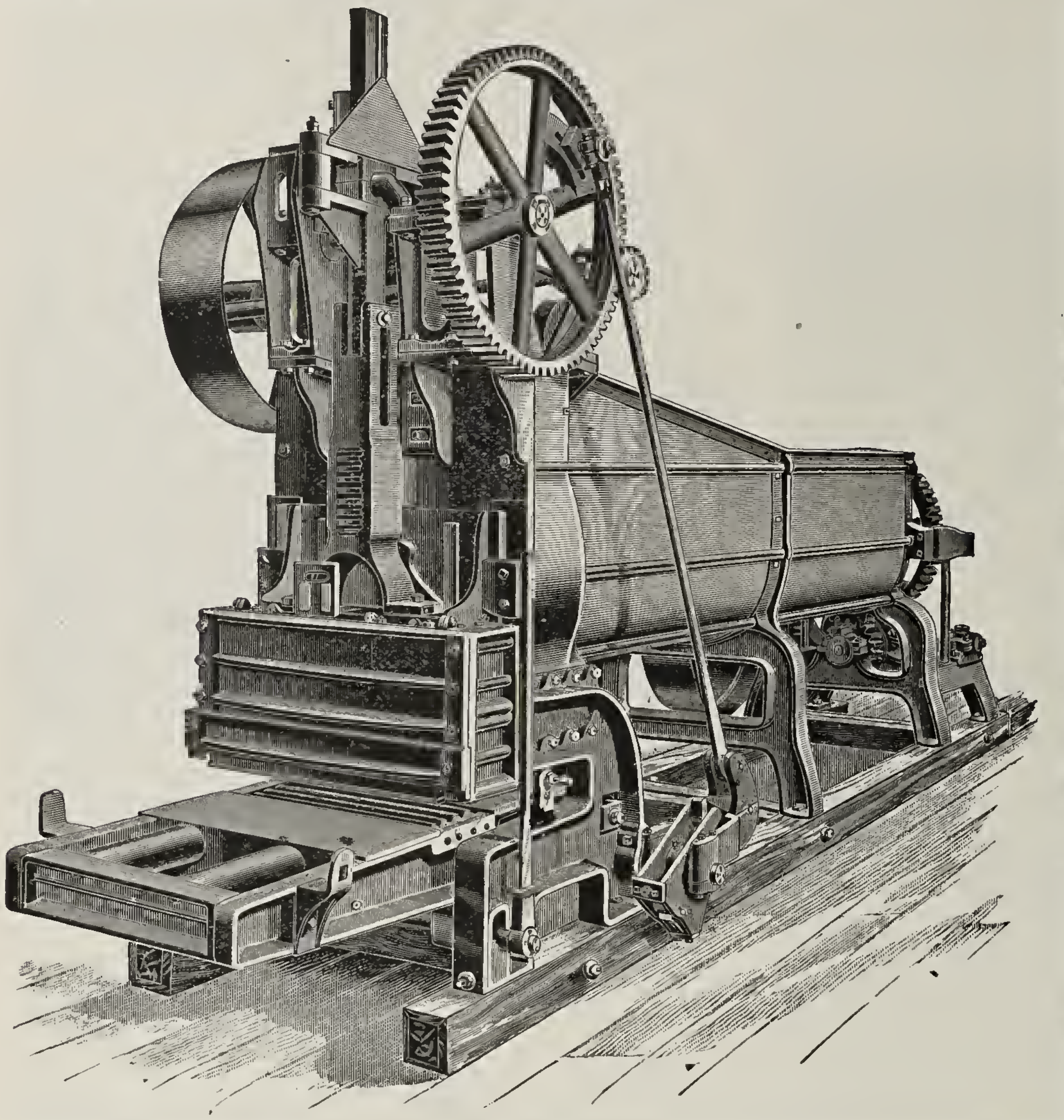
SCOTT'S PATENT BRICK CAR CO.,

Write for Catalogue.

Knoxville, Tenn.

THE POTTS Horizontal Stock Brick Machine.

THE LEADING MACHINE OF AMERICA.



More Machines Sold This Past Season, Than In Any Two Former Years.

What We Claim: It is the Largest, Heaviest and Best Constructed. It has Double the Tempering Capacity of any Machine made, It will work the clays as stiff as it is possible to slip it from the moulds or strike the moulds, at the same time fill a six-brick mould perfectly with brick which will have CLEAN, SHARP CORNERS, SMOOTH SURFACES, and are STRAIGHT and SQUARE when burned.

All Shafts are made of the best grade of STEEL. STEEL GEAR—All surface joints planed, insuring good solid bearings.

There is no one to dispute, and prove his claim, that this is not the best Machine on the market today.

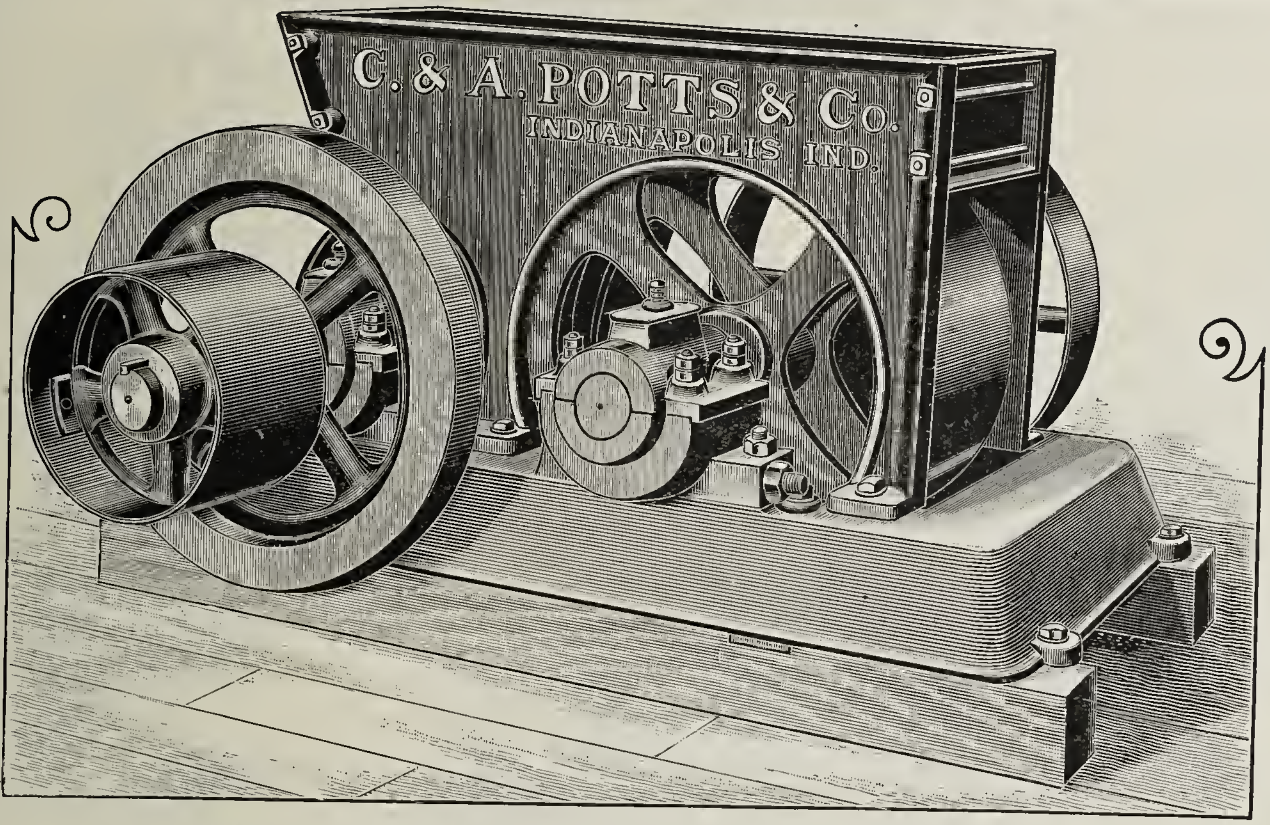
We guarantee all we claim with a guarantee which is good, no verbal promises.

Write for Prices and Terms.

C. & A. POTTS & CO., - Indianapolis, Ind.

Potts Disintegrators

Are used in all parts of the United States and Europe. They are acknowledged by the trade in general to be the only Reliable Machine ever made for the work.


C. & A. POTTS & Co.
INDIANAPOLIS IND.

(Patented.) **Style "P"** Four Sizes, Capacity 20 to 150 M Brick per day.

It grinds any kind of clay. Does not Choke or Clog from wet, sticky or hard, dry clays. Grinds the clay, leaving it in a loose, open condition so it will take water readily, and can be thoroughly tempered.

These Disintegrators grind the small stone, and separate the large ones.

There is no piece of machinery made which will make a greater improvement in the quality of your Brick or Tile.

Remember that a good thing, and one in general demand, soon has competitors, so with the Potts Disintegrator, which is the only machine made having **ADJUSTABLE SECURED STEEL CUTTING BARS,** all other Disintegrators have the lugs, or bars cast to the cutting roll (an underhand way competitors have taken to avoid our patents) these cast bars wear off in a week or two, with no way to replace them, only by purchasing a new roll. When some agent is trying to sell you one of these inferior machines, his only recommendation is that it is cheaper than the Potts.

Stop, Then, and figure what three new rolls for one of these machines will cost per year. You will purchase a Potts Disintegrator we know. THEY ARE THE BEST.

C. & A. POTTS & CO.,

Mention the CLAY-WORKER

Indianapolis, Ind.

Brick Machinery and Brickyard Supplies

Soft Mud, Wire Cut, Dry Press Processes.

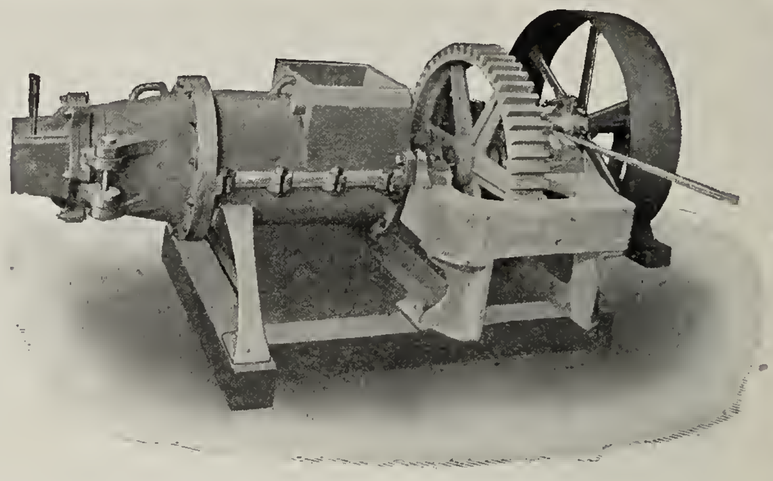
WE EQUIP BRICK PLANTS COMPLETE AND GUARANTEE THEM TO GIVE SATISFACTION.

◆ ◆ ◆

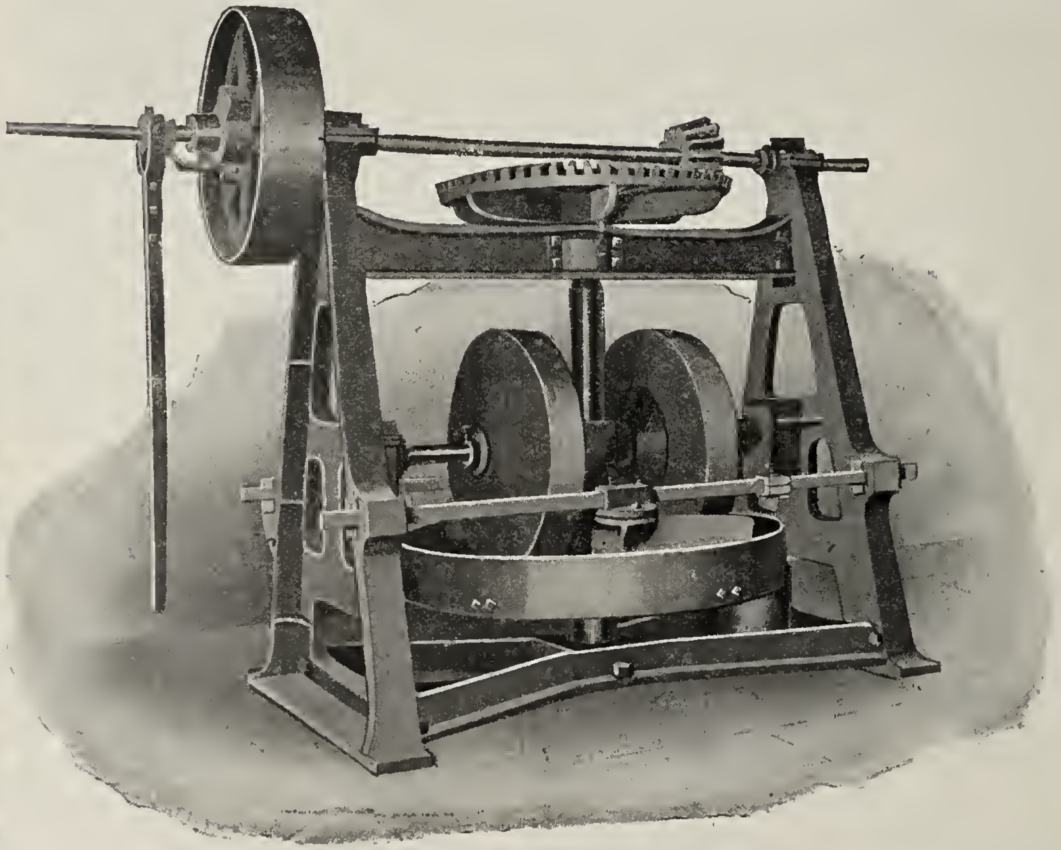
Advise us the capacity you desire and get our prices.

THEY WILL INTEREST YOU.

Send us a Sample of your clay and get our opinion of it.



Our No. 2 Auger Machine—Capacity 20 M.



5 foot Grog Mill.

We Furnish Everything a Brickmaker Needs.

Pug Mills.
Granulators.
Crushers.
Dry and Wet Pans.
Elevators.
Conveyors.
Hoisting Drums.
Dump Cars.
Brick Barrows.
Brick and Tile Trucks.
Dump Carts.
Dryer Cars.
Brick Moulds.
Engines.
Boilers.
Etc., etc.

THE HENRY MARTIN BRICK MACHINE MFG. CO.,
Incorporated.

Send for our new Catalogue No. 60.

LANCASTER, PA.

The Henry Martin Brick Machine Mfg. Co., LANCASTER, PENN.

INVENTORS, MANUFACTURERS AND EXPORTERS OF

Brick Machinery and Brick Yard Supplies.

MARTIN'S STYLE "P"

♣ ♣

All Iron and Steel.

♣ ♣

Capacity 35,000 daily.

♣ ♣

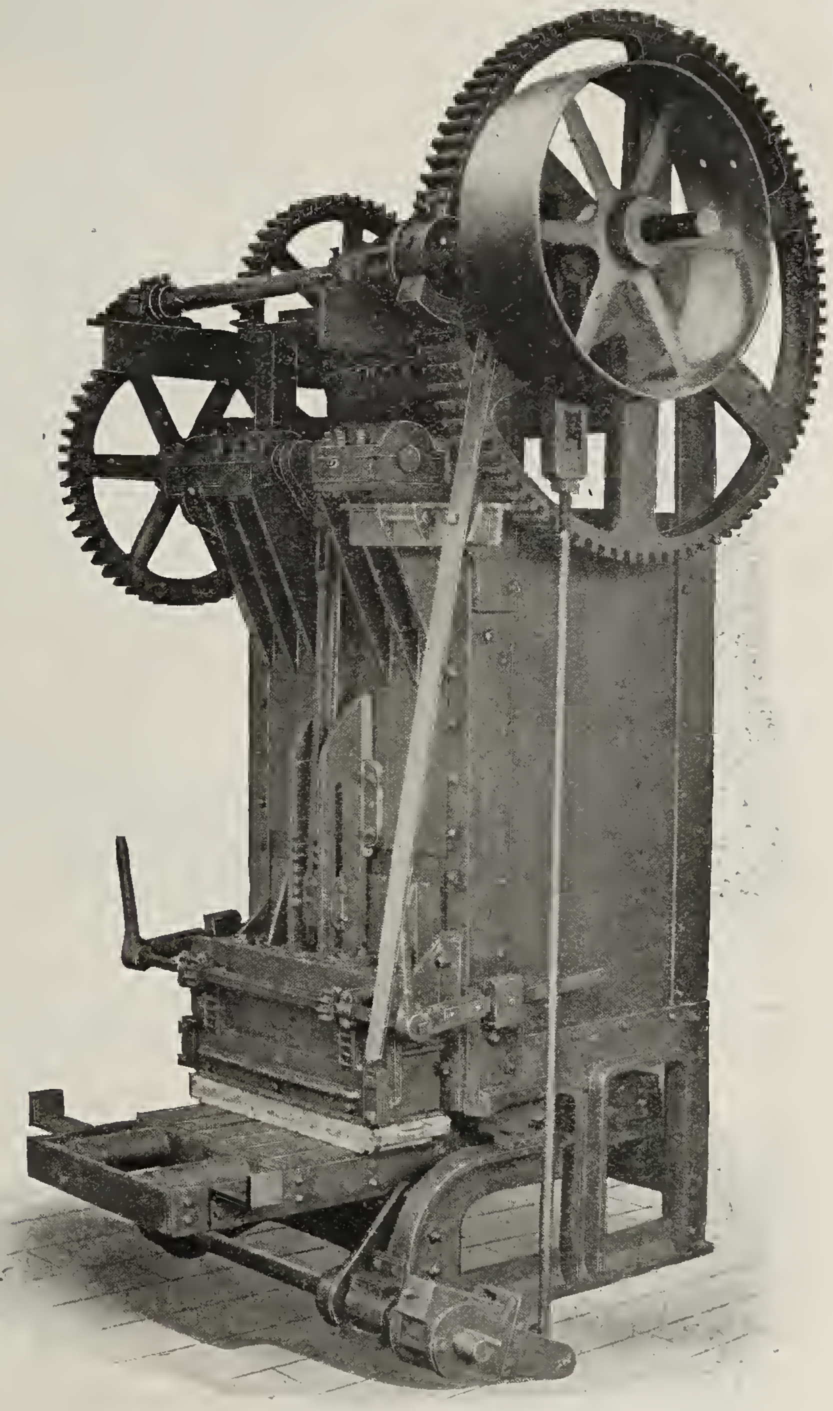
Complete with
Friction Clutch
and Pulley.

♣ ♣

Every Machine is set up and thoroughly tested before shipment.

♣ ♣

No Experiment,
But a Perfect
Success.



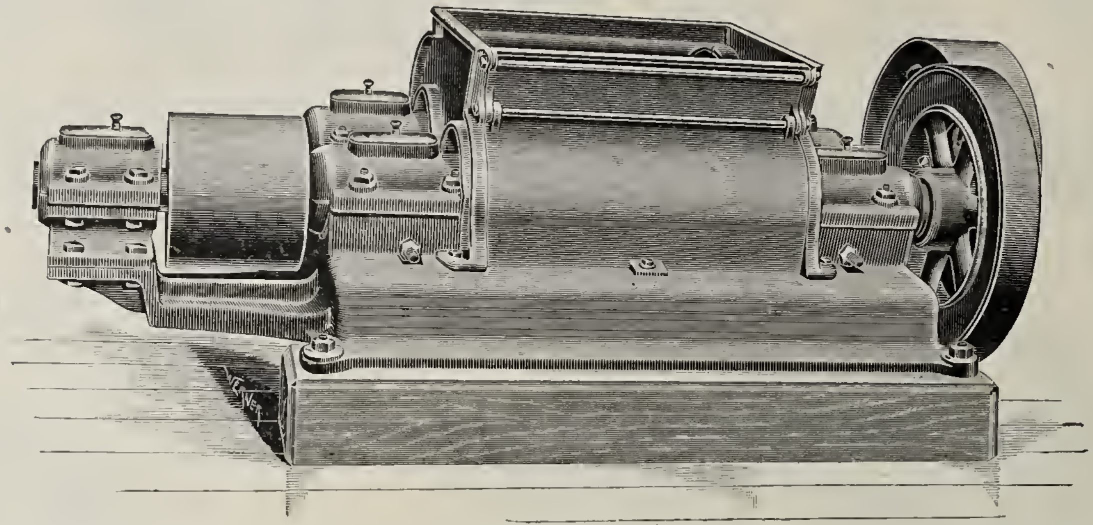
WE CAN SHIP FROM STOCK.

All Correspondence cheerfully answered.

Send us a list of your requirements and let us quote you.

We Manufacture

A full line of BRICK
MACHINERY to equip
an Up-to-Date Plant.

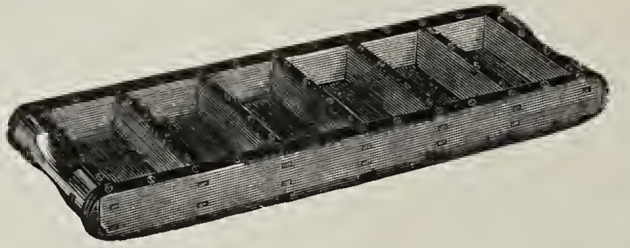


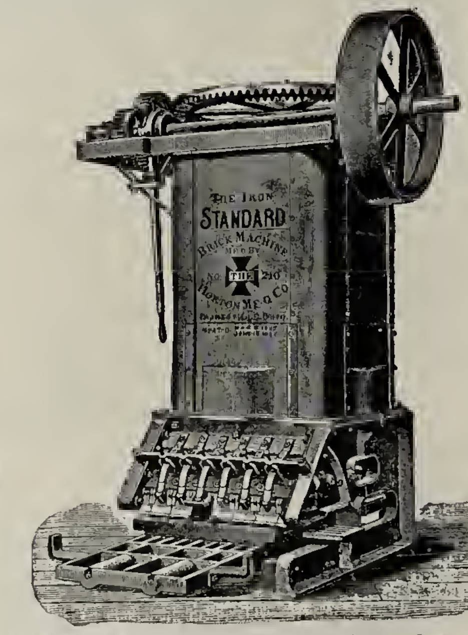
The above cut represents our No. 3 and No. 4 Disintegrators. Notice the heavy construction and out bearing boxes.

MOLDS.

Is one of our Specialties. Either Hand, Machine or Shapes. We have a shop full of Special Machinery for the Manufacture of these as well as Trucks of all kinds, Wheelbarrows. Dump Cars, and Carts. In fact everything used on a Brickyard.

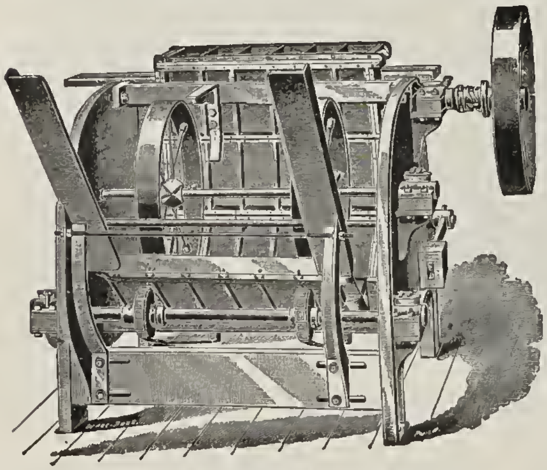
Iron Standard Horse Power Brick Machine—The Leader of all Horse Power.





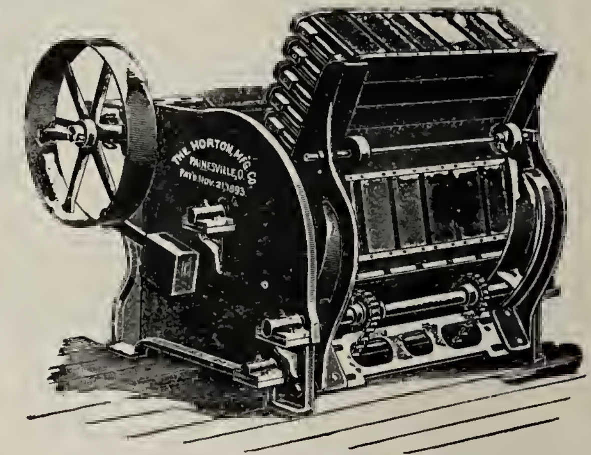
Standard Steam Power Brick Machine—Just the Machine for Medium Sized Yards.

The Mold Sanders That "Sand"



No. 1 Sander for Pallet System.

TWO
STYLES.


The Horton Mfg. Co.
Painesville, O.
Pat'd Nov. 21, 1893

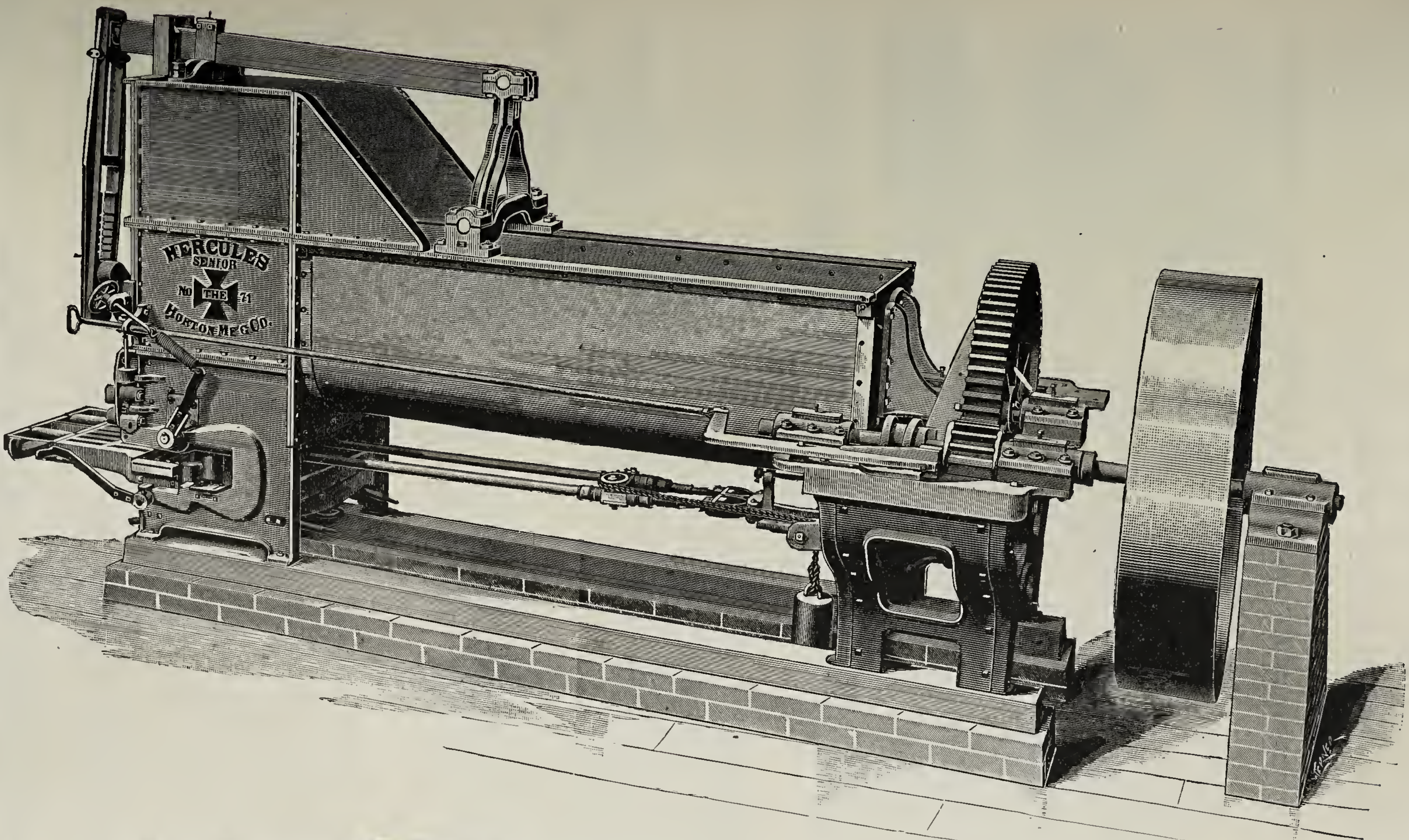
No. 2 For Open Yards.

THE HORTON MANUFACTURING CO.,

Painesville, Ohio, U. S. A.

Mention The Clay-Worker.

The Hercules.



READ THIS

Messrs. HORTON MFG. CO., Painesville, O. PINE BLUFF, Ark. December 12, 1901.

GENTLEMEN: This makes the third year we have been running one of your Soft Mud Brick Machines, the Hercules Senior, and indeed we consider it a Model Machine. We are making just as nice and pretty brick to-day, as we did the first day we put it in operation. We make thirty-five thousand brick each day we run, in eight hours time, and if required could make more. During this three years, our percentage of breakage has been very small, and have had very few repairs to make. The Hercules Sr. is very simple in construction, and its strength is wonderful. We can temper our mud to any degree of stiffness without fear of breaking, and taking into consideration the amount of work required of it, it is an excellent and easy runner. Were we in need of another Soft Mud Machine, we certainly would order the Hercules. With much success for the ensuing year, we beg to remain Very truly,

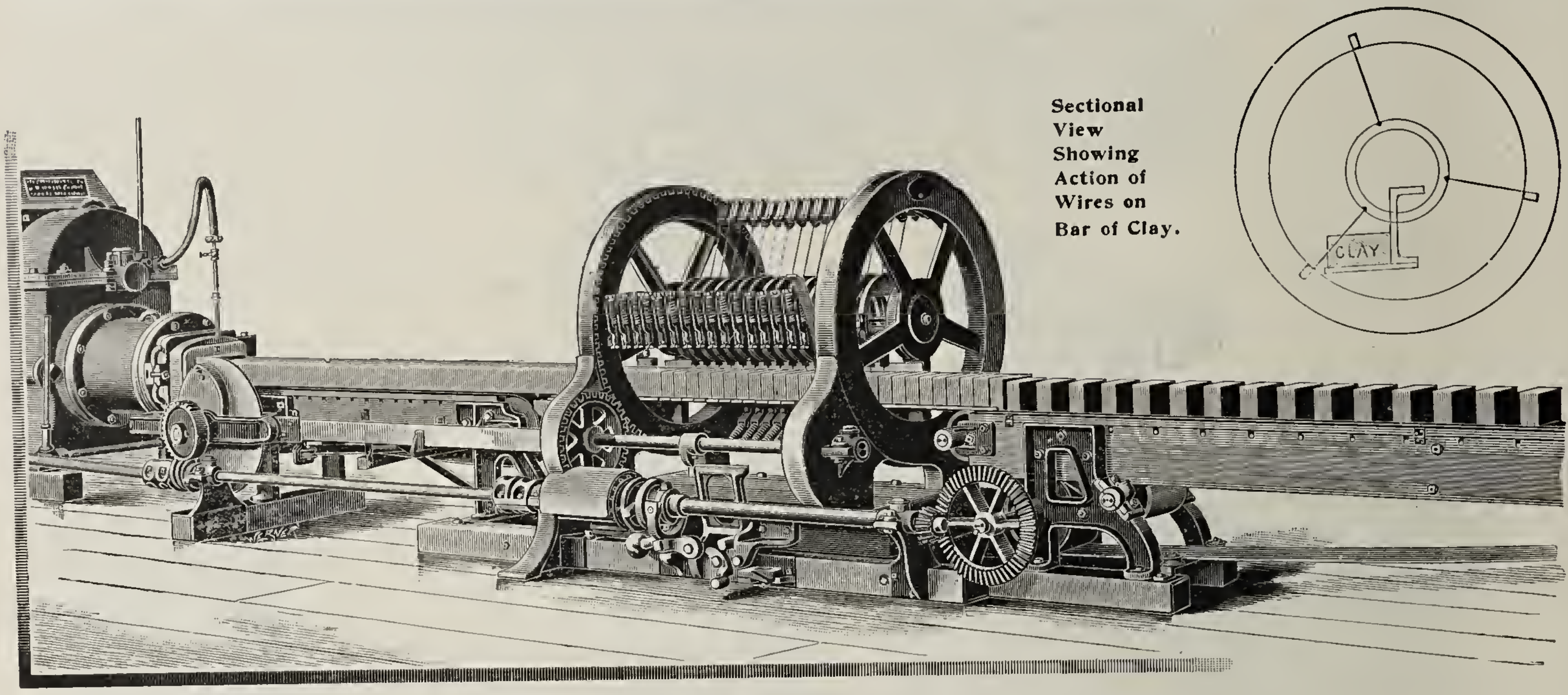
PINE BLUFF BRICK CO.
A. BREWSTER, Secretary.

THE HORTON MANUFACTURING CO., Painesville, Ohio.

NO OTHER

AUTOMATIC CUTTER

Is "Just as Good" as This.


Sectional View Showing Action of Wires on Bar of Clay.
CLAY

ROTATING AUTOMATIC CUTTER. Patented.

Why waste time and money using Cutters which are frequently out of order and cannot be depended upon to do good work?

Why not produce brick of **finest quality** when it can be done with less expense?

A multitude of others have found it profitable to use this Apparatus.

Why should you not use it also?

You will be satisfied with it.

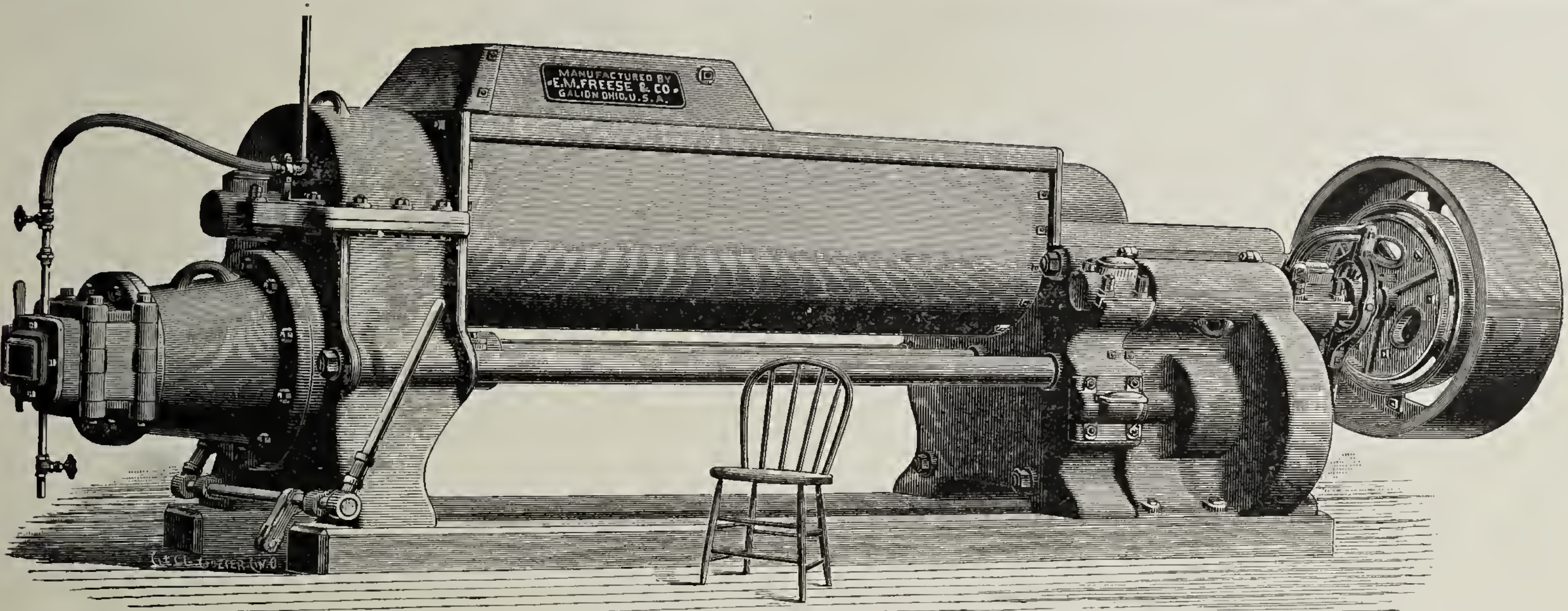
We will prove this statement if you will give us opportunity.

E. M. FREESE & CO.,
Galion, Ohio.

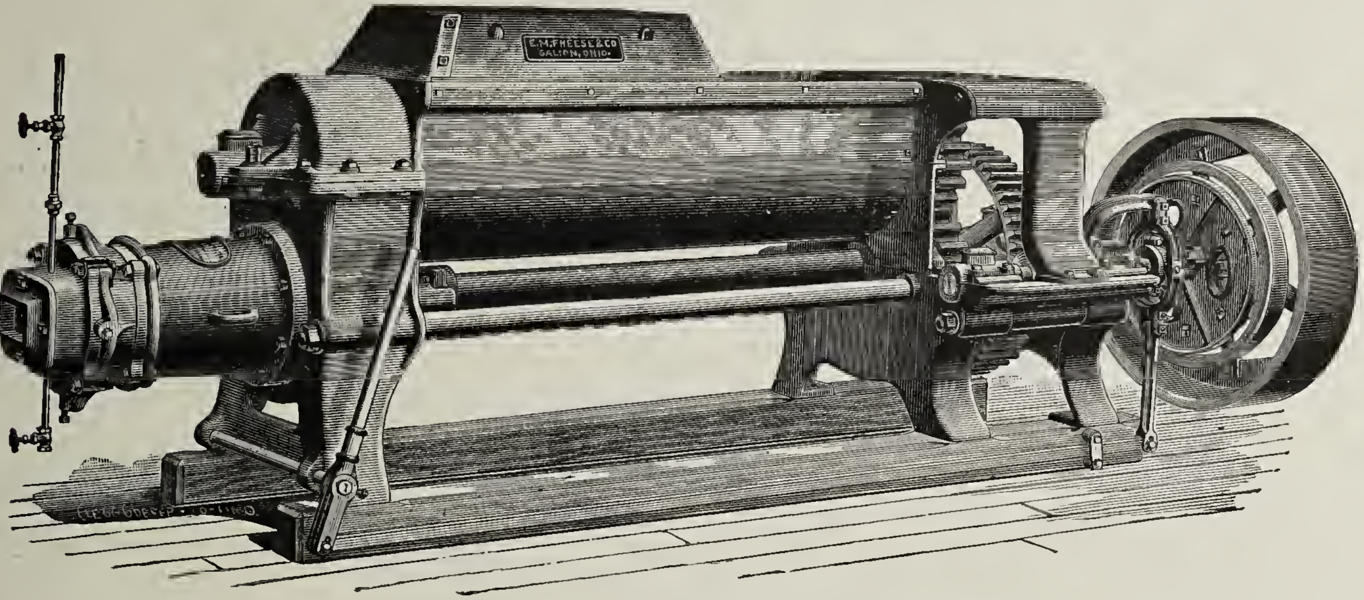
Mention The Clay-Worker.

Union Brick Machines

With Pug Mill Combined.


MANUFACTURED BY
E.M. FREESE & CO.
GALION OHIO U.S.A.

UNION BRICK MACHINE. (SPECIAL SIZE.)



UNION BRICK MACHINE. (No. 1 SIZE.)

We build these Machines in five (5) sizes.

Their reputation for convenience, enconomy and satisfactory service generally is established by their use in scores of the best Brick Plants.

E. M. FREESE & CO.,
Galion, Ohio.

Mention The Clay-Worker.

SOME OF THE ARTICLES WE MAKE

Horizontal & Vertical Brick Machines

Clay Granulators,
Clay Elevators,
Clay Cars, Pug Mills,
Revolving Dump Tables,
Tempered Steel Brick Strikes,
Kiln Castings,
And other castings.

◆ ◆ ◆

Friction Winding Machines,
Friction Clutches,
Friction Clutch Pulleys,
Friction Cut-off Couplings.

◆ ◆ ◆

Power Freight Elevators,
Hoisting Machines,
And Some Other Things.

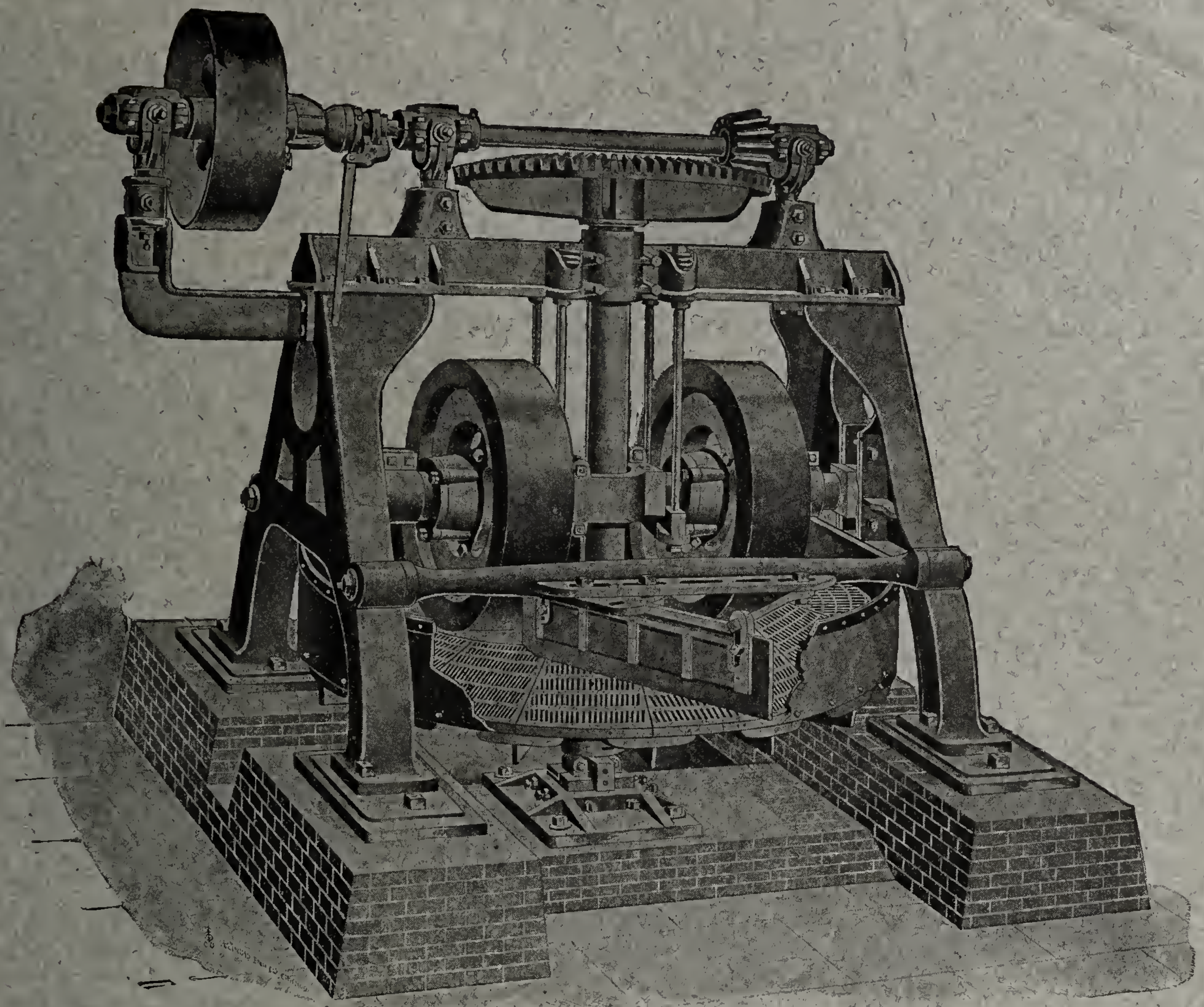
Have printed descriptive sheets describing many of these articles, which we will be happy to furnish, with prices on application.

It's not our aim to build the cheapest but we do try to build the best. Better Investigate Them.

The Eastern Machinery Co.,

NEW HAVEN, CONN.

Mention The Clay-Worker.



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The ORIGINAL and BEST Dry Pan in the market. More of these Dry Pans in use to-day than all others combined. All sizes: both Wood and Iron Frames. Used by every Prominent Brick Manufacturer. ☛ Less repairs are required for the Frost Dry Pan than any other make. This is a very important fact. High Grade Automatic and Throttling Steam Engines, Horizontal Tubular Boilers and Plain and Submerged Tube Vertical Boilers. ☛ Send for Illustrated Catalogue.

The Frost Manufacturing Co.,

Established in 1851.

CHICAGO and GALESBURG, ILL., U. S. A.

AMERICAN BLOWER CO.

“A B C”
Waste Heat Brick Dryers are standard the World over. Send for full detailed information.

American Blower Co.,
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NEW YORK DETROIT LONDON

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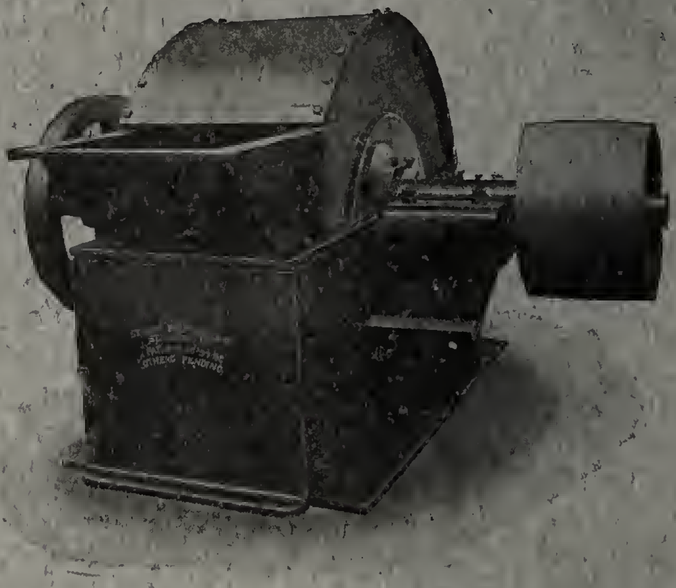
Schoellhorn and Albrechts'

PATENT

Pulverizers, Breakers and Disintegrators



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416 N. Main St.,
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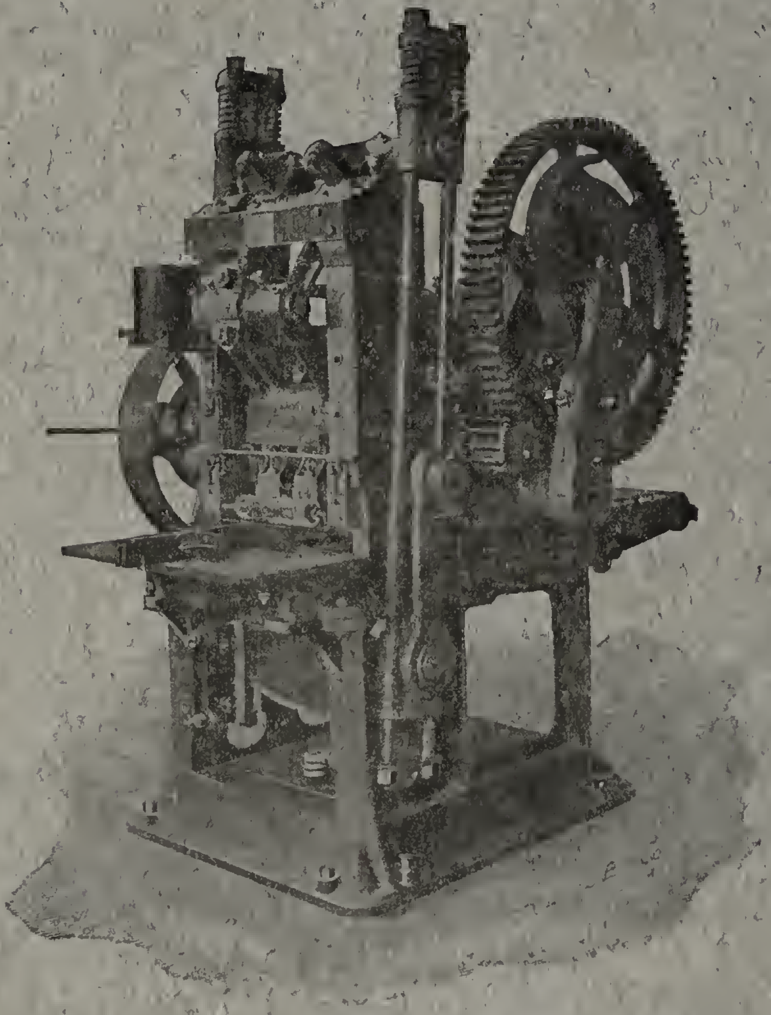

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We Have Just Shipped

The Thirteenth RICHARDSON REPRESS to the City of Washington.

These thirteen Represses were shipped to five different plants, on eleven different orders, the last four years.

• • •

We would be glad to take your order also, and at the same time please include what Dryes Cars you need. They are as high grade as our Represses.

• • •

STEAM and HAND REPRESSES,
STEAM DRY PRESSES, two mould,
SWORD BRICK MACHINES,
STEEL DRYER CARS.

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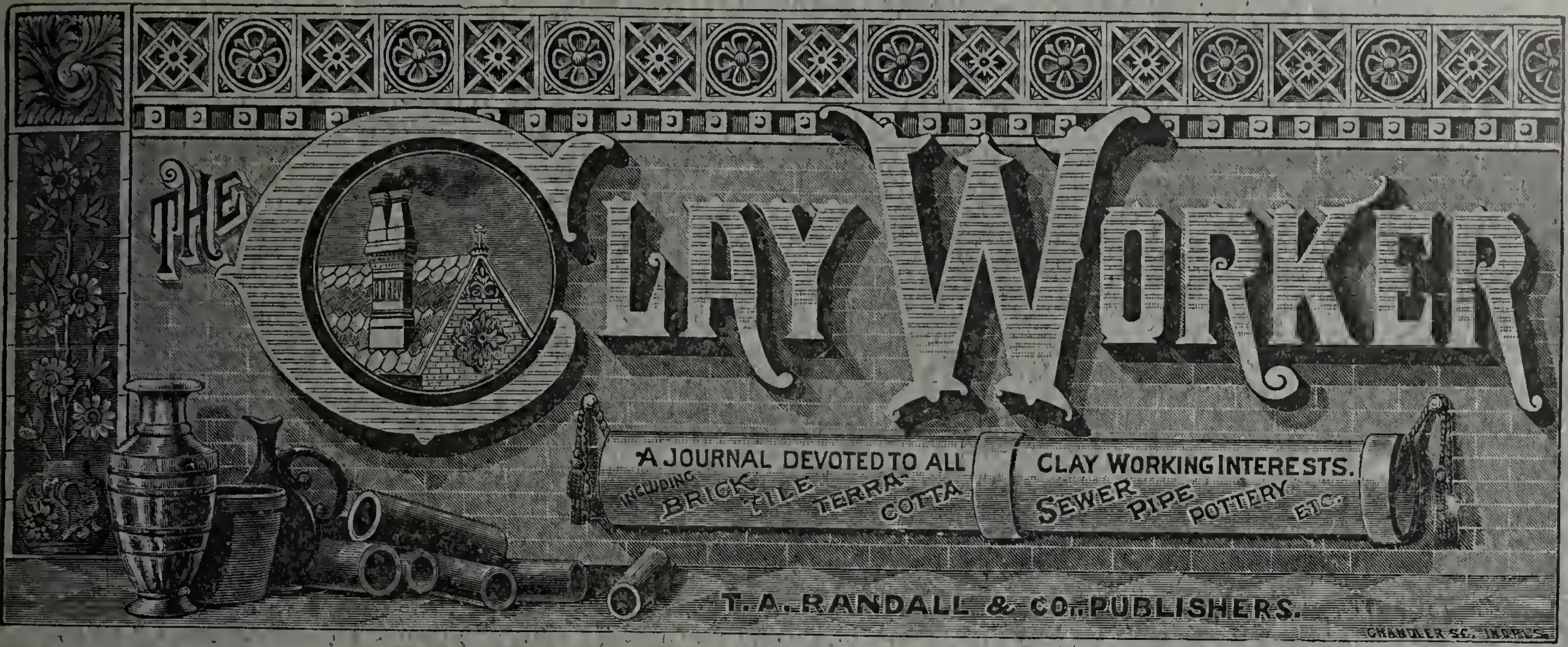
THE OHIO CERAMIC ENGINEERING CO.,
Cleveland, Ohio.

Table of Contents, Page 362.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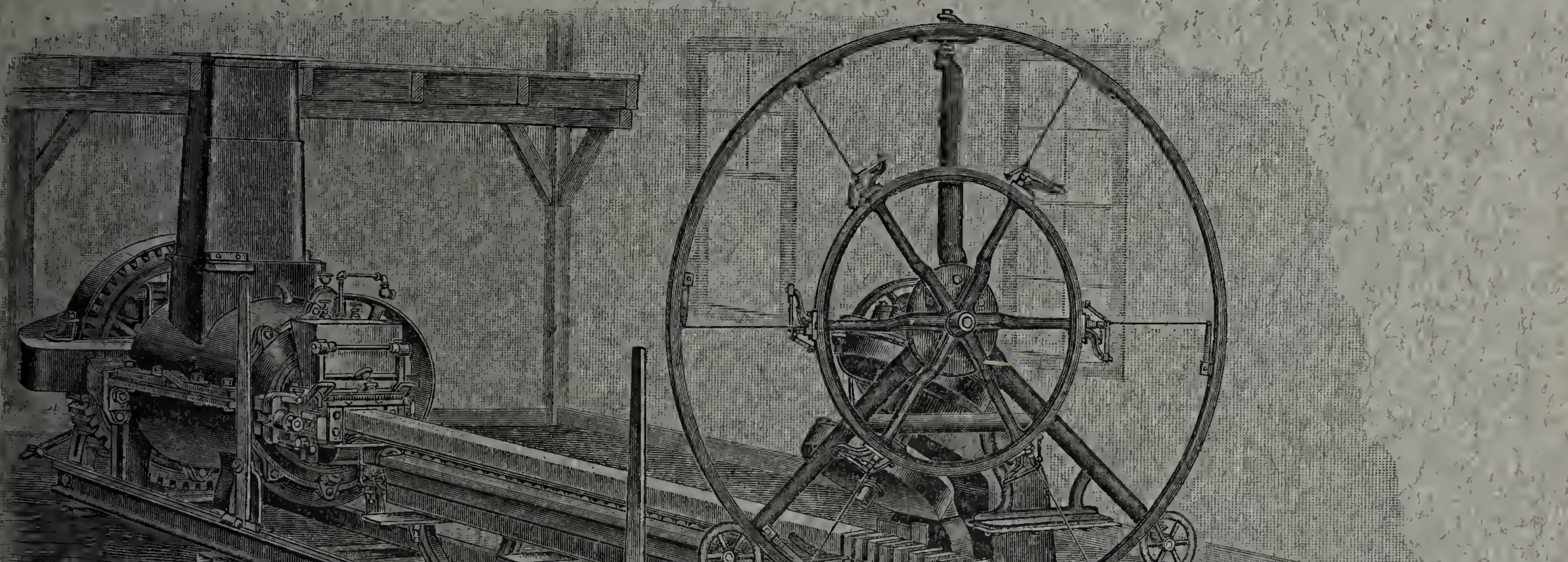
CHANDLER SC. INDPLS.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXXVII, No. 3. INDIANAPOLIS, IND., MARCH, 1902. $2.00 a Year in Advance.

Automatic Side-Cut and End-Cut Brick Machines.



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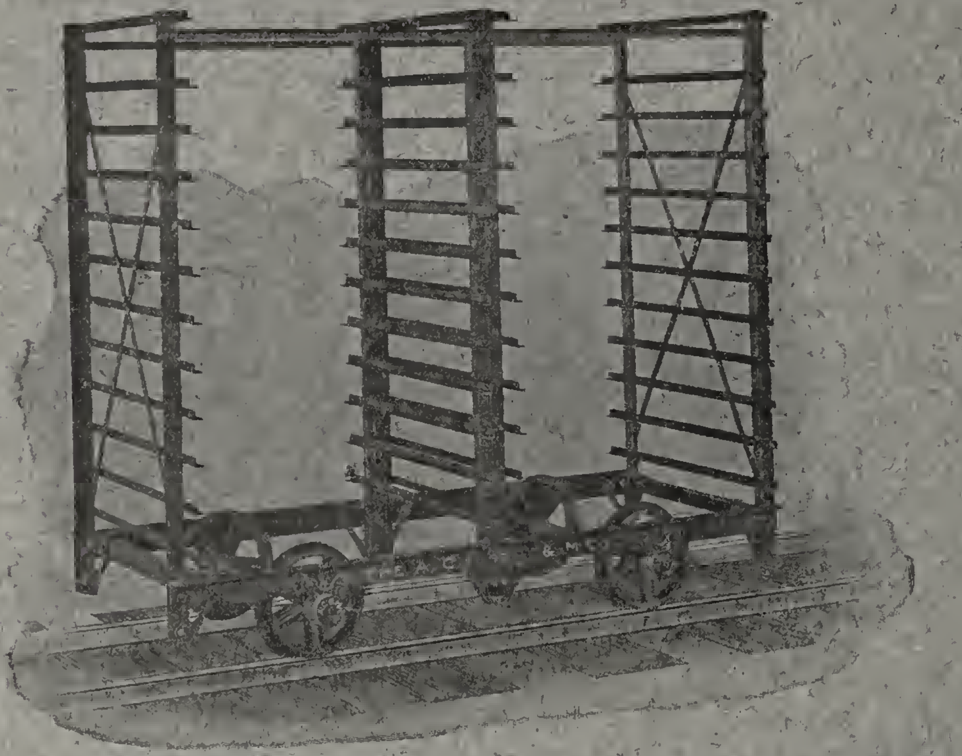
FIFTY-SECOND STREET, BELOW LANCASTER AVE.,
PHILADELPHIA, PA.

DAVIS BROWN, Chicago Agent,
59 West Jackson Blvd.

See Ad. on Page 365.



No. 137 Rack Car with Wright's Patent Malleable Corner and Center Upright Brackets.

We also make a full line of

Dump Cars, Turn Tables, Transfer Cars, Track Switches, Etc.

Write for Circular.

The ATLAS CAR AND MFG. CO.,
(THE ATLAS BOLT & SCREW CO. PROPRIETORS.)
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WE ARE THE LARGEST MANUFACTURERS of

Dryer Cars

Of every description in the World.

We do not confine ourselves to standard styles and sizes, but build anything in the way of cars to suit the requirements of our Clients. Our long experience in the manufacture of cars, enables us to design and build the strongest, lightest and easiest running car on the market.

Don't Buy until you see What we have to offer.

INDEX TO ADVERTISERS.

Brick Machinery—Dry Press Process.

Name. Page.
Anderson Foundry and Mach. Works 320
Chicago Brick Machinery Co. 389
Chisholm, Boyd & White Co. 316, 317
Fernholtz Brick Machinery Co. The 319
Ill. Supply & Construction Co. 323
Ross-Keller Brick Machine Co 318
Simpson Manufacturing Company The 321

Brick and Tile Machinery.

American Clay-Working Mach Co., The 395, 405
Anderson Foundry and Mach. Works 320, 390
Battenfeld Mfg. Co., The 373
Brewer, H. & Co 407
Bonnot Co, The 402
Chambers Brothers Co. 313, 365
Chicago Brick Machinery Co 389
Eastern Machinery Co, The 410
Fate & Co., The J. D 406
Freese, E. M. & Co., ... 408, 409
Henry Martin Brick Mach. Mfg Co The 400
Hensley, J. W 374
Horton Mfg. Co., The 401
Ill. Supply & Construction Co. 323
Jonathan Craeger's Sons Co 375
Kells Foundry and Machine Co 381
Leader Mfg. Co, The 390
Madden & Co 378
Ohio Ceramic Engineering Co., The 412
Potts & Co., C. & A. 398, 399
Raymond Co., The C. W 363
Stedman Foundry and Machine Works 315
Steele & Sons, J. C 384
Stevenson Co., The 403
Wallace Mfg. Co, The 404
Wellington Machine Co, The 371
Wiles Co., A. M. & W. H 385

Brick Kilns and Dryers.

American Blower Co, The 412
Barron, A. F. & A. E 394
Bushong, M. M 387
Crown Dryer Co., The 392
Eudaly, W. A 387
Frey Engineering Co 391
Haigh, H 383
Illinois Supply and Construction Co, The 323
Justice, I. M 386
Morrison & Co., R. B 383
New York Blower Co., The 377
National Dry Kiln Co, The 369
Phillips, S. G 382
Pike, E. M 383
Reppell, L. H 386
Standard Dry Kiln Co, The 326
Wuerz-Kottenhagen 382

Brick Yard Supplies.

Atlas Car & Mfg. Co. 314
Arnold, D. J. C 388
Bechtel, B. E 384
Cleveland Car Co 393
Caldwell & Son Co., H. W 379
Carmichael, T. W 386
Carnell, Geo 385
Cox, Geo. S 383
Dunlap Mfg. Co 391
Frost Engine Co 411
Gandy Belting Co., The 380
Gray, S. B 378
Gregory, M. E 382
Harrington & King Perforating Co, The 315
Henry Martin Brick Machine Mfg. Co, The 400
Horton Mfg. Co, The 401
Jeffrey Manufacturing Co, The. 380
Kendall & Flick 380
Marion Steam Shovel Co 388
Main Belting Co 380
Mershon, Schuette, Parker & Co 369
Newton, A. H 382
Phillips & McLaren 381
Rockwood Mfg. Co, The 381
Patterson Foundry and Machine Co, The 380
Smidth & Co., F. L 386
Scott & Co., Alex A 396 397
Shaw, Willis 376
St. Louis Pulverizer Co 412
Tecktonius, E C 383
Thew Automatic Shovel Co, The 389
Williams & Co., M. F 384
Williams Patent Crusher and Pulverizer Co 322

Miscellaneous.

American School of Correspondence 277
American Road Machine Co 379
Audel & Co., Theo 378
Baird & Co., Henry Carey 381
Big Four Route 382
Caldwell Co., W. E 379
Chesapeake & Ohio R. R 382
Clinton Paving and Building Brick Co., The 325
Coaldale Paving Brick Co., The 324
Clark W J. Co., The 382
Crown Fire Clay Co., The 378
Dean Bros. Steam Pump Works 378
Eastern Paving Brick Co 324
Evens & Howard 378
Evert & Co., H. C 379
Gabriel & Schall 382
Green & Hunter Brick Co 324
Indianapolis Engraving and Electro Co 379, 381
Indiana, Decatur & Western 383
Johnsonburg Vitrified Brick Co 324
Lake Erie & Western 383
McAvoy Vitrified Brick Co 325
Miller Oil and Supply Co 380
New York Brick and Paving Co 324
Ohio Steam Pump Co., The 376
Ohio State University 378
Preston Brick Co 325
Pennsylvania Line 383
Purington Paving Brick Co, The 325
Perrine & Son, H. C 378
Reese-Hammond Fire Brick Co 378
Roessler-Hasslacher Chemical Company, The 385
Sangamo Brick Co 324
Terre Haute Brick and Pipe Co. 325
Vandalia Line 382
Wabash Clay Co., The 325
Ads., Small Wanted, For Sale, etc.

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ILLUSTRATED CATALOGUE AND SAMPLES FREE.

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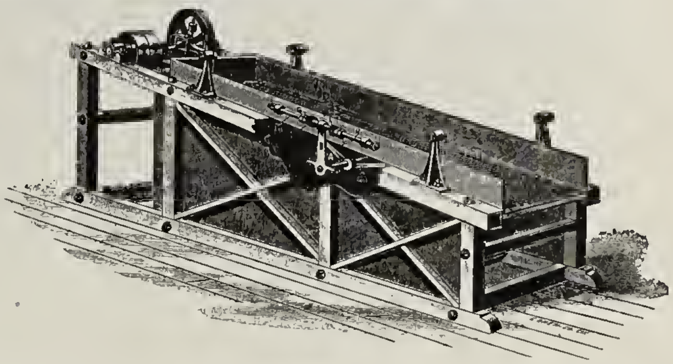
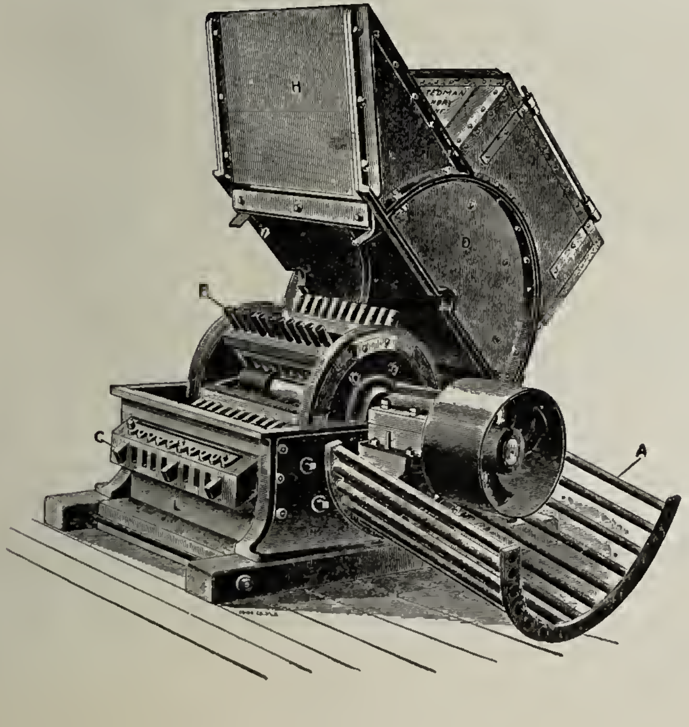
THE HARRINGTON & KING PERFORATING CO., 231 N. Union St., CHICAGO.



STEDMAN'S AGITATING INCLINE SHAKER SCREEN.

A GOOD Screen for properly screening to any degree of fineness a great variety of materials, and especially clay, is a long felt want. Our Incline Agitating Shaker Screen meets the requirements of the trade in the most successful manner possible.

In this screen we have one of large capacity for small floor space and one that will screen fine without clogging, as the agitating device we have underneath the screen wire prevents any clogging of the screen holes when screening clay or any other material in a dry or semi-dry condition. The screen will run with little power and without any shake or jar to the building, as the moving parts are well balanced by an adjustable counter-weight within the rim of the balance or fly wheel.



STEDMAN'S TORNADO CLAY PULVERIZER.

For Thoroughly
Pulverizing Clay in a
Dry, Semi-Dry or
Damp Condition.

Its construction is such that it will not clog in pulverizing damp clay, and the journal bearings are constructed dust proof.

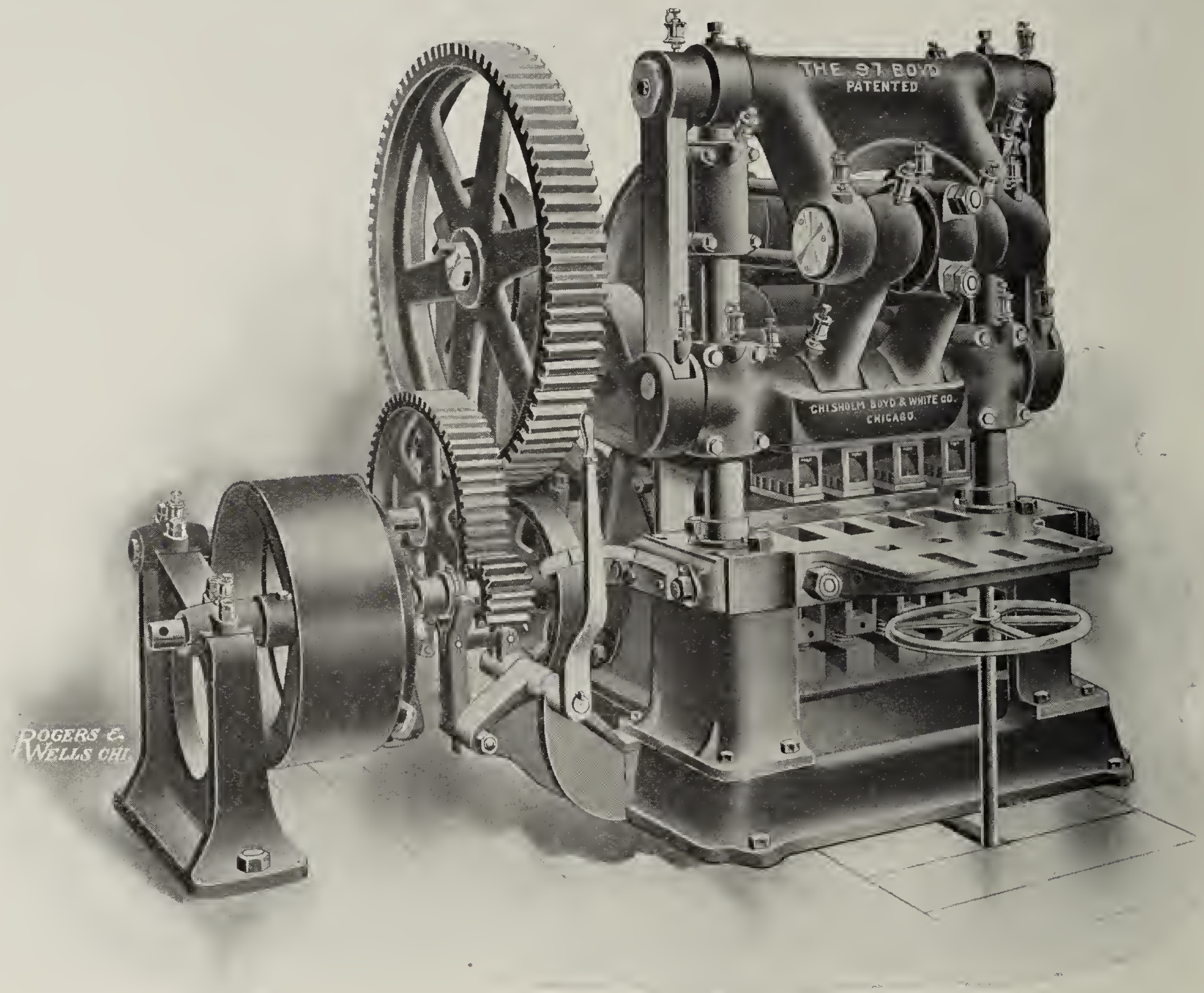
Write for catalogue, giving full description, references and testimonials.

Stedman Foundry and Machine Works,
Aurora, Indiana.

The Improved Boyd Brick Press.

The '97 Model.

IT'S NAME A GUARANTEE.



The '97 Boyd Brick Press has Enormous Strength and Great Durability: It is Compact; The Adjustments are Convenient; It Operates Quietly and Smoothly; The Workmanship and Material are of the best; The Design Ingenious, and shows the most Perfect Application of Scientific and Mechanical Principles to the Art of Brick-making.

Sent on trial and subject to purchase after the making and burning of one or more Kilns of Brick.

Fifty Presses of this Pattern Now in Use.

Can not be broken in pressing brick. Fully Guaranteed.

Write for Descriptive Catalogue, No. 9.

CHISHOLM, BOYD & WHITE CO.,
CHICAGO, U. S. A.

OFFICE AND WORKS:
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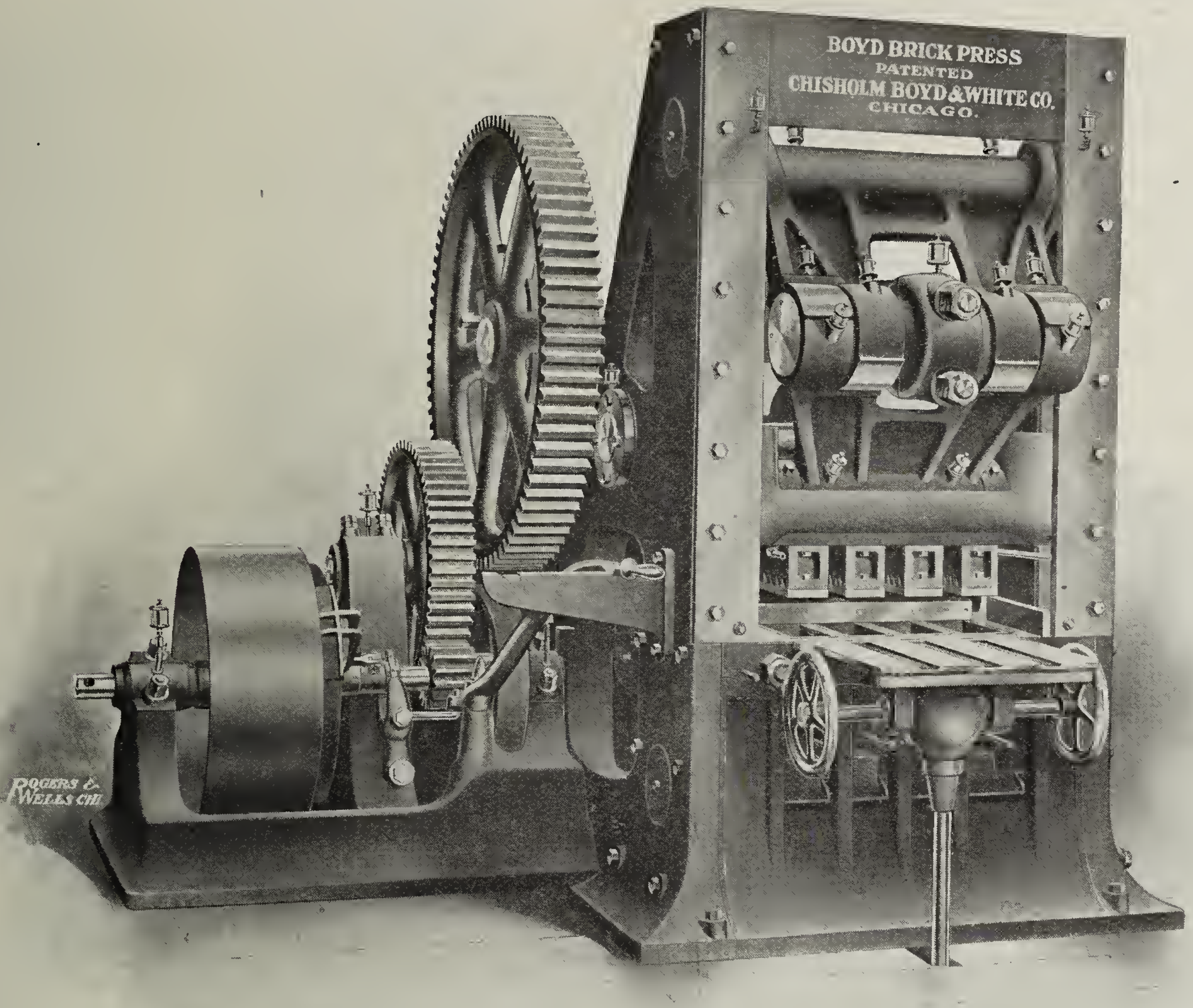
Cable Address; CHISHOLM, CHICAGO.
A. B. C. and Liebers Code.

The BOYD BRICK PRESS.



The Boyd Brick Press will make Better Brick from Clay or Shale than can be made from the same material by any other press.

Especially adapted for Working Shales; and is the only Successful Machine for Making Fire Brick.

Its Record: More Boyd Presses in Actual Operation than of all other Press Brick Machines Combined.

Brick Plants ot any desired capacity designed and constructed complete, Under Guarantee of Producing Satisfactory Burned Brick.

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CHICAGO, U. S. A.

OFFICE AND WORKS:
57th and Wallace Streets.

Cable Address; CHISHOLM, CHICAGO.
A. B. C. and Liebers Code.

The LATEST IMPROVED

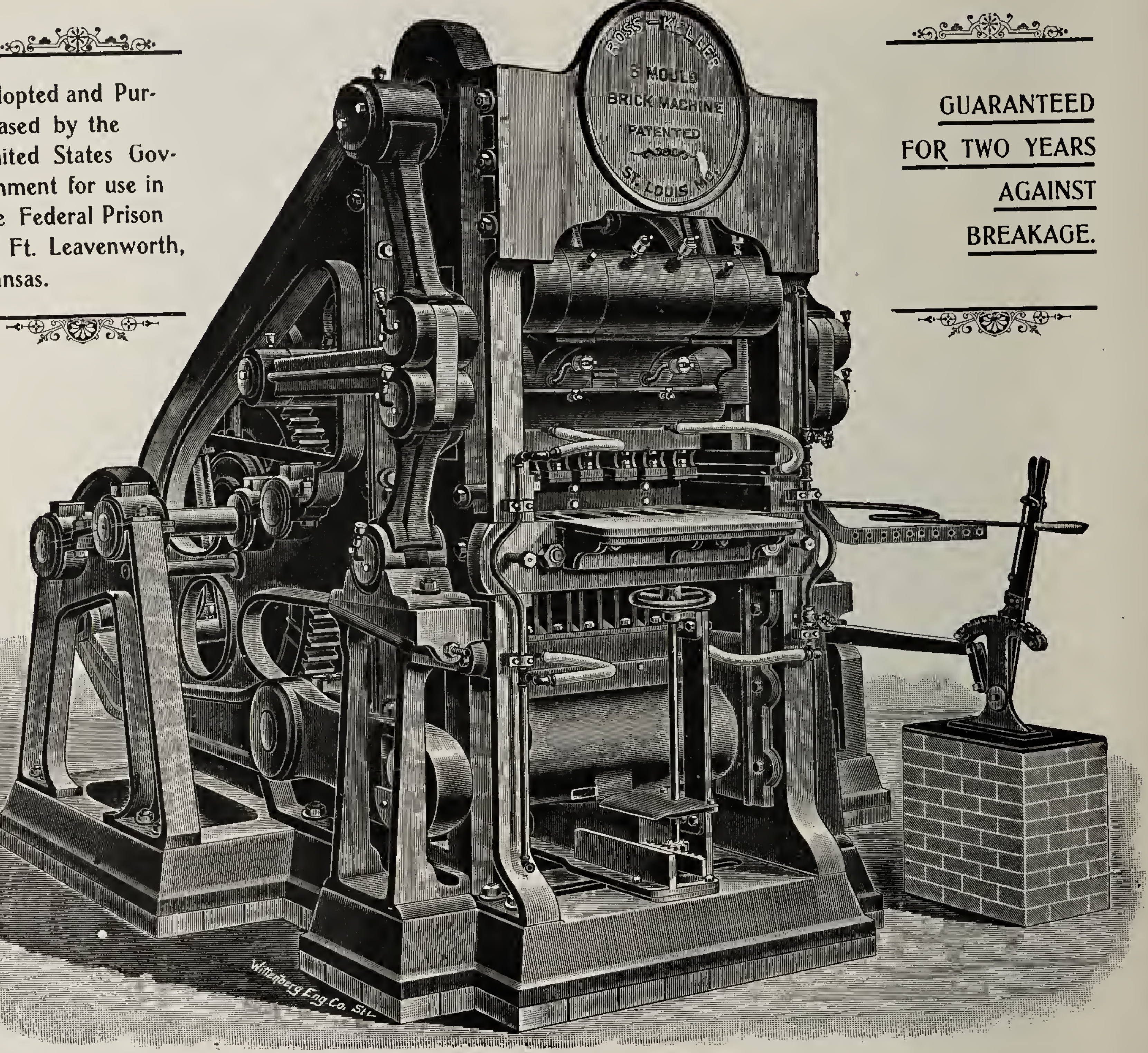
Ross-Keller TRIPLE PRESSURE Brick Machine

Manufactured in four and six-mould sizes. Weight of four-mould machine 58,000 pounds; capacity 24,000 brick per day. Weight of six-mould machine 75,000 pounds, capacity 35,000 to 40,000 brick per day.

BRICK SET IN KILN DIRECT FROM MACHINE.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

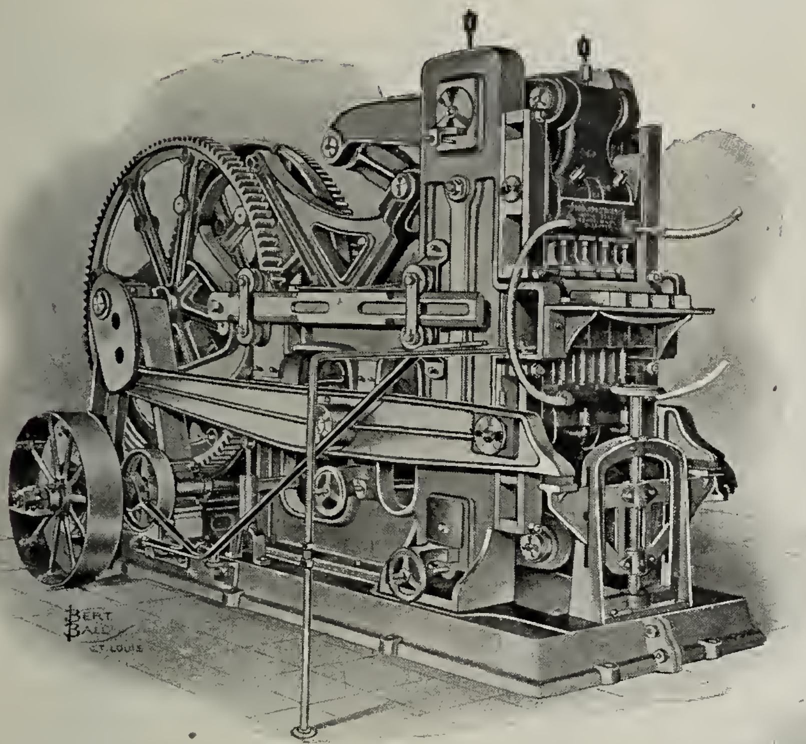
GUARANTEED FOR TWO YEARS AGAINST BREAKAGE.



THIS machine has an unbroken record of success. It is used on a number of the best equipped brick plants in the United States. It has never failed to give entire satisfaction and we are perfectly safe in guaranteeing that it will work any clay of which pressed brick can be made, and make them better and cheaper than any other press. It makes better brick because the pressure is greater and is applied in a way most effective. It makes brick cheaper because it is unbreakable and hence there are no repair bills or expensive delays and stopping of work which brickmakers know are more costly than the repair bills themselves. If you want to make the best brick at the least expense the season through don't fail to investigate this machine. with it you can "put money in your purse." Let us tell you more about it and give the address of those now using it. Remember "the proof of the pudding is in the eating of it."

For Prices and Full Particulars, address **ROSS-KELLER BRICK MACHINE CO.,** Fullerton Bldg., ST. LOUIS, MO., U. S. A.

The New Fernholtz Brick Press.



WONDERFULLY IMPROVED.

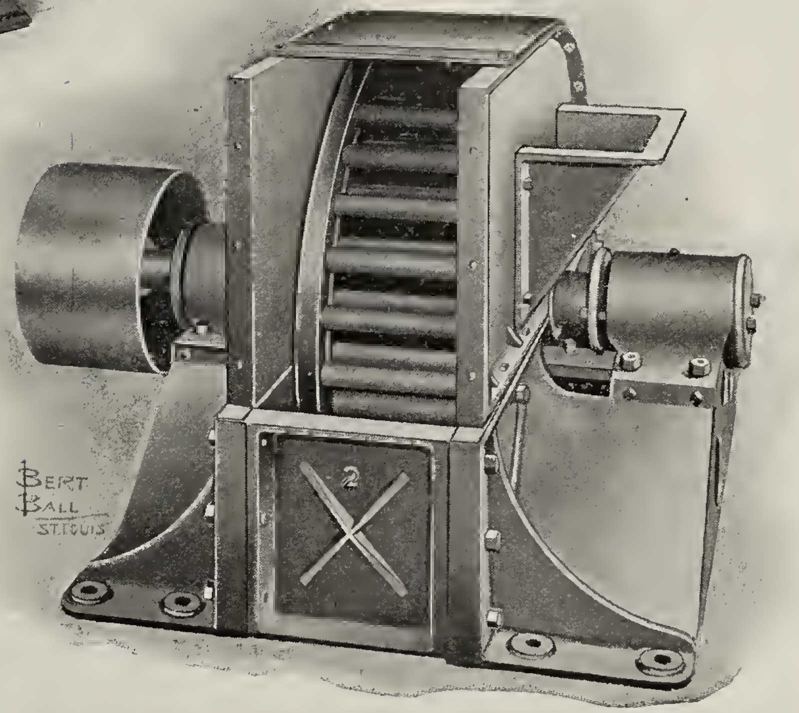
Fitted with the Celebrated

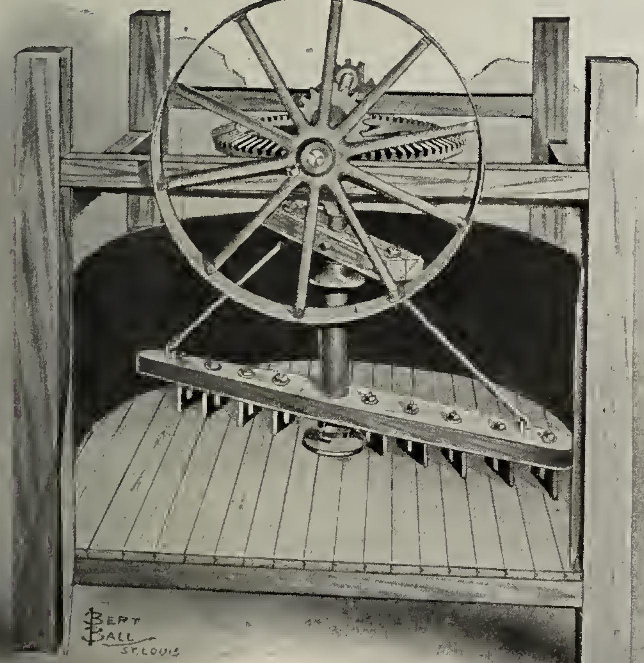
FERNHOLTZ MOLD BOX

Which is used by leading Brick Manufacturers in other Dry Presses.

The Fernholtz PATENT Clay Pulverizer.

No more rivetting Pins in Cage. Any one can put them in. Most economical Clay Grinder ever made.





The Fernholtz Clay Mixer.

"The Mixer that Mixes."

WE HAVE a first class repair department and can repair all kinds of Brick Machines and Machinery. We make a specialty of Molds for Fancy Shape brick at reasonable prices.

Dealers in BRICKYARD SUPPLIES.

If you don't see what you want ask for it. No trouble to answer questions.

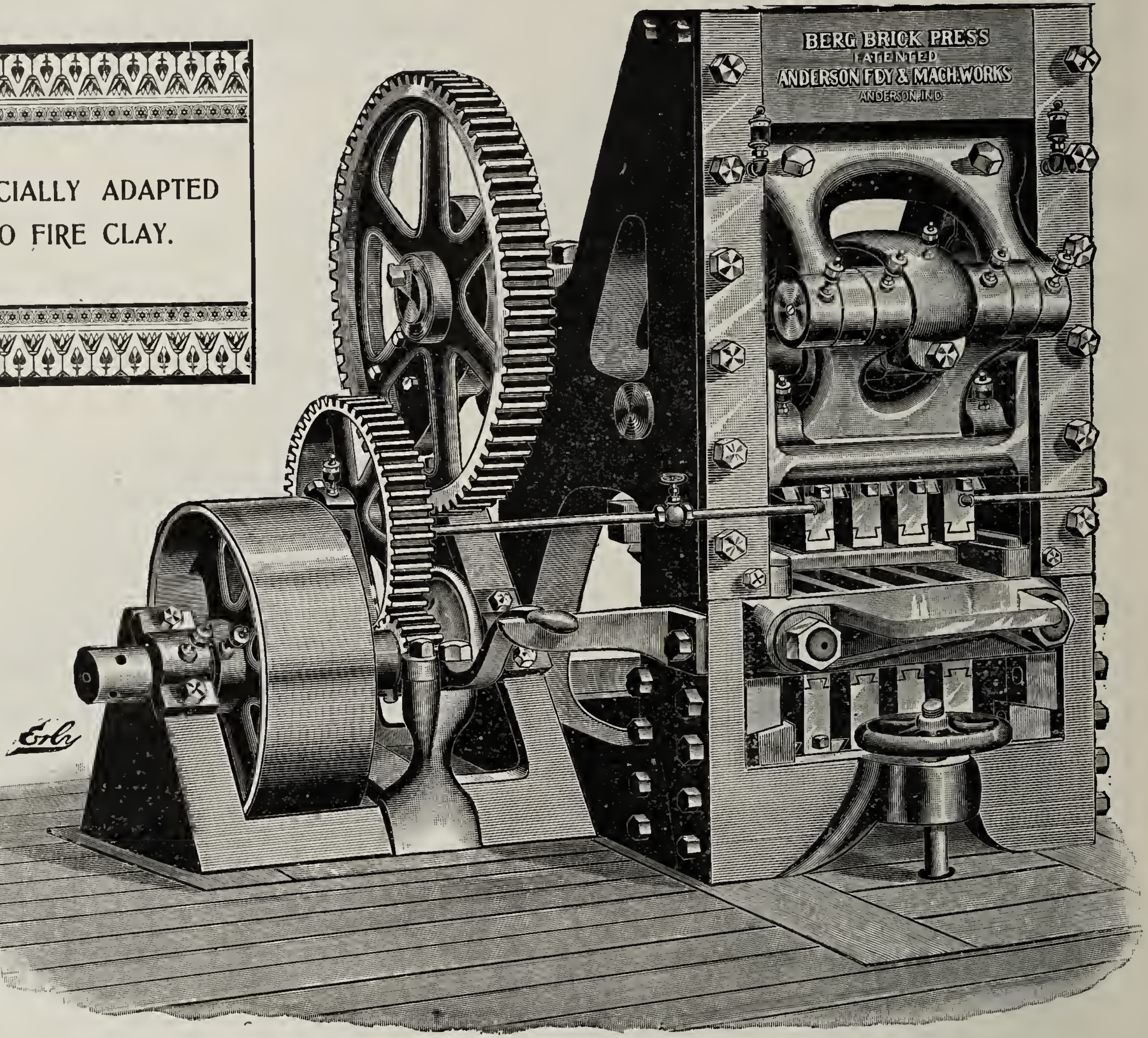
The Fernholtz Brick Machinery Co.,

CABLE ADDRESS "FERNBRICK."
WESTERN UNION CODE.

1214 to 1216 Poplar Street, ST. LOUIS, MO., U. S. A.

The BERG BRICK PRESS.

ESPECIALLY ADAPTED TO FIRE CLAY.



The Highest Development of the Art of Brickmaking— so Pronounced by the U. S. Government.

Three distinct pressures.
Greater Pressure than any other machine.
Greater Strength than any other machine.
Will put more clay into given space than any other machine
Less working parts than any other machine.
No Plunger Stems, eye rods or Springs.

Mold Liners Made of Tempered Tool Steel.

Makes all size Brick and Tile from 2 to 24-inch.

SOLD BY

Chicago Brick Machinery Co.,
225 Dearborn St., CHICAGO.

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The Anderson Foundry & Machine Works,
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IN NATIONAL and international use for the last 17 years, giving the greatest satisfaction, receiving the highest confidence and conceded to be the most adaptable and least expensive—that is the record and reputation of the Simpson Brick Press.

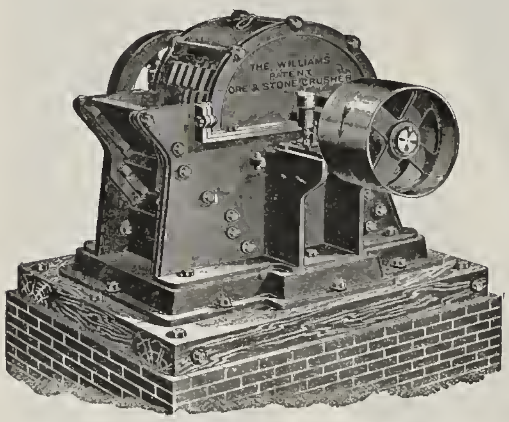
Our Catalogue Including a Treatise on
"Dry Press Brickmaking," Mailed Free.

The Simpson Manufacturing Co.

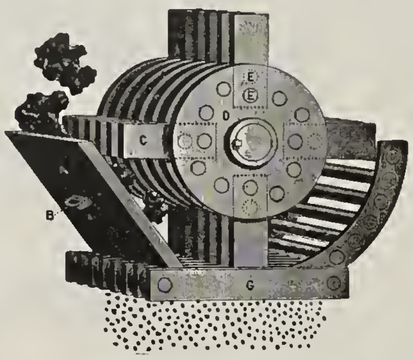
Works: Winthrop Harbor, Illinois. **Offices:** Suite 1208 Chamber of Commerce, **Chicago.**

The Williams Patent Crusher and Pulverizer Co.

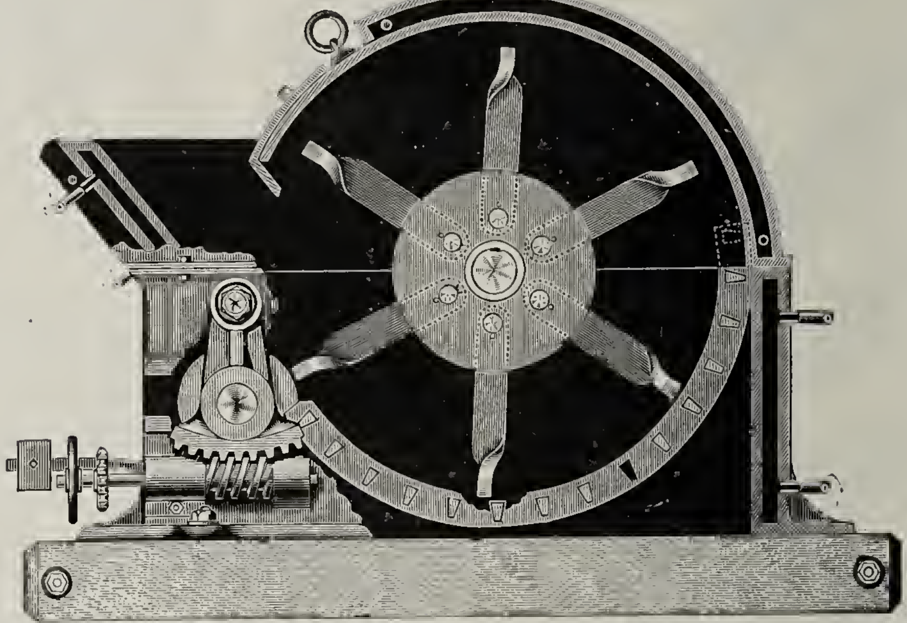
St. Louis, Mo., U. S. A.


THE WILLIAMS PATENT ORE & STONE CRUSHER

SHALE CRUSHER ahead of a Pan. 5 Sizes.

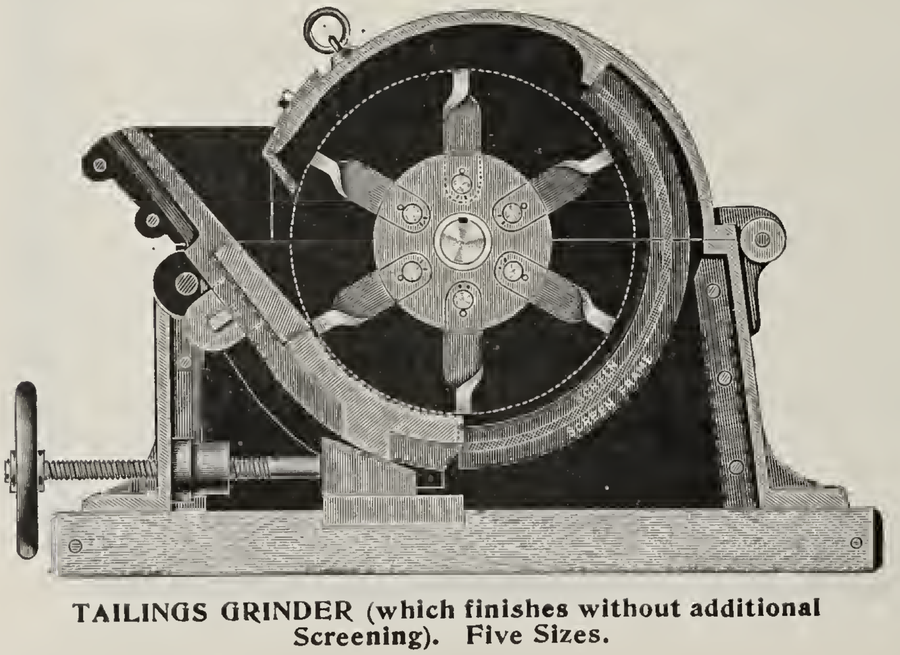


Interior of Same.

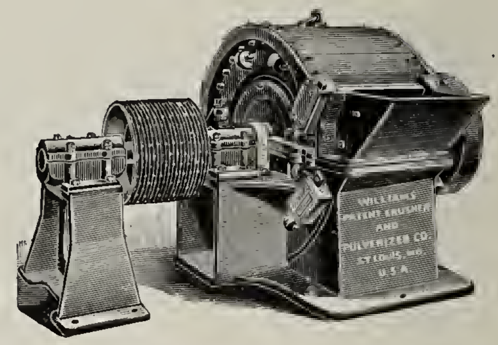


WET and DAMP CLAY DISINTEGRATOR, from the Bank. Five Sizes.

WE NEVER FOLLOW BUT ALWAYS LEAD. Our Steam Screen leads them all. We guarantee to work satisfactorily any clay that will make a Brick, wet or dry, with less cost than any other machine on earth. : : : : : :



TAILINGS GRINDER (which finishes without additional Screening). Five Sizes.


WILLIAMS PATENT CRUSHER AND PULVERIZER CO. ST LOUIS, MO. U.S.A.

SHALE and CLAY PULVERIZER. Five Sizes.

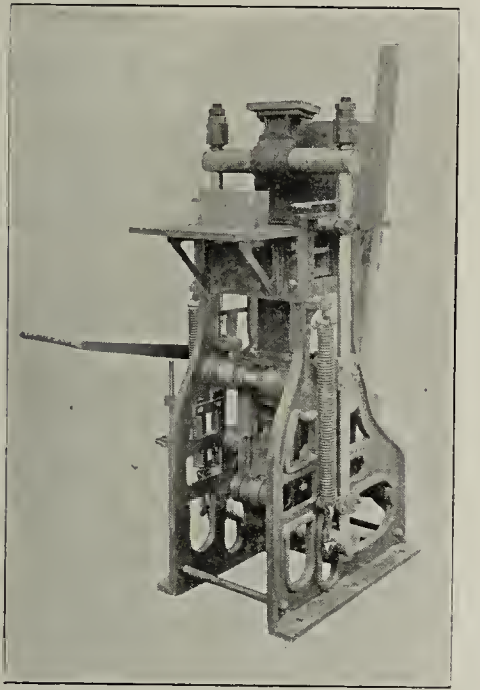
Branch Offices:

NEW YORK OFFICE: Singer Building.
WEST VIRGINIA OFFICE: Bramwell.
PHILADELPHIA OFFICE: Stephen Girard Bldg.
LOUISVILLE OFFICE: 1301 West Main Street.
CHICAGO OFFICE. 741 Temple Court Building.
SAN FRANCISCO: Partridge Building.

THE NEW

Grath Hand-Power Brick Press

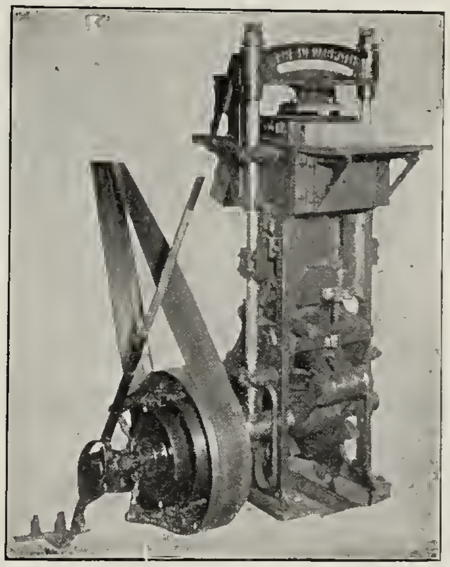
FOR MAKING PLAIN AND ORNAMENTAL PRESS
BRICK FROM SEMI-DRY CLAY.



The accompanying cut shows the only successful **HAND POWER PRESS** for pressing brick direct from the clay. The brick made on same are equal to those made on any steam power or hydraulic press. They have a polished face and perfect edges and corners. As will be seen, the press is equipped with charger and feed box. Two men can easily make 2,000 best quality press brick per day. By simply changing the liners and die plates, brick of any size up to 12½ inches long, 8½ inches wide and from 1 to 4¼ inches in depth can be pressed. In making brick on edge the mould is 9 inches deep. No brickyard is complete without a press of this sort. It is also recognized as the only successful press for making plain press or front brick for small yards that are making brick by the plastic process.

The Coffeyville (Kansas) Vitrified Brick & Tile Co. were the first one to order one of these presses, and to show what they think of same, they have only recently placed an order for two more of them.

The Grath ONE AND TWO Mould Steam Power Press



The accompanying cut shows the latest improvement in Brick Presses which are built in two sizes. The One Mould, which has a capacity of 5,000 best quality press brick per day. The Two Mould having a capacity of 10,000 best quality press brick per day. This press is so constructed that all shapes and sizes of ornamental brick can be made on same by simply changing moulds and die plates, and is the cheapest as well as the simplest and most powerful Press of its kind in the market. The brick made are very dense with perfect edges and corners. The Press is guaranteed against breakage for one year. All parts subject to strain are of steel.

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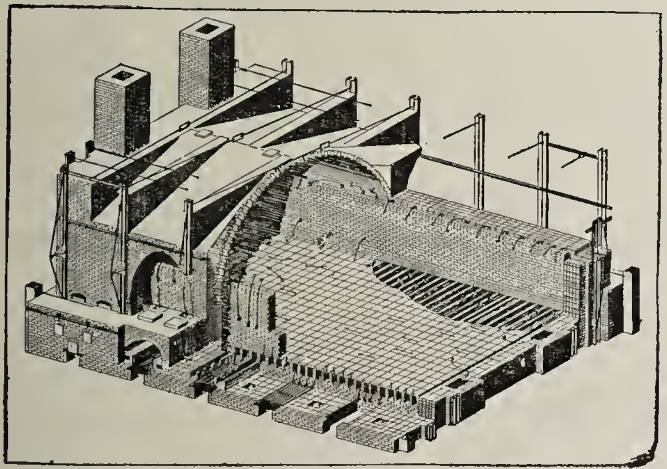

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THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXXVII. INDIANAPOLIS, IND., MARCH, 1902. No. 3.

BEAUTIES OF TERRA COTTA.

The Builder's Most Durable and Artistic Decorative Material.

STUDENTS of architecture know what excellent use the Romans made of burned clay, how their system of building spread with their conquests through Western Europe, and how its influence still survives, fifteen centuries after their departure from the British isles. The terra cotta architecture of Italy has been and will continue to be an inspiration to men of different tongues and nations. So, too, the examples found in Spain and the south of France; also the less ornate but not less interesting brickwork of Germany, Holland and Belgium. These, with much that was of purely native growth, dating from the Tudor period, gave rise to the modern revival of terra cotta in England some sixty years ago.

Eagle for the "Republic" building, St. Louis, Mo. Executed in terra cotta by the Winkle Terra Cotta Company. Isaac S. Taylor, architect.

The first terra cotta made in New York, or, perhaps, in America, dates from about 1853, when it was used for string courses and window trim on the Hotel Saint Denis, Broadway and Eleventh street. On the same thoroughfare, and overlooking Trinity churchyard, there are a number of tigers' head keys, which millions of people have assumed to be of brownstone. Even now, after a lapse of nearly half a century, the only thing that points to a different conclusion is their perfect and otherwise unaccountable state of preservation. Yet, notwithstanding this promising beginning, very little was attempted along the same lines during the next thirty years. Not until 1886 did the architects and building public of this otherwise progressive city begin to realize the extent of their neglected opportunities.

The use of terra cotta preceded by some years the advent of the skyscraper, to which form of building it afforded much encouragement. It, in turn, received a corresponding impetus, which goes far to account for the extraordinary growth of a comparatively new industry. It is, therefore, not too much to say that architectural terra cotta in combination with structural steel has, within a period of ten years, caused a complete revolution in building methods.

The difficulties at first experienced in the manufacture of terra cotta were much the same as those encountered a few years earlier in England ultimately overcome. They arose chiefly from the scarcity of competent workmen. That condition of things, however, has long since disappeared. There is no longer any uncertainty as to shrinkage, the blocks are true to line, the color well under control and deliveries are made on time. These claims can be verified by referring to any of the important buildings for which terra cotta has been furnished.—*W. Geer, in Journal of Building.*

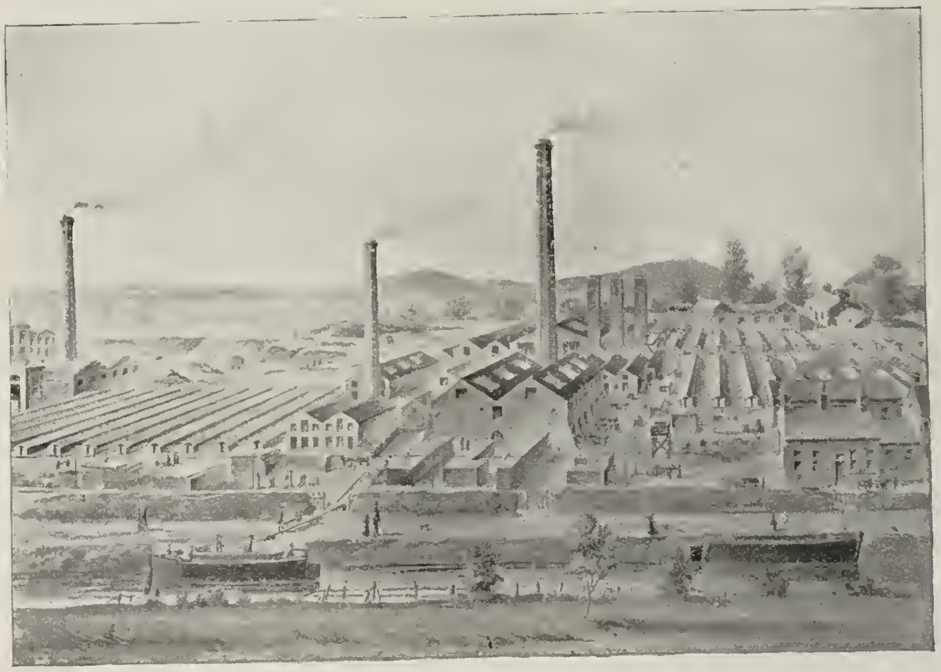
Andrew Carnegie has selected his own epitaph, which he desires shall read: "Here lies a man who knew how to get around him men much cleverer than he." Possibly that faculty is the most valuable one of which a business man could be possessed. No man can make a great success in life single-handed, and he is the wisest and generally the most successful who has the ability to surround himself with able assistants. The more perfect each part of a machine the better the results.—Ex.

THE STATUS OF THE CLAYWORKING INDUSTRIES IN ENGLAND.

By Our English Correspondent.

THE TITLE OF THIS article was furnished by the editor. It is too large an order. To adequately describe the clayworking industries of this country would require a year's volume of The Clay-Worker all to itself, for this is a big little country. There are counties in Texas each one of which is as big in area as this whole country, and I daresay that is true of other States also. But in the United Kingdom of Great Britain and Ireland there are forty millions of people, and as there are no such things as frame houses known here, it takes some brick to supply their wants.

It is safe to say that not one man in a thousand in the United States has the slightest idea of the extent and importance of the clayworking industries here. A short time ago *The British Clayworker* placed the clayworkers of this country under a great obligation by issuing a directory of the trade. This directory cannot be expected to have got every firm—there are doubtless a great number not included—but it contains about 3,500 names, representing an army of at least 200,000 workers, exclusive of contributory occupations, such as coal miners, etc., and this list takes no account of earthenware or encaustic and glazed tile manufacturers and many others that are entitled to be classed as clayworkers.



Logan Vale Estate Brick Works, Belfast.

The various classes of brick made in different districts in this country vary as widely in their characteristics in this little island as they do in the whole vast continent of America, and, indeed, more so. To present anything like an intelligent review of the clay industries of this country it would be necessary to have reports from at least twenty to twenty-five different districts, but owing to the conservatism, or exclusiveness, of the average Englishman, it is impossible to obtain these. I must, therefore, content myself with a few remarks on the conditions of the trade generally, and a more particular review of a few of the principal districts.

—A Declining Brick Market.—

The brick trade for the past year, taken as a whole, has certainly been far from satisfactory, and has exhibited a marked decline on previous years. Not that too much emphasis need be placed on this. The fact is that for three or four years previous the building trades had been at the highest tension, and the demand for bricks and other clay goods more than the makers could meet. I should say that the past year has been far from a bad year, at any rate, compared with others that one can look back upon, but after such a period of prosperity as we had had, we do not take kindly to a falling off.

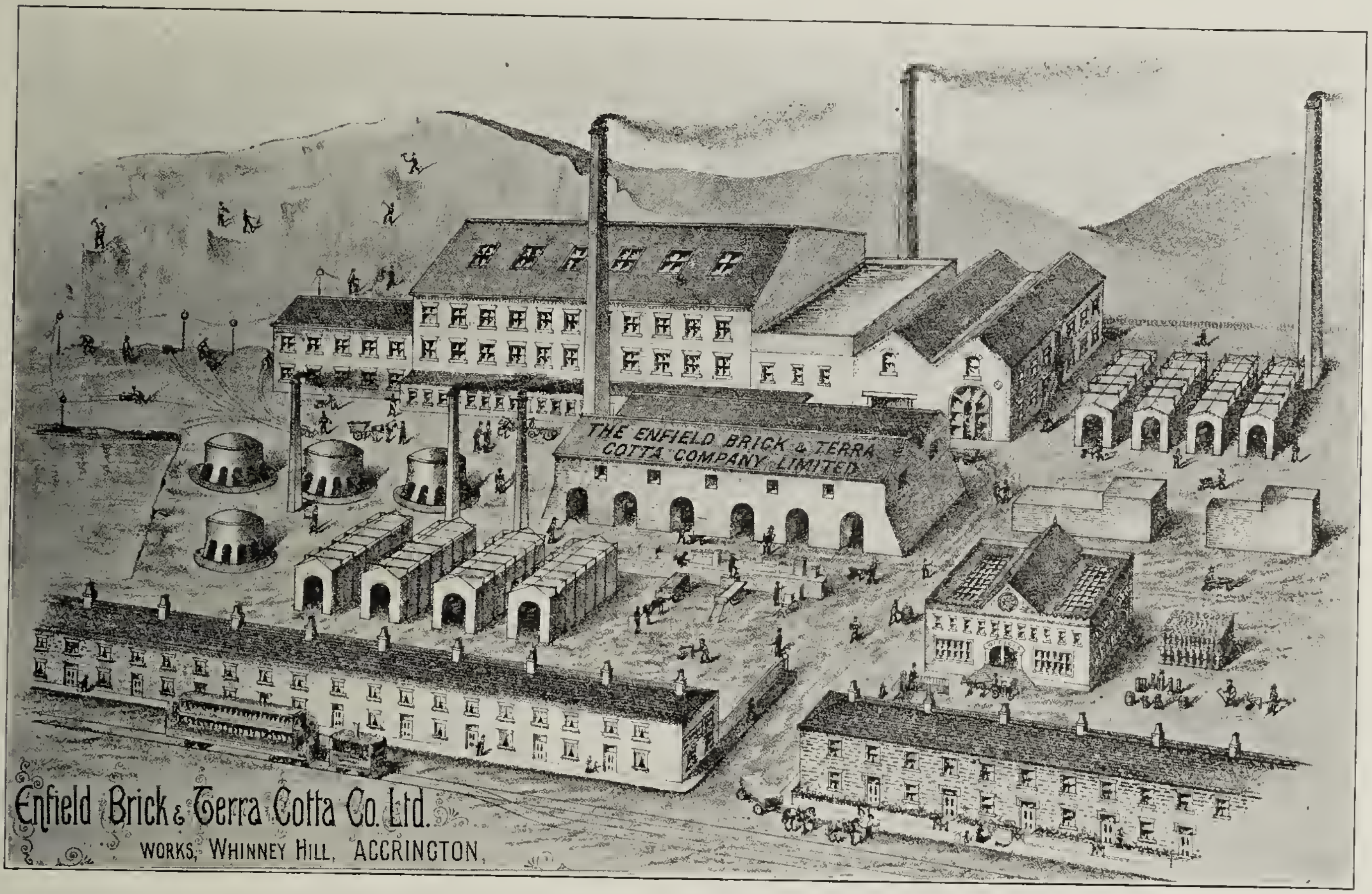
One feature of the past year's trade has been its unevenness. Some of the districts have been at high-water mark, while others, again, have been very slack and caused considerable complaint. It must be said, indeed, that the latter have predominated. The building trades have been very brisk and the demand for brick well-maintained in the very large shipbuilding and iron-making district from Newcastle-on-Tyne to Middlesbro and West Hartlepool. On the other hand, such important districts as the Midlands, West of England and South of Scotland have been very slack. The London trade has been fairly well maintained, but the famine prices of the previous two or three years have quite fallen off. In many places prices have been cut considerably, with, of course, very unsatisfactory results. This is the result of overproduction. The extraordinary activity of previous years led manufacturers to increase their output, and also to the starting of many new works, all of which have tried to keep going in full swing, with, of course, the usual result. I am afraid there is only a poor prospect for the brick trade in general for 1902. There are, of course, exceptions to this, more particularly as regards the better classes of goods, best pressed facings and glazed bricks, the use of which is much more general than it was a few years ago.

—Relative Sizes of British and American Brick.—

I must ask my readers, in presenting such reports of prices as follow, not to forget the great difference in size betwixt English and American bricks. It is so very easy to overlook this when making comparisons. The same remarks apply when comparing production or output. The sizes here vary considerably, running from about 2⅝-in. in the South of England to 3¼-in. in the North and in Scotland. We are thus no nearer to a standard size, that is, in thickness, than you are in America. For length and width we have a standard, viz., 9-in. x 4½-in., and the only variations from this are due to the vagaries of shrinkage. The most of the bricks referred to below will have an average thickness of 3⅛-in. Thus, while an average American brick will contain 72 to 80 cubic inches, an average English brick (Southern counties excepted) will contain 126 to 130 cubic inches, or about 70 per cent. larger. The Roman brick, so popular in America, is unknown here, at least, I have not seen any examples of it. There is undoubtedly a strong feeling amongst our best architects in favor of a thin brick, and occasionally we get an architect who insists on having them, but the difficulty of getting a thin common brick for backing, and the greediness of so many people to get the biggest lump they can for their money, discourages many architects from using thin bricks who otherwise would be glad to do so. In comparing prices also between English and American bricks it must also be remembered that coal for brick burning is very much higher here than in America, in many cases as much as 100 per cent. or even more.

In the district of Rilenarnock, Scotland, there are about fifteen works. The average selling prices for the past year have been: Common, $7.30; pressed facings, $9.75, and white glazed, $50 per thousand. The prospects for the new year are said to be fairly good. The methods of manufacture in use there are hand-made, wire-cut, semi-plastic and semi-dry, and the kilns in use are up-draft, down-draft and continuous, all better class goods being burnt in down-draft. The largest concern in the district is that of Messrs. J. & M. Craig, Limited, who have four distinct works. Their yearly capacity in bricks is 2,500,000 common, 1,000,000 pressed facings and 1,500,000 glazed, a total of 5,000,000 brick. Besides these, they are very large makers of sewer pipes, sinks, chimney pots, vases and all kinds of fire clay goods, and in addition closets, urinals, lavatories and other sanitary goods. The total value of their output yearly is $500,000, and they employ in all departments no less than 600 hands. They have altogether forty-five kilns, both up-draft and down-draft, and dry their wares mostly by steam heat. Besides being clayworkers, the firm are large coal owners, having three extensive collieries, from which also their supplies of fire clay are obtained.

From Scotland I turn to the Belfast district, in the North of Ireland. The brick trade there has only been developed on a large scale but a few years, comparatively, but the production has been carried to such an extent as to exceed the demand considerably, as will appear in the particulars following. In this district there are now seventeen works altogether, six making red perforated facing bricks and eleven ordinary solid bricks. Their combined capacity is equal to 120,000,000 per annum. Their output for the past year has only been about 50 per cent. of their capacity, viz., 45,000,000 common and 17,000,000 facing. The average selling prices for the year have been: Common, $5.50; perforated facing, $6.70 per thousand. My friends there state that the brick trade has been in a very depressed state, and the prospects for the new year cannot be said to be any better. The trade in this district is made unremunerative owing to the very keen competition, the capacity of production being so much in excess of the demand, even in fair times. The method of manufacture in this district is principally wire-cut, being about 90 per cent., and 10 per cent. semi-plastic. The bricks are nearly all burnt in continuous kilns of different kinds.


THE ENFIELD BRICK & TERRA COTTA COMPANY LIMITED
Enfield Brick & Terra Cotta Co. Ltd.
WORKS, WHINNEY HILL, ACCRINGTON.

—A Great Irish Plant.—

The most celebrated works in the district is the Logan Vale Estate Brick and Terra Cotta Works, Limited, one of the principal firms in the trade for making all kinds of red facing, sand-faced, ornamental and molded bricks, also terra cotta of all descriptions. The works are situated in the suburbs of Belfast, about two miles from the center of the city. Their total capacity is 7,000,000 per annum, viz., 5,000,000 of perforated, 1,000,000 pressed and 1,000,000 specials. Owing to the popularity of the company's products, they have not suffered from the depression as much as their neighbors, and have, in fact, been kept fairly busy. They employ about one hundred hands. We are able to give a view of the works, taken from a photograph. They are built in the most substantial, up-to-date manner, and are fully equipped with the best class of machinery, including four power-driven presses.

The most of their bricks are burned in a rectangular shaped continuous kiln, with a burning capacity of 150,000 per week, patented by the manager, Mr. H. R. Vaughan, and known as Vaughan's XL kiln. They also use two large round down-draft kilns for special goods. These works have the special distinction of having been the first to adopt the American system of tunnel drying—theirs was the first order booked by the Wolff Dryer Co. in the United Kingdom. This is a nine-track dryer, and has given every satisfaction. It is supplemented by drying sheds on a rack system, patented by Mr. Vaughan, and in the summer season by outdoor drying.

Although it is less than six years since this company took over the estate and commenced the erection of the brick works, owing to the excellent quality of their product, they have for some considerable time gained a wide reputation, their bricks having been used for most of the important buildings about the district, and are now specified by most of the leading architects and engineers in the North of Ireland. During the last four years also they have supplied immense quantities of facing bricks to the War Office for military barracks in different places.

The Accrington (Lancashire) district, though one of the newest brickmaking centers in England, has become justly celebrated for the superior excellence of its red facing bricks and terra cotta. It is only a few years since the first company commenced operations, but their success was so great, both financially and otherwise, that very quickly a number of other large works were erected, and were soon turning out more or less excellent bricks in large quantities. History repeats itself, and very soon the supply far exceeded the demand, with the result that a market could not be found for all, and some of the concerns have been more or less involved in financial difficulties, and one or two at least have had to go into the hands of a receiver. There are about twelve works in this district, with a combined yearly capacity of about fifty millions. The output for the past year has been probably twenty-five or thirty millions, the most of them being best facing bricks.

The material employed is a very fine shale, easily worked, and burning to a bright red vitrified brick. The shale in many places is 50 or 60 feet high, all usable material, with practically no waste, in fact, it is the cleanest used-up shale bank I ever saw in my life.

The most of the bricks (at least 90 per cent.) are made by the dry press or semi-dry process, and nearly all on Whittaker's machines. A limited quantity is made by the plastic or wire-cut process. The bricks as they are made and go to the kiln are all alike, but when they come out are divided into best facing, second best, seconds, engineering and common. The prices during the past year have been: Best plastic, $10.95 to $12.15; best semi-plastic, $9.75 to $10.25; second best, $8.50; seconds and engineering, $6.50 to $7.00, and common, about $5.25 per thousand.

In addition to bricks, some of the works are large producers of terra cotta of a most excellent and durable quality, and many large and important jobs have been done with it. The shale to which the brick industry here owes its origin and its high repute is that locally known as the Whinney Hill, and it is said that only three works are operating it, viz., the Accrington Brick and Tile Co. (the original or parent company, the Enfield Brick and Terra Cotta Co. and the Whinney Hill Brick and Terra Cotta Co. All the other works are working from other shale deposits, but if not identical in character, are, at least, very similar and make most excellent bricks.

The largest and most successful concern in the district is the Enfield Brick and Terra Cotta Co. Their works are built in the most substantial, up-to-date fashion, and are fitted up in all departments in the best possible manner. There are seven or eight Whittaker dry press machines, with dry pans by the same firm, besides plastic machines and pug mills, etc., all driven by a magnificent Corliss engine, such as one seldom sees in a brick works. Their output is 200,000 per week (3⅛-in. thick), besides molded and ornamental bricks of an infinite variety of patterns. The terra cotta department is replete with every convenience and fitted up superbly. Their goods are all burnt in square down-draft kilns. In some of the other works, however, Hoffman or other continuous kilns are in use. The outlook for the new year is not very bright for this district, as with the decline in the general volume of trade there is little prospect of all the works running to their full capacity.

—Brickmaking in the Wales District.—

Another district celebrated for the special excellence of its products is Ruabon, in North Wales. There are six principal firms in this district, viz.: J. C. Edwards, H. Dennis, Ruabon Brick and Terra Cotta Co., Monk & Newell, Clark & Rea and W. Bower. This district is considerably older as a brick center than the Accrington district, but still its entire development has been within the memory of men still living. There are practically no common bricks made in the district, at any rate, by the firms named above, the clay being capable of much better use. The bricks are practically all made by the plastic process, some being left unpressed and sold as plastic wire-cuts, but the greater number are pressed, mostly in power presses.

The price of pressed brick during the past year has been $13.35 to $15.80 per thousand, and the works have all been kept pretty well employed during the past year, with fair prospects for the coming year. All the works in this district use kilns of the round down-draft type. The largest firm in the district is undoubtedly that of J. C. Edwards. From the very humblest beginning, on the most limited scale possible, I believe about forty years ago, it has continuously grown and increased, until it is now one of the largest, wealthiest and best known firms in the country, and some idea of its extended operations may be inferred when we learn, as I am credibly informed, that the pay roll of the official staff, managers, etc., alone, amounts to no less than $2,000 per month. Besides red facing bricks, already mentioned, the firm make buff facing bricks, red, buff and pink terra cotta, white and colored glazed bricks of all kinds, roofing tiles, flooring tiles, both plain and encaustic, sewer pipes, chimney pots, vases, sanitary goods of all descriptions, and, I believe, many other classes of goods besides. This firm is very busy and has been all the past year.

—The Famous Blue Brick.—

Some or all of the goods named are also made by the other firms. The Dennis people have been kept very busy on terra cotta, their weekly output the past year being about 1,800 cubic feet. Staffordshire, noted the world over for its potteries, is also one of the most important brick producing counties in England. It is specially noted for its fire bricks and blue or terra metallic bricks. Of the former the celebrated "Stowebridge" has been the standard of the world. Its blue bricks are also world famous, and I think I may almost say that the like of this brick is not made elsewhere in this wide world. There are imitations of it, and that is about as much as can be said.

The county may be divided into two districts, North and South, for they are quite distinct. A long article could well be written on these alone, and I am sorry to have to be content with the most meager report on them. In North Staffordshire there are about thirty works, and all methods of making are employed, hand-made, wire-cut, semi-plastic and semi-dry. The trade of the past few years has not been maintained during the past year, and the prospects for the new year are said not to be very bright. Prices during the year have been: Common, $6.00; pressed facing, $14.50, and glazed, $50.00 per thousand. Clamp and continuous kilns are used in this district for common bricks, but all best goods are burnt in round down-draft kilns. One of the well-known firms of the district is that of George Woolliscroft & Son, Limited. They make red and blue facings, and pavings for sidewalks, also roof tiles, ridges, finals, quarries, copings, and also encaustic and mosaic flooring tiles, glazed hearth and wall tiles, etc. One thing that has led me to mention this firm particularly is that it enjoys the distinction of being the only firm in England who have had enterprise enough to take up the manufacture of road or street paving bricks, and they are to-day turning out a satisfactory article for this purpose. Of course, they took the initiative from reports of what has been done in America in this line.

One of the largest, if not the largest, common brick districts in England is the Fletton and Peterborough district. They cater largely to the London market. The capacity of the district will run into millions per week, and the price is extremely low, about $3.50 per thousand, I believe, for the past year. The bricks are nearly, if not quite all, made by the semi-dry process and burnt in continuous kilns.

One of the most interesting districts is that known as the Barton-on-Humber district, in Lincolnshire. Here the bricks and tiles are made from a sedimentary deposit or river silt. While not of the high standard of quality attained in some of the other districts described, the quality of the goods made here is very uniform and reliable, and while no pressed facings are made, all being simple wire-cut, those sent out for facing are truer and better in shape and finish altogether than many pressed ones from other districts. The clay is very easy to work, very fine in grain, and of a smooth, silky texture.

The shrinkage is low and the bricks keep their shape well in drying and burning. For many years they have been in great demand for facing purposes where bricks at a moderate price were required. A special feature of the district is the extensive production of roofing tiles in very large variety and excellent quality, being straight, true and hard, and they have been shipped in large quantities many miles beyond their own district.

In the Barton-on-Humber district there are altogether about thirty works, having a capacity of 50,000,000 per annum. The works have all been kept in full swing during the past year, and the production has been about 50,000,000 bricks, of which 10 per cent. are facing, and 15,000,000 tiles of various kinds. The average prices for the year have been: Common, $5.10; facing, $8.50 per thousand.

Trade during the past year has fallen off very considerably, and a large part of the year's output is still on hand unsold, and the outlook for the new year is very poor indeed. The method of manufacture is practically all wire-cut, the only exception being a few slop-molded. No artificial drying is in use in the district, and all are dried outside or in sheds unheated. Hence they are all-season yards. The kilns in use are mostly Dutch kilns, with a few continuous, lately built. One of the principal firms in the district is that of Mr. J. B. Tombleson. They make facing and common brick, ornamental molded brick, etc., besides all kinds of roofing tiles. Their staff consists of sixty boys. They have three Dutch kilns, two round down-draft kilns and one continuous kiln. The goods turned out by this firm have a high reputation and are second to none in the district.

I trust the foregoing may be of some interest as far as it goes, but I am compelled to say again that it gives but the faintest idea of this great British industry. My own countrymen, and any others who know the country, will know very well that I have not touched more than the fringe of the subject.

ADVISING THE YOUNG MAN.

This is usually the most difficult problem to employers, professional men and others to whom the young men come for advice. Each and every one has this question to solve from time to time, and is often at a loss what to do. It is a good rule that "he who helps another to help himself helps him best." We are in a position to answer this problem in this way. We would be pleased to correspond with parents and others, and acquaint them with our plan to help a young man to help himself. Through the generosity of its founders and of several prominent manufacturers interested in the better technical education of their men, the trustees of the American School of Correspondence are able to offer each year a few free scholarships in the engineering courses to deserving, energetic and intelligent young men.

The scholarships for 1902 are now at the disposal of the trustees, and applications will be considered from the readers of The Clay-Worker. The course of study offers thorough instruction at home in mechanical, electrical, stationary, locomotive, marine and textile engineering, as well as heating, ventilation, plumbing and mechanical drawing, under instructors who are graduates of the great technical schools. Much of the instruction is under regular teachers in the technical schools, for which Boston is famous.

To the young man who has lacked the time and money to fit himself to be a master in his trade this opportunity opens wide the doors to advancement and success. Though he may live hundreds of miles from an educational center, he nevertheless enjoys many of the advantages of the student paying $200 a year for tuition in the great technical schools. Indeed, it is one of the most important factors in the superiority of the American School that it is situated in close touch with these famous Boston institutions for technical training, and is thus enabled to engage exceptionally qualified instructors to supervise the work of the students. For large hand-book, describing the courses, methods, etc., address Registrar, American School of Correspondence (chartered by the Commonwealth of Massachusetts), Boston, Mass., U. S. A.

The Mayer Pottery Company's Works *Operated By Water Power.*

A POTTERY OPERATED BY WATER POWER.

WE ARE PLEASED to present to our readers a view of the only pottery in the United States, and possibly the only one in the world, operated by water power. It is the plant of the Mayer Pottery Co., Beaver Falls, Pa. The factory was built in 1881 by the firm now operating it. It has been running continuously since that time. The principal products of the plant are underglaze printed ware, although they make a full line of white and enameled dinner, tea and toilet ware. The works are owned by Joseph and Ernest Mayer. The latter was recently honored by election to the presidency of the American Ceramic Society. The latch-string of this great factory hangs out to all members of that organization and the N. B. M. A., any of whom will be cordially welcomed at any time they can make it convenient to visit Beaver Falls.

Mention The Clay-Worker.

When writing to Advertisers,
Mention the CLAY-WORKER.

WRITTEN FOR THE CLAY-WORKER.

THE GOOD SHIP BRICK.

How the Brick for the Nation's Metropolis are Taken to Market.

ONE DEPARTMENT of the brick business seems to have been overlooked by all who contribute to the brick journals. It is one of the main features of the plant, whether it is on tidewaters or located inland. I refer to the method of placing the stock in and on the market, as well as the way of conveying the burned brick to the market. The increased growth of output has required better facilities of transportation on tidewater, causing the almost passing away of the means of conveyance as used thirty years ago. Whether the size of the vessels will keep on increasing I will not be bold enough to say, but in all probability they will, unless there should take place a radical change in the way in which the vessel owner is discriminated against by the buyer of the cargo of brick which she carries.

I will endeavor to place before the readers of The Clay-Worker some of the changes which have taken place in the class of vessels which transport the manufactured stock to market. The changes in the class of vessels has been brought about by the demand of the trade. The small yard of years past did not require a very large craft, in fact, the market for brick was not very large, as one will see by walking about that part of the city in the neighborhood of Canal streets and the streets running from it. Mostly two-story houses, and anyone who will take the trouble to look at the brick used will see that they were made years ago, at a time when sand did not enter so largely in the construction of good brick, and small vessels, carrying from 25,000 to 30,000, were well suited to the demand.

The vessel owner got his freight from the yards up the river, that is, Newburg Bay, as that was the section which first furnished brick to the New York market. When Haverstraw, with its fine clay deposit, was opened, being but about thirty-five miles from New York, the yards there had the call of vessels. It was a sight to see the mosquito fleet of that time collected off Haverstraw. They were diminutive compared with those of to-day, but they were large enough to carry the output of the yards then.

ANOTHER CLASS

Of vessels was required to meet the growing demand about the beginning of the fifties. They carried from 40,000 to 50,000 and the latter figure was looked upon as a big boat. At that time there were but few brickmakers who were interested in any of the vessels. They were owned by the men who sailed them. The margin of profit in the trade was not very large, so that the brickmaker required the money in his business. The captain and owner held closer relations at that time than at any time since, simply because the captain was intrusted to sell the cargo, and he was expected to do the best he could in the way of getting the best price for the brick.

There were no dull times then. The captain had to hustle to find a buyer as promptly as possible, as the brickmaker was waiting patiently for the return of the vessel, so that he could have the money to meet his current expenses. It was often the lot of the vessel to reach the market when it was dull, and a number of vessels lying alongside the dock waiting for a buyer a week or ten days, and sometimes more. The brickmaker not knowing how to turn himself till the returns from the sale of that cargo reached him, while the captain of the vessel, with a crew, and only getting 50 cents a thousand freight. A long trip was very trying to both the brickmaker and captain, as a 50-cent freight meant but $3.50, or a trifle above that, for the brick. A cargo of 40,000, at $3.50 per thousand, was $140, less $20 for freight, net $120. One would say that was small business.

The captains of the vessels of that date were thorough masters of the art. They could handle a vessel as one would a yacht. It did not make any difference where the cargo was sold; they would make sail and go there, if it was anywhere along the east side, Brooklyn or through Hell gate, or in the Harlem river. If there was not enough wind, he would wait until there was. There were no tugboats hovering around to take one in tow for five dollars. It would make one's hair stand when a vessel was sent in the East river, where the tide runs like a mill race. The man at the tiller had to have his nerve and judgment when he reached his destination, and he chucked her up in the wind to fetch the dock. An error in judgment meant the loss of vessel and cargo.

The manner of loading at that time was as now, with the wheelbarrow. It did not make any difference at what time of day the boat reached the yard, there were always men enough to load her. It was usual for a vessel to put 8,000 in the hold, so that she would have ballast. Think of it, have a wheeler set his barrow down and toss off the brick to the man who was stowing them in the hold. Think of the time lost, and the cost. In those days such things were given no thought. The brickmaker considered himself lucky when he could secure a steady boat, and the captain was happy that he had a steady running brickyard to run from, not having to hunt around for freight.

ADVANCE IN CLASS.

About 1855 the new class boat, and a decided departure in size, made its appearance. The firm of Peck & Briggs built a sloop called the "American Eagle," and, like the bird she was named after, was the pride of the trade. She was a beauty, and could beat any vessel that was brought against her. After serving for thirty years in the brick trade she started for Galveston, but was never heard of after she left Sandy Hook. She carried about 60,000. The prediction was made when she was launched that her cargo was so large that it would be hard work to find a customer. About the same time the agent for the sale of cargoes made his appearance. He had no regular office, and he did not meet with the best wishes of the captains who sold their own cargoes. Still, it was the start, which increased in numbers.

From that time on the class of boats which had the call were those that could carry all the cargo on deck, which caused captains to put less brick below deck, as the brickmakers complained of the time required to put so many in the hold. Also, by this time the brickmakers had been able in some cases to purchase their own vessels, and this made him somewhat independent.

From 1856 to 1868 the brick trade was very dull, and the vessels which were engaged in the transportation of brick were poor stock as a means to make money. Reports at that time said that brick were freighted to New York as low as three shilling per thousand. The panic of '56 was the cause of the failure of a number of brickmakers.

A boom in the trade began in 1868, and the next year the brickmakers made so much money they did not know what to do with it, and in many cases did not know enough to hold onto it, as they seemed to think that the flush times were going to continue forever. As an investment a number of manufacturers had a class of vessels built which far exceeded in size anything in the shape of sailing vessels engaged in the transportation of brick, and the captain who had the luck to have charge of one of them was a fortunate man. They were of a class called schooners, and would carry from 75,000 to 100,000, and all on deck. To say that they were built of the best material and well-fashioned goes without saying, as to-day, after thirty years of service, one sees many of them still carrying brick to New York, and some of them running East—by that I mean carrying brick to Newport, New Bedford, Fall

River and Providence. Money was not spared in fitting out one of these boats. The amount paid for each ranged according to size, and the price ranged from $12,000 for one which carried 75,000 to $15,000 for one of 100,000 capacity. It took a sum of money to build a vessel of that class in those days—what brickmakers a few years before would have considered a fortune. The daily output at that time was from 15,000 to 16,000 to a machine, and then they thought the limit had been reached. The call for brick was good, and the vessel owners had their own way, as boats were scarce and the brickmaker was running after the captain to carry his brick.

A FRIENDLY STRIFE

Between the captains of new vessels existed, encouraged by the brickmakers, to have their vessels make the most trips during the season. When the boat reached the yard they would begin to load her, so that if the tide should come right by nine or ten in the morning, she would get off. If it came later in the day, they would not put any brick on her till the next morning, as they could load by 3 o'clock, and then the whole fleet at times would swing off about 6 o'clock in the evening. Ofttimes twenty or thirty vessels loaded with brick, and the wind southeast, would swing off, and staud over to the east side of the river in plain sight, each captain striving for advantage. He would be in New York in the morning by daylight and report to the office, get his order, not say a word as to where he was going, as some other captains may have an order for the same place, and the first boat in gets the berth. I mentioned before that the captains of former years had to sail to the place of destination. At this time tugboats were as plenty as bees, and the captain would hail one, give him a hawser, and then get his sails in shape to commence discharging cargo as soon as possible. The place of destination is reached, the captain puts one, two or three brick handlers to help the crew and get her unloaded that day. Possibly in half an hour after he gets alongside the dock along comes another boat for the same place. No berth for an hour or so, when possibly a sand boat or some other kind of craft will be unloaded and go out. Does the other captain lay idle that hour or two? Far from it. He will lay alongside some vessel and have his crew, with the help of brick handlers, pass the brick across the deck of the other boat. A rather slow way to discharge, but it is still getting some off. Just as soon as he can get alongside the dock it is work for all they are worth, and try and get the load off that day. He may have a good chance to pile and have a good run of carts and trucks, and get out with a good, spanking, fair wind home. The captain will not stop to settle. He will keep the ticket of the carts and trucks, take the length of the tiers of brick on the dock and settle the next trip. In the meantime the crew and brick handlers will have made sail, and he is homeward bound. He will be at the yard by two or three in the morning, and by 5 o'clock they will be wheeling brick on the dock. This may seem rather overdrawn, but it is a positive fact.

THE NUMBER OF TRIPS MADE

Will prove that such driving must take place to make the number of trips during the season. The winters during that period were longer than during the last few years. They would start between the 10th and 15th of March and could not run later than the 1st or 10th of December, and the records will show that from seventy-five to eighty-five trips have been made in that time. Two trips a week were not considered much, but two and a half and three could be made, which meant that the captain and crew had to handle the brick every day and sail at night. There were two sloops carrying from one yard, and they started in the spring of one year to see how many trips they could make. They would carry about 50,000. The one made an even hundred trips, the other ninety-nine.

All kinds of vessels were in use carrying brick when the demand was so great that the sail craft could not get them down the river fast enough, and $2.25 a thousand freight was paid. When ice closed navigation to sail crafts grain boats, and, in fact, canal boats of all descriptions, were in demand. The ice-breaking steamboat Norwich would tow them up. The ice on the flats would extend out to deep water, and the steamboat could not break it up, so that the canal boat could get to the dock. The brickmaker would set men to work and cut a canal through the ice with saws, and then haul the canal boat in and load her and push her out where the towboat could get her, and the next morning she would be in market. In many cases the mind of the brickmaker was quite relieved when he heard that she was unloaded, as some of the boats which were loaded that winter of '69 were very doubtful, but the brickmaker was after that $15 and $16 per thousand, and he took the chances.

THE PRESENT CLASS OF VESSELS

Were not looked upon with favor when they first put in an appearance in the early seventies by anyone connected with the brick trade—the brickmaker, those who owned and those who comprised the crew of sailing vessels, or those who disposed of the cargoes in New York, or those who bought the brick. "Too big" was the general verdict. John C. Rose, of Roseton, now deceased, was the originator of the barge for transportation of brick. One of the main troubles after the vessels were built was to get a boat to tow her from Haverstraw to New York, and to perform the same service for the return trip. How to build a boat so that she would tow easy was the first problem. A square bow would not do, although it would be cheaper, so there was a round bow, so-called, but it was just a slight turn. The next trouble was to steer her, as they expected she would always be towed to a hawser, so as to make sure she would always have complete control of her and not make any mistake.

A Schooner Carrying Brick to New York City.

Like all new inventions, and she could be called by that name, it was soon discovered that she was a money maker, and that it would be a good investment. Others were built, but still the sharp bow, and sharper stern with a rudder, would carry about 165,000, or about 15,000 more than the first one built. No one brickmaker had enough confidence in them, nor thought they would be such a complete success as to invest in one altogether, but would take a quarter or third share. The first one to build one outright was a brickmaker at New Windsor. It was built just as a schooner would be, but without a center board. Her sides were rounding. He said if she did not succeed as a barge, he would put on a center board and two masts and make a schooner of her. Her capacity was about 165,000.

Like many good things, the introduction of barges as a carrying factor in not only the brick trade, but also in other lines, lead as money makers. No one had a good word to say for the new addition, but the prediction was that it would be a signal failure. One of the most prominent made was that with a cargo all on deck and stowed fourteen high, she would roll over.

INCREASED CARRYING CAPACITY.

As time went on and no accident befell any of the barges the brickmakers came to the realization that there was money in them. In the eighties a still larger size came out, with a capacity of a quarter of a million. Just think of it! Eight times the size of cargo of the little sloops which were the pioneers in the trade. The brickmaker had but one complaint to make, and that was he was short-handed when the barge was at the yard loading.

Larger still larger was the cry. If the barges had to lay waiting to discharge for two weeks or a month, they might just as well have a few more brick on. Presto, one with a carrying capacity of four hundred thousand is heard of. In about a year or so afterward one to carry a half million, and there is talk of one being, or has been, built to go that figure at least 50,000 better, a carrying capacity of 550,000 brick, or eleven hundred tons. It seems beyond reason that such a size boat would be the right size, but it is not safe to venture an opinion, as a still larger size may be built.

The handling of brick in loading is still done with a barrow. When the little boats did the carrying the men did not find any fault, as the vessel was soon loaded, nor when the fifty thousand class came on. The men would hustle. Take four men in the kiln and five wheelers, they could load 50,000 by 11 o'clock.

The unloading is done the same old way by the crew, or with the 'longshoremen or brick handlers. As they have a union, you have to do as they say. They will not work with anyone who does not belong to their union.

Some changes have crept in which are a drawback to the boats making trips. One of them is that they are not allowed to pile any brick on the piers. They must all be taken away from the vessels by carts or trucks. Another change is that when the vessel discharges at the yard (that is the name given to the place where the dealer in lime, brick, cement and lath has his office) the captain will be compelled to run out his tiers a hundred or more long and get nothing for it. It was the former custom to allow a man pay for the brick piled out after the tier was of a certain length, but that is no longer the case.

THE DIFFERENT STAGES

Of carrying capacity of boats that transport the brick to the market have been varied from the small to the large, and from the vessels that depended on the wind to move them to the ones that are propelled by steam power. Some of them always had to have the best of pumps to keep them from going to "Davy Jones' Locker."

Two of the first large barges were built at a very low figure for boats to carry 200,000 brick. They were not strong enough to hold the cargo, so that when afloat with a load on they would open at the seams and the pumps had to be used. The last barrow that went aboard of the boat when loaded was a wheelbarrow full of stable manure to throw over the side, to be drawn in the seams to stop the leaks. The boats were named "Atlas" and "Leo," and surely the names should have been changed. The photograph presented is of a vessel carrying about 55,000 brick.

A. N. OLDTIMER.

A SUCCESSFUL GEORGIA BRICK PLANT.

ONE OF THE BEST equipped, as well as one of the largest, brickyards in Georgia, is that of Cruger & Pace, at Albany, the county seat of Dougherty county, located in the southwestern part of the State, about 150 miles due south of Atlanta. Albany is quite a railroad center, being located on the S. A. L., C. R. R., S. F. & W., B. & W., W., and the A. & N. railways. Hence Cruger & Pace not only have a good local market, but are able to reach a large territory in that section. They are fortunate in owning a large area of clay land. The clay averages about six feet in depth and is very plastic. They have been hauling clay from bank to machine by an endless chain conveyor system, but propose to abandon this after the present season and haul the clay in cars with a dummy engine.

A Glimpse of the Brick Plant of Cruger & Pace, Albany, Ga.

They have a Chambers machine, on which they make 100,000 brick in twelve hours. The brick are dried in the open air and in well-ventilated sheds, the latter covering two acres of ground. The weather is such that they can dry out of doors successfully the larger part of the year. The brick are burned with wood in up-draft kilns of their own designing. The green brick measure 2⅝x4⅛x8⅛ and shrink in burning to 2½x4x8. They set five on three and burn in five to six days, including the water-smoking.

The average price of brick the past season has been $5.00 per thousand. They anticipate making a number of improvements in the yard before the beginning of the coming season, which bids fair to be a busy one. The demand for brick will probably keep them going up to their full capacity, in which case it would seem prices ought to advance somewhat.

Better a meal of herbs, with love on the side, than a six-course dinner among brawlers—that is, if you are not hungry.

Never look a gift horse in the mouth. You may easily take it for granted that he has no teeth.

THE GROWTH OF THE CLAY INDUSTRIES IN WESTERN PENNSYLVANIA.

THE DEVELOPMENT of the clay industries about Pittsburg and throughout western Pennsylvania has been rapid during the past two decades. The brick and pottery industries have been exploited in this section since the early days of the last century, and here have been wrought some of the most important revolutions in the growth and development of these industries. At first the efforts along this line were devoted to the manufacture of crude pottery and common hand-made brick. As the demand for these and varied clay products increased, the variety of products here manufactured increased, until to-day there is scarcely any clay product in use that is not manufactured about Pittsburg or at some of the big clay manufacturing establishments in western Pennsylvania controlled and developed by Pittsburg capital.

While considerable pottery is now manufactured in this district, the development of the clay industries here has been more along the line of brick manufacturing, the total value of these clay products manufactured in this district during the past year amounting to something like $10,000,000. Pennsylvania easily holds first rank in the manufacture of brick, and western Pennsylvania manufactures a large percentage of the brick of the Keystone State. Some idea of the immense value of the brick manufacturing establishments of Pittsburg will be gleaned from the fact that only recently the Harbison & Walker Co., of that city, was reorganized with a capital of $10,000,000. This company devotes its whole energy to the manufacture of brick of various kinds, and is not the only large brick manufacturing concern in the district.

Cruger & Pace's Brick Kilns.

While the manufacture of red and buff building brick and of common red brick is carried on extensively in this district, it has been the manufacture of brick for industrial purposes which has undergone the widest exploitation within recent years. The great iron and steel industries of the Pittsburg district require enormous quantities of all kinds of brick suited to industrial operations, while the coking industry is also a large user of a special kind of furnace brick. The demands of these and other industries have in a large degree been responsible for the enormous development of the brick industry here, for the manufacture of these products close to the point of use has been a most advantageous feature to the concerns which require great quantities of brick. While the brick industry has already been sufficiently developed in western Pennsylvania to about supply the present demands made upon it by the great industries of Pittsburg, the industry is destined to see a still further development during the next few years. During the past year there has been unusual activity in the way of buying up clay deposits, installing new brick plants and preparing for the further extension of this already profitable industry. Millions of capital is now being invested in various patterns of brick plants, new machinery is being installed, and, while the new firms are putting their plants in shape, the concerns already engaged in the industry are preparing to meet the modern plants being put in operation by the new concerns in the industry.

While the demand for brick for industrial purposes is great, the demand for building brick is not lagging. During the past year some five or six great sky-scrapers have been in course of erection in Pittsburg, thousands of smaller buildings are being erected, and the manufacturers of building brick in this district have been unable to meet the demands made for their product, even at the increased prices which now rule. Many of the brick manufacturers of this district have their plants equipped for the different kinds of brick manufacturing, and under ordinary conditions have been able to keep up with the demand by changing from one kind of brick to the other as the demand for the several products occasioned, but this is not possible now.

With respect to the products, the clay industries of western Pennsylvania may be classed as the pottery industry, the fire clay industry and the red and buff brick industry. With respect to locality, we have the clay industries of the city of Pittsburg, those of Allegheny county, the upper Ohio valley clay industries, the Allegheny valley field, the Monongahela valley, the Kiskeminetas valley, the Youghiogheny valley and the Conemaugh valley. The fire clay industry easily holds first rank, with the red and buff building brick industry second. Allied with the fire clay industry is the silica industry, which, during the past five or six years, has been largely exploited in this district. So far as concerns the value of the product and of the capital invested, the clay industries of the city of Pittsburg hold first rank in the district. However, many of the plants located in the city draw their clay supplies from different parts of western Pennsylvania, and Pittsburg capital is very largely represented in the numerous important clay manufacturing industries located throughout western Pennsylvania. Pittsburg is the headquarters for all the large clay manufacturing establishments of the district, and the sales offices or agencies are located in that city, which gives the interests the advantage of proximity to the markets which the city affords for the varied clay products. Users of these products in other sections have come to know the real position which Pittsburg holds in these industries, and many big orders from all over the country and from foreign countries for the different western Pennsylvania clay products are placed through the Pittsburg offices and agencies.

As has already been said, the phenomenal development of these industries in western Pennsylvania has in a large degree been brought about through the great demand for the products about Pittsburg. Throughout western Pennsylvania are abundant deposits of all kinds of shales, clays, fire clays and the other necessary material for clay manufacturing. Want of space makes it impossible to give anything like an adequate idea of the clay deposits, and this can best be done in a separate article, as can a detailed description of the leading clay manufacturing interests of this district. The advantages in the way of fuel and of adequate railway facilities have also counted in the development of these industries.

Written for The Clay-Worker.

A SERMON ON BRICK.

FORCE OF HABIT AS A FACTOR IN DETERMINING CHOICE OF BUILDING MATERIALS.

POPULARITY of any article, no matter how useful, is due ofttimes to habit or custom more than to the intrinsic merits of the article itself. Without question this proposition makes plain why stone has been used so extensively in the erection of certain classes of buildings. Originally it became a matter of fashion, partly because there was an erroneous supposition that stone was more durable than brick, and partly because men who were leaders in certain communities used stone for building purposes, or perhaps large municipalities, or mayhap the government or the state or nation, constructed buildings of stone. And there might have been other ways in which the public came to regard stone with especial favor.

It is fair to give the earlier builders the benefit of the doubt and admit that brick then was not what it is to-day, and possibly would not have done as well as brick does now. If that is true, and there is a reasonable certainty that it is true in many instances, the builders are not so much to blame. But granting this argument shifts the blame for neglecting brick to the shoulders of the more modern builders, and clearly they have no excuse for failing to appreciate the superiority of brick over stone.

It will do no harm to notice, again, that insurance companies, or, it would be more correct to say, some of their agents, have discovered the difference in fire risks between brick and stone. So far as known the companies have never taken action upon this point, but that will follow later. A brick building is not nearly as hazardous a risk as a stone building. The difference may not be as great as the difference between stone and wood, but it is great, and recent experiences with stone buildings in great fires have repeatedly demonstrated the truth of this assertion. A material which will either melt or explode when water is poured upon it is scarcely the material with which buildings holding valuable property, and near other valuable buildings, should be constructed. Some time this point will be so clearly proved that no argument can controvert it.

WHEREIN GRANITE IS INFERIOR TO BRICK.

Granite, the foundation rock of the world, the most durable stone that is taken from the earth, explodes like a blast of dynamite if water is poured upon it when it is hot. A granite front will fly into a thousand pieces if it is wet when hot, and frequently the only damage a stone building sustains is from heat. In such a case brick would not only withstand the intense heat itself, but it would keep the interior of the building from injury because it is a poor conductor, and in a fire which would destroy an ordinary building would hardly ever become heated enough to cause injury inside. It becomes, in such cases, which are numerous in any city, not only a preventive of fire spreading, but also a protection for the contents of the building. Brick men would do well to call the attention of insurance companies to these qualities of brick buildings, thus impressing upon the ones who have power with builders one great benefit to be derived from brick construction.

The writer is preparing some suggestions to brick men for advertising which may at least prove interesting, and it is hoped they will be instructive. But before the suggestions are published they will be submitted to practical men, who will be requested to modify them or make such changes as in their judgment will improve the work. No interest will be detracted from those articles by outlining them here, but this explanation is made to satisfy any questioner who might possibly ask why something of that sort isn't done now. They will come along some time during the year, and such as they are, it is hoped they will do good to the industry.

INCREASED USE OF BRICK.

The past year certainly was encouraging. Remember, the writer is not dealing with the financial end of the industry. That is to say, any observations made here are based not upon the prices obtained, but upon the use which was made of brick by builders. Without any question the number used far exceeded any previous year, proportionately. Without statistics at hand, it is impossible to say what number of buildings were erected, but judging from the comparisons made during observations of work actually in progress, the proportionate use of brick has been largely increased. This means all varieties. Not only the handsome grades, which are used upon the outside of buildings, but upon foundations and other work as well. More and more builders are using them, but the aim of every brick man for the coming year should be to secure a wider use if possible. It is a benefit to the builder, the tenants and business for you. You can base your action upon purely philanthropic motives and not be wrong, or you can base it upon purely selfish motives and be right, too. Therefore, do not be afraid to talk.

The writer is not familiar with any plans for the present year, but has heard rumors that there is to be a determined effort made to increase the sale of brick everywhere. That is, along the lines which the writer has urged consistently in season and out of season for years. If 1902 sees such a devoutly to be hoped for consummation of some of the scattering efforts of earnest brick men it will mark an epoch in brickmaking as important, in its way, as the one ushered in when Pharoah ordered the making of bricks without straw. Constant hammering will bring about almost anything. Few movements are so hopeless that they will not yield to persistent effort.

LARGE USERS OF BRICK SHOULD BE COURTED.

Can anyone suggest any particular reason why railroads should not use brick in constructing embankments and similar work? Why is stone superior to brick laid in cement? Why do not railroads investigate the matter of using brick in such work wherever practicable? Has any brick man ever suggested to the companies the advisability of investigating the subject before specifying stone? Here are some questions of great interest to the trade. Possibly some of them have been answered already. If so, it doesn't seem that much benefit to brickmakers has resulted. Maybe another investigation, with resulting answers, would be of more benefit. There is nothing like keeping at a thing. If men turned back when they met their first rebuffs there would be no progress, and if brick manufacturers have been rebuffed by one set of railway officials that is absolutely no indication that they would be by another. The officers of railroad companies are changing constantly, and some time a board will be put in power which can see where true economy lies. Then is your opportunity, and unless you are making repeated inquiries you will never know when it comes.

A good illustration of this policy of keeping continually at a thing is shown in the profession of journalism. A man has a certain thing to do on the staff of a daily paper. He goes to see certain men each day and must, perforce, ask them certain questions. Day after day he goes and receives always the same answer, "No news to-day." It gets tiresome, and he thinks one day that he won't go. It doesn't matter much, for he never has found anything there. So he goes away and sits in the park and wishes he was a Carnegie and didn't have to do anything but make presents of libraries. His competitor goes around the same as usual and gets the best story of the year. The unexpected thing has occurred, and yet he missed his opportunity because he was unprepared to take advantage of it.

Now if brick men visit railroad men once, it is good. If they have called the attention of the master builders and the road engineers and other men in authority to the desirability of brick for certain work, they have done well as far as they have gone. But once will not do. A certain piece of work is planned in which a considerable quantity of masonry is specified. The stone men lose no time getting next to the proper officials, and live with them until the contract is given out. The result is that stone is practically always used where brick would do even better. Who is to blame? Surely not the stone men, who are out looking for just such easy fruit. Surely not the railroad man, who may look upon brick as proper for a foundation in the cellar, but scarcely suitable for outside walls, where dignity and solidity are required.

This has degenerated into a good deal of a sermon, but perhaps it will not be amiss for the season, and if the writer promises to refrain in future it may be forgiven. There are a few more points which it will be well to remember.

WHAT'S WORTH HAVING IS WORTH THE ASKING.

If you want anything ask for it. If you know of a piece of work, no matter how large, where brick might be specified, go ask for it. You may not get it. Probably you won't, but you will have attracted some attention to your business and your product, and that is worth all the effort cost you. Don't forget that these things are not going to be thrown at you. Neither God nor your neighbor will secure you a contract, though if you tried for yourself there is a strong supposition that both would assist materially. It is a well-established principle that if a thing is worth having it is worth asking for. If you are a young man and want to marry a banker's daughter, go tell him so. He may fire you out of the house, but he won't think any the less of you because you asked for his daughter. Men admire pluck and cheek, if you choose to call it so, and it must be admitted that under certain circumstances such an action might be one of the cheekiest moves any young fellow ever made. If you want to borrow $10,000, go tell him so. The chances are he won't lend it to you. Bankers are very shy of their money, fully as shy as they are of their daughters; but then you will acquire a reputation for effrontery that will not hurt you. If you think the banker ought to have his house built of brick instead of stone, tell him so, and demonstrate to him that you are right. If you know your business you can do it. Never mind if the stone man brings in his crushing tests and his weathering tests and his test of appearances. It is all the same. An ordinary house doesn't go much on crushing tests, and if a house outlasts the builder without weathering very perceptibly he won't care about his successors. And the appearance matter is easily fixed, because brick are made in imitation of every face of stone on the market.

This is no theory. It is hard facts, and if you choose to follow this homely advice during the coming year you will be more successful. One more story in illustration of these assertions and the brick preachment is done. A young man who had some brains, but no money and no good clothes, and had rather frayed manners, wanted to marry the daughter of a wealthy neighbor, one of those men who has eaten a few measures of oats and feels them exceedingly. The girl was handsome (they always are), and well educated and all such things. In fact, it would be difficult to think of a greater contrast than existed between the two. The young fellow went to the old gentleman and told him what ailed him. It took the irate father about two and one-half seconds to settle his case, and the flying leap the fellow took down the front steps was a marvel to beholders. But he married the girl, and now the old man thinks there is nobody like him. How did he succeed? He simply went back again, just as though nothing had occurred. It took gall, perhaps, but on the principle that you won't get anything you don't go after the young fellow won. Now apply this story to your own case. If the railroad or other companies throw you out, figuratively speaking, never mind. Put a little arnica on the bruised spot and go back again. If you keep at it you'll get the contracts in time, and then what more do you want? BURTON.

ENLARGED PLANT OF THE H W. CALDWELL & SON CO.

ABOUT TWO YEARS AGO there appeared in these columns a description of the new plant of the H. W. Caldwell & Son Co., Chicago, Ill., engineers and machinists. While the original plant, as described at that time, was a very extensive one, the growing trade of this company has made it necessary for them to make extensive additions to their plant. The accompanying illustration shows the plant as it has been enlarged.

The main machine shop building is 100x180 feet, with galleries running the full length of the building. By means of an electric crane the galleries are utilized for manufacturing purposes as conveniently as the main floor. This building is used entirely for manufacturing, all the raw material and manufactured stock being carried in the warehouse hereafter described. By utilizing this entire building for machine work the capacity of production is much greater than would be the case if stock were carried. In this building is a complete equipment of modern tools, all of them being driven electrically and all being arranged for the convenient handling of the material to be operated upon.

Next to the machine shop building, and of the same dimensions, is the building devoted to the manufacture of the well-known specialty of the Caldwell Co., the Caldwell Helicoid conveyor, and also to the manufacture of their growing line of sheet metal specialties. This building is fully equipped with furnaces, the fuel used being fuel oil, and every device for the economical and workmanlike production of sheet metal articles is to be found therein. Among the recent additions to the plant is a complete pneumatic tool equipment, by means of which the riveting, chipping and some of the drilling is done. The use of compressed air in this work insures economy and rapidity of production.

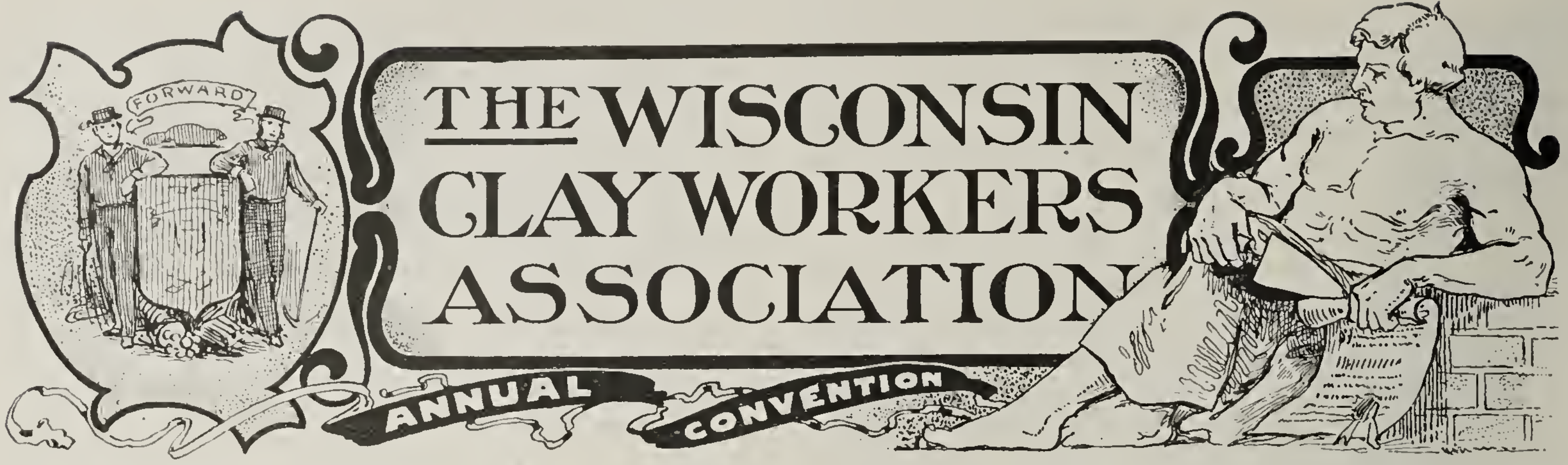
The power house, which is shown back of the main machine shop building, is an independent structure, the equipment consisting of water tube boilers, with a large Corliss engine for the main power generator, this being connected with a dynamo for generating the electricity used in the plant. In addition to the main engine is a high-speed, direct-connected engine, used as an auxiliary to the main engine, and also used for lighting purposes and night runs.

In the engine room is placed a large air compressor for supplying the pneumatic tools, pneumatic hoists and the compressed air for the fuel oil furnaces. The transmission of power from the engine room is entirely electrical, the generators supplying not only the power for running the plant, but the electric light and the power for operating the electric crane.

Factory of the H. W. Caldwell & Son Co., Chicago.

The most important addition to the plant is the large warehouse shown in the illustration, this building having three stories and basement, and with about 45,000 square feet of floor space. The building is equipped with two large and heavy elevators. It is used for the storage of the large stock of their goods that the Caldwell Co. always carry on hand, and is also the place where all the orders are gathered before being shipped. With ample space for shipping purposes, the handling of orders with facility and dispatch is attained. The general arrangement of the plant is such that the raw material is received in one department and moves through its different stages of production until it finally reaches the shipping room, ready for delivery.

The additions to the plant just completed double its capacity, and with the increased capacity the Caldwell Co. is prepared to take of a growing trade with even greater dispatch than has been their custom heretofore.


FORWARD
THE WISCONSIN CLAY WORKERS ASSOCIATION
ANNUAL CONVENTION

PROCEEDINGS OF THE SECOND ANNUAL CONVENTION

Of the Wisconsin Clayworkers' Association, Held at St. Charles Hotel, Milwaukee, Wis., January, 28, 29 and 30, 1902.

January 28, 1902, at 2 P. M.

Convention called to order by President E. W. Drake.

The President: I feel like congratulating the brick and tile workers of the State of Wisconsin on this, the second annual meeting of our Association. I think that it is perfectly fitting that this city should receive them, and I know of no man who can more beautifully express the sentiment of our citizens than our honored Mayor, and I shall now ask him to extend to you the welcome of the city. Mr. David S. Rose. (Applause.)

WELCOME TO MILWAUKEE.

Mayor Rose: Mr. President and Gentlemen of the Convention—I assure you that our people appreciate the honor that you have conferred upon our city by holding your annual Convention within our borders. It has been claimed that one particular product which we produce has made Milwaukee famous, but I assume to-day that there is another splendid industry that we have that has done as much, if not more, to spread the name of Milwaukee than has the one I referred to. The Cream City, the name by which we are known the world over, took its name from our brick industry, and more especially from the color of the bricks that we produce.

You gentlemen of affairs, you gentlemen who are engaged in the manufacturing industry, will perhaps appreciate to the fullest extent something that I may say to you regarding the extent of our manufacturing industry, for in truth Milwaukee has come to be known as one of the great manufacturing centers of this Nation. Our manufactured products last year exceeded in value two hundred millions of dollars, and showed an increase over the year before of upwards of twenty-six millions of dollars. We have more than three thousand two hundred independent manufacturing institutions, giving employment to upwards of eighty thousand operatives, and while it is true that Milwaukee has become a great manufacturing city, it is likewise true that our wholesale jobbing trade has assumed enormous proportions. That trade last year exceeded three hundred millions of dollars and grew in one year from two hundred and sixty-six millions. The growth of our population has been rapid, our percentage of increase in the last census decade was 39.54 per cent., a growth of upwards of eighty-five thousand inhabitants.

Milwaukee yields to no city in her efforts for advancement, and I undertake to say that we can show as much in substantial growth and development as any other city in the United States. In our public institutions we undertake to keep pace with our sister cities; we point with pride to our City Hall, completed only a few years since at an expense of about one million of dollars, and constituting, as it does, one of the most commodious, one of the most delightful office buildings in the land; to our splendid educational institutions, to our public library and museum building that cost the city about three-quarters of a million of dollars; to our museum collection, the fourth largest in the United States; to our magnificent library, one of our best and most liberally patronized educational institutions. You can visit either one of those branches in the afternoon or evening and you will find the youth of our city there prosecuting their studies. Our common school system is a part of the common school system of the old Badger State, a system that has operated to place Wisconsin in the foremost rank in educational facilities and advantages.

President E. W. Drake, Milwaukee, Wis.

We have now in process of erection or projection ten additional school buildings that will cost the city six hundred and fifty thousand dollars, and when completed they will enable us to tear down every school barrack that we have within our borders; a proud distinction that few large cities of the United States can boast.

Our art galleries and our many other places of attraction, of education and of amusement all bespeak the progressiveness and enterprise and patriotism of our citizens. While it is true that we have perhaps the most cosmopolitan population of any city in the United States, representing, as we do, in our citizenship, every civilized nation, it is likewise true that we find them as one great happy family animated by a common desire to accomplish the greatest good for the greatest number.

Our park system, though young in years, is a credit and ornament to our city, and I only regret that you gentlemen could not convene in our city at a more seasonable time and have an opportunity to visit the many places of attraction and entertainment that we can then offer.

The home life of Milwaukee is deserving of especial mention. Milwaukee enjoys the distinction of having within her borders no tenement house district. On the contrary, the great army of laboring people own their own homes, and you can go out into the outskirts and there you will find the humble cottages of the laborer and the more pretentious residences of the artisan. There, amidst healthful surroundings, they rear their children to strong and sturdy manhood and womanhood, and this is a feature of civic life that other cities may well desire to emulate.

We have now projected many important public improvements. We call directly upon your industry for supplies. Our school buildings I have mentioned. In addition to these we are now erecting four additional fire stations, fire engine houses and a new steel hull fire boat that will be a model of its kind and that will cost our city a hundred and fifty thousand dollars. It has been demonstrated with the admirable water facilities that we have here in Milwaukee that the system of fighting fires by the employment of fire boats is of the most desirable character, and is of the greatest value to a fire department.

We are now erecting a new bascule bridge at Grand avenue, which I undertake to say most of you have had an opportunity to see. This is an innovation; it is something new; it enables us to cover the center channel for navigation and gives us greater breadth of channel and better facilities for navigating the large vessels that now come into our port, for it is not an uncommon thing to have vessels five hundred feet in length and fifty-five feet of beam come into our harbor. We are also erecting another bascule bridge of the same pattern at Broadway and have made provision for still another one at West Water street, which will necessitate the changing of the swinging bridge owned by the Chicago, Milwaukee & St. Paul Railway Company to one of the bascule pattern to conform to our bridge alongside of theirs. A fourth bascule bridge is planned at Muskego avenue; a viaduct at Sixth street that will cost the city three hundred and fifty thousand dollars, and another one at Twenty-seventh street that will cost the city four hundred thousand dollars, and yet we are proud to say that, notwithstanding these many expenses and costly improvements, we have been able to keep our taxes down to a point lower than they have been at any time during the last twenty years.

The matter of the government of cities is nothing more than a business undertaking. As you gentlemen run your private business affairs, a common rising in one direction, and broadening and extending and developing in another, making adequate provisions to meet the increased expenditures by forced economy where it can be practiced elsewhere. That same rule of business conduct applied to the administration of municipal government will achieve precisely the same results.

To you gentlemen of Wisconsin who read the Wisconsin press I think that it is due me and our city to make some words of explanation regarding the character of our administration of municipal affairs. It has been charged in the columns of some newspapers that Milwaukee is what is denominated to be a wide-open town. Wide-open town means absolute license, and I am proud to say that we have nothing of the kind in Milwaukee. We have had the honesty to recognize the evils that have existed ever since the birth of the human family, and instead of undertaking to eradicate those evils, something that centuries of diligent and earnest work has been unable to accomplish, we recognize them as existing necessities, and undertake to regulate and control them, and thereby reduce them to an absolute minimum. This I believe to be the most advanced method of treating these evils for municipalities. Ours is an orderly city; more orderly than any other city of our Nation. Our percentage of crime is the lowest of all cities—all large cities—of this Nation. You may say that this is attributable to the fact that here we have a large foreign-born population, in which the German character largely predominates. There is no question but what this is true to a great extent. There is no question about the proposition that the German character, taken as a character, is conservative, law-abiding and order loving; but I beg you to remember that we are situated only eight-five miles from Chicago, and unless we had a police department, well-organized and efficient in its administration of the affairs of that department, our city would be overrun with the criminals of that great city. We have an excellent police department, and that is demonstrated to an absolute certainty by the splendid order that we are always enabled to preserve.

Gentlemen of the Convention, I assure you that the people of Milwaukee entertain only the kindliest feelings for their fellow-citizens of the interior of the State. It is our ambition to make Milwaukee worthy of the esteem of the people from the interior; to make Milwaukee, as the metropolis of this State, what it should be, and we are as proud of the other cities of Wisconsin as we would have the other cities of Wisconsin to be of us. We are as one great family; our interests are all common. We are subject to precisely the same laws in productiveness, in development, in progress and everything that goes to make up a great State, and we should all be animated by the same common motives.

I express the wish that the purposes for which you are convened may be well subserved by your gathering in our city; that you may accomplish those ends that would be of the greatest benefit to your organization as an organization, and to the individuals who make up the organization; and I trust that your committee has made provision for your entertainment, and I am sure they have, because Milwaukeeans always look to that, so that in the interims between your sessions you will have sufficient opportunity to find pleasure and enjoyment; so that when you return to your homes you will have pleasant recollections of your visit to your metropolis. I thank you. (Applause.)

The President: Now, gentlemen, as we have been welcomed by the city of Milwaukee, I want you also to be welcomed by the brickmakers, and we have one of our foremost citizens and brickmakers of the city, Mr. Henry Herman, who will give you the welcome in behalf of the local brickmakers.

A BRICKMAKER'S WELCOME.

Mr. Henry Herman: When the first Clayworker stepped into His clay-ground and selected His material wherewith to mold a perfect man, and after due examination and inspection, like the Great Master Workman that He is, breathed the soul into the inanimate form, He became the patron of all the clayworkers of the earth, and, as such, we, His disciples, most humbly bow unto Him with fervent reverence.

Henry Herman, Milwaukee, Wis.

The soul which God then gave to man, endowed with all its good attributes, lives within all of us, and in the identical spirit in which it was placed in our breast, I now welcome you, my co-workers in this God-installed profession, to our beautiful city of bricks, to our homes and to our firesides.

I am not a public speaker, like my friend, Mayor Rose, who has just preceded me, and whose silvery tongue and sparkling thoughts have made him prominent throughout the land, but the words I address to you are from an humble citizen, who feels proud of the city in which he lives, and pleased to have the opportunity to make its guests feel that they have struck a place that is proud to receive them and make them feel at home in the broadest sense during their stay.

When I look around me and perceive these intelligent faces, these brawny forms and the spirit of business and push depicted in every eye, I feel that the future of our chosen labors is in good hands, and that the work of your Convention will be so conducted that its close will leave the marks of "duty well performed," in the hearts of all of you, and which I am sure in saying will meet with response of "Well done, good and faithful servants," from your constituents.

Such conventions have proven a great and lasting benefit to the world at large, and to the clayworkers in particular. The wonderful marks of progress in the beautification of our cities since the last few decades is but partial evidence of the unceasing efforts of the clayworker in his field of labor.

While we do not depreciate the architectural beauties of the structures reared by our ancient brethren throughout the continent of Europe and part of Asia, they pale into insignificance when compared with our modern buildings constructed from material formed and molded under our auspices. Truly, this is an era of clayworkers.

Many complicated matters touching our interests will come before your meeting, but I will say, without fear or favor, that you will grapple with them all and bring them to a successful ending.

Again I bid you welcome to our midst and city, and trust that you will take the best advantage of the opportunity and enjoy all the attractions and social proclivities of the city to your utmost extent.

I thank you, gentlemen.
(Applause.)

The President: We are exceedingly glad that Mr. Herman welcomes us to his home, and we will try and see that we profit by the invitation.

I now have the pleasure of introducing to you Mr. C. S. Morris, of Berlin, who, in behalf of the Wisconsin Clayworkers' Association, will reply.

RESPONSE OF MR. MORRIS.

Mr. C. S. Morris: Mr. President and Gentlemen of the Convention—The programme for a gathering of this kind usually requires a response to an address of welcome, so that the custom may be said to be a time-honored one, but in the present instance I believe it would be more honored in the breach than the observance. However, I am sure I voice the sentiment of all here when I express grateful appreciation for the kindly and eloquent words of welcome to which we have listened, and the courtesies and attentions that lend dignity and importance to our meeting. The forming of acquaintanceship in various localities and the interchange of knowledge and opinions concerning everything relating to the welfare of our State and the development of its progress are of importance not alone to us here, but to all good citizens.

Now, when it comes to trying to make a speech I find myself seriously hampered, for as I look over the very comprehensive order of exercises I can say little pertaining to what I know without appropriating the text of some other speaker. It is customary upon occasions of this kind to expatiate largely on the benefits of such an organization as ours, and were we older I might say much in praise, so much that perhaps your garments might seem temporarily much too small for you, but as we have room for growth, I must speak of the past or prophesy what the future may hold.

I need not remind you of the antiquity

of your art, since those here who accept the Mosaic record acknowledge that the great Artist of Creation was a worker in clay and formed His noblest product of the dust of the ground, and all remember how the brickmaking industry taxed the poor Israelites when deprived of the straw they used in its manufacture; but as I can throw no new light upon ancient history I must turn to the future.

One of the citizens of our State has voiced his enthusiasm for our commonwealth in a song entitled, "Wisconsin, Land of Beauty." I would add to this designation that of "Land of Promise," for I believe it has yet undreamed of possibilities for industrial progress. Its clayworking industries are rapidly assuming larger proportions, and should the time come when the use of brick for architectural purposes should be superseded by iron or steel, the many other uses to which the clay deposits of our State are adapted will remain and call to us and our successors for development. Let us take up this work intelligently and with determination, and let us follow the aims of this organization so earnestly that those who come afterwards may say they builded better than they knew.

Through this heartily extended local hospitality I hope to see more and more that the various sections of Wisconsin are identical; that in building up one locality we aid in the advancement of all, and that this city of Milwaukee, becoming so widely known as an ideal convention city, is our city, our metropolis, in which we take intense pride, and I predict that our Convention will never meet in a city where we will be treated better and oftener than here. (Applause.)

The President: I think the gentlemen who met a year ago in Madison were all thoroughly convinced that the success of that meeting was largely attributed to the efforts of our Secretary, and when it was made known to the clayworkers of this State that Mr. Buckley was about to leave Wisconsin, I know there was a feeling of sorrow passed through the hearts and minds of all, and I could just see the smile of satisfaction and approval pass over their faces to-day as they saw his well-known face again with us, and we are all glad to have him with us.

I shall call upon Mr. Buckley for the Secretary's report. I just wanted to say this, as I couldn't say it in private to his face, because he is one of those kind of men who won't let you flatter him, and when I am here I can say what I have a mind to, and he cannot stop me. I know I have voiced the sentiment of every one of you here, for I know what you wanted to say, and took it upon myself to say it for you. (Applause.)

Secretary Buckley: I cannot tell you how overjoyed I am at being able to be with you at this meeting. I am proud of this Association and feel deeply the words of appreciation by your President. I wish to thank you, Mr. President, and the members of the Association for the very kindly interest which they have always shown in the work which I have attempted to do in a small way.

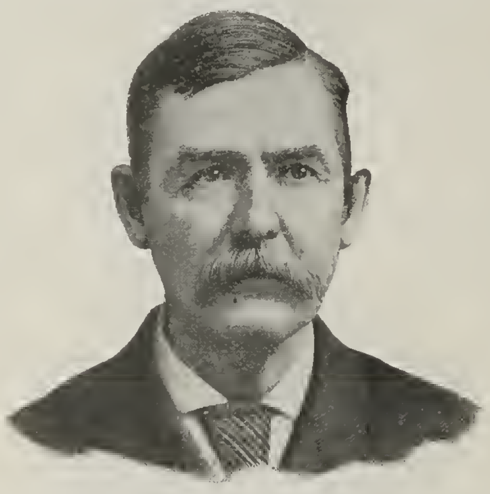
I wish to say, and it is in my written report, which follows, that any success which attends the present Convention is not due to the Secretary, but is due to your presiding officer—to your President and his associates in Milwaukee. (Applause.)

I do not expect in this report to give in detail the proceedings of the last meeting. The proceedings have been published and distributed, and I believe they are in the hands of all the members of the Association and also all clayworkers in the State. I have written a short report, which I will now read.

SECRETARY BUCKLEY'S ANNUAL REPORT.

Pursuant to a call issued by thirty of the Wisconsin manufacturers, the first annual meeting of the Wisconsin Clayworkers' Association was held in the Capitol Building at Madison, Wis., February 5 and 6, 1901. On the first day a temporary organization was perfected with Mr. David Stephens, of Madison, as President, and E. R. Buckley, of Madison, as Secretary. Committees on constitution and by-laws and on resolutions were immediately appointed for the purpose of making a permanent organization.

The sessions were very largely devoted to the reading of papers and discussions of topics of interest to the trade. A banquet was held on the first evening, and during the afternoon of the second day the visitors were escorted through the university buildings. During the last session constitution and by-laws were submitted and approved. Officers were elected and the invitation of the Milwaukee Brick Manufacturers to meet in Milwaukee in 1902 was unanimously accepted.



WILLIAM FINNEGAN, Green Bay, Wis.

The Association ordered the Secretary to have the proceedings printed and distributed to the members. This has been done. The proceedings have also been placed in the hands of all the other brick manufacturers in Wisconsin.

The attendance at this meeting was far beyond the anticipations of those who were fostering the organization. The attendance was in the neighborhood of fifty, and of this number forty were enrolled as members. Six names have since been added to the list, all of whom have been enrolled as charter members. The total active membership of the Association is now forty-six. It is thought that during the coming year the membership ought to be doubled, and I confidently look forward to a time when it will exceed the one hundred mark.

The Secretary has endeavored to perform all of the duties ordinarily devolving upon such officer. Owing to the fact that he was called upon to change his residence from Wisconsin to Missouri, this has been at times attended with difficulty. I wish at this time to say that our President, Mr. E. W. Drake, has proven himself to be a most efficient executive officer, and whatever success may attend this meeting is largely the result of his labors with those of his Milwaukee associates.

I believe that it should be the duty of the Secretary not only to keep a record of the meetings and to perform such clerical work as may be necessary in the transaction of the business of the Association, but that he should also keep himself in touch with all the brick manufacturers throughout the State. With this end in view, I would recommend that he be instructed to keep a careful record of the names of all brick manufacturers, the foremen, superintendents and every other person in any way connected with the clayworking industries. It ought to be the duty of each member of the Association to inform the Secretary of any new manufactories which come to his notice during the year. By keeping such a record it may be possible eventually to reach a solution of some of the labor and other difficulties experienced in the brick manufacturing business.

I am very anxious that this should be made a part of the duty of the Secretary, and trust that some action may be taken at this meeting incorporating this in the by-laws.

During the year I have received $90 as initiation fees from members. This amount has been turned over to the Treasurer, and I submit with this report two receipts covering the same.

I wish at this time to extend to the clayworkers of Wisconsin my sincerest thanks for the many courtesies which they have shown me during my connection with the Geological Survey of Wisconsin. I trust that they will continue to assist any and all members of the Geological Survey who may take up the problems which I have left unfinished. There are many problems connected with the clayworking industries of Wisconsin which should be given the careful consideration of someone who can devote his time to experimental work.

Respectfully submitted,
E. R. BUCKLEY.

(Applause.)

The President: Unless there are corrections or suggestions, the report will stand approved and be placed on file.

It is so ordered.

There was at Madison last year a gentleman who by his wit has made himself acquainted with all the members of our Association, and when we elected him to the responsible position of Treasurer he said he would take care of the money and account for it. We will now have our Treasurer's report, by Mr. Finnegan, of Green Bay.

TREASURER'S REPORT.

To the Officers and Members of the Wisconsin Clayworkers' Association:

—Receipts.—

From initiation fees	$90.00
Expenditures	41.57
Balance on hand	$48.53

—Expenditures.—

Paid T. A. Randall, printing reports	$18.50
Express on reports, Indianapolis to Madison	1.60
Express on reports to Green Bay	.90
Postage, mailing reports to non-members	2.60
Expense of Secretary for stamps, envelopes, record books, printing, etc., as per report	18.57
Total	$41.57

Respectfully submitted,
WM. E. FINNEGAN, Treasurer.

The President: We will now take up the subject which is marked for 4:30, "Tile Drainage," by Mr. C. G. Elliott, of Indianapolis, Ind.

TILE DRAINAGE.

C. G. Elliott, Indianapolis, Ind.

Wisconsin has large areas of land which await only the advent of the skilled drainer and the product of the tilemaker's kilns to equal or surpass her sister States in the production of the valuable cereals. You of Wisconsin have no occasion to look toward the arid regions of the West for an expansion of the farming domain, nor to concern yourselves personally in the irrigation of regions deficient in rainfall, while you have acres upon acres of land within your own boundaries which are waste because too well watered, but which can be easily reclaimed, and other acres whose production can easily be doubled by carrying out well considered and practical plans of land drainage.

Wisconsin has before her the example of neighboring States whose experience in drainage work constitutes a valuable lesson manual, which, when carefully studied, will serve to prevent many of the mistakes that always accompany the beginnings of projects. She enjoys the distinction of possessing business enterprise and natural resources necessary to accomplish her undertakings. It may be assumed that her people are ready to enter into any project and engage in any business which will develop the natural wealth of her lands, and thereby add to the reputation which the State enjoys for thrift and material stability. Permit me, as a resident of another State, but familiar with land drainage practice and its value to agriculture, to call your attention to this subject, so closely allied with progressive soil culture.

DRAINAGE AND GOOD HUSBANDRY GO TOGETHER.

The theory and practice of drainage are better understood now than they were fifteen years ago. The results are better known; the influence of the improvement is more salutary and far-reaching than the most sanguine at that time expected to see. That the best farming practice and underdrainage are closely identified with each other where success in the culture of clay soils and subsoils has been attained is now conceded. The trenching and laying of drains in such soils makes good culture possible and the latent fertility of the soil available. You may ask why this is so, and it is a proper question. A fact may be known, but not always fully appreciated. Drainage may be recognized by a man in the abstract, but not so thoroughly believed in that he will at once undertake the work on his own land and profit by the results. It may be the proper course for others, but for him it is not so clear. The facts do not come to him with sufficient force to impress him with their peculiar value in his case.

Among my earliest recollections of work on an Illinois farm are those connected with the making of small field ditches for the purpose of removing the superabundance of water from the cultivated land. My father, who was a firm believer in drainage, and practiced it as far as his opportunities permitted, remarked at one time as we contemplated the ditches: "I suppose it is a fact that in some parts of the East they lay earthen pipes under ground, and in that way dry land like this; that where we are digging these field ditches their plan would be to open them deeper, lay drain tiles and cover them." This was about the time of the extension of underdrainage in western New York and Ohio, and in his reading he had learned the facts. To both of us they seemed more like legends of the far East than something to be investigated with reference to their practical value. So we continued to dig in the old way until, in the course of events, the subject of underdrainage was brought home to us, and later its value demonstrated by practice. A man must be so thoroughly imbued with the value of the improvement that he will order tile and pay for them, and see that they are placed where they will do the most good, or he need not expect to get any practical good from his belief. It is the general who puts his tactics in practice on the field who wins the battle, not the one who sits in his tent and reads how battles have been won. It is the land owner who has the nerve and courage to follow up his knowledge and convictions on the drainage subject who will grow tall wheat, fat cattle and great corn and grass.

C. G. Elliott, Indianapolis, Ind.

WHY IS SOIL DRAINAGE VALUABLE?

Scientific investigation in late years has thrown much new light upon the properties of soils, and pointed out more clearly than ever before the means which may be used for their improvement. Practical results have not been lacking to sustain these findings, yet I am compelled to say that by many these matters have not received the attention which their importance demands.

The first difference apparent between a dry and a wet soil is its firmness. The particles of soil are effectually separated from each other when the soil is saturated. Fifty per cent. or more of its entire volume may be water which occupies the interspaces, and under such conditions no loads can be moved over its surface, nor is cultivation or growth of crops possible. Reduce the quantity of water to 25 or 15 per cent. and the particles of soil come in contact with each other at points; air fills the space previously occupied by water, and the soil is mechanically changed. If the soil water be drawn to a depth of three or four feet, the space in the volume of soil will be occupied by moisture and air in the proportion of from 8 to 23 per cent. of the former and from 25 to 40 per cent. of the latter. The additional thrift and growth of plants on soils on which these simple changes were made seemed greater than ought to be expected; that is, the cause was not adequate to produce such results. It is now known that with the air which enters the soil a certain kind of bacteria is present, which, under these favorable conditions, converts the organic matter of the soil into nitric acid, one of the chief nitrogen supplies of vegetation, thus supplying this important plant food direct and making otherwise inert soil matter available to plants. The action of the air has a disintegrating effect upon the matter of the soil, while water tends to preserve it unchanged. The rainfall percolates through it to the drains, and from it is filtered the organic matter it contains. The frosts in our northern climates penetrate deeper where water is absent, and do much towards fining the old and making new soil. All of these conditions are brought about by underdrainage, and, contrariwise, such changes and advantages do not appear in soils having no drainage.

A few facts further: The temperature of a wet soil is kept down in the spring until the heat of the sun warms the water or dispels it by evaporation. No germination of seeds or growth of plants will take place in the spring until the soil reaches a temperature of from 48 degrees to 72 degrees F. According to experiments made by Prof. King, the amount of heat which will raise a given amount of water 10 degrees F. will raise an equal weight of dry clay 44 degrees. Wet soils must therefore warm more slowly in the sun, because the water which they contain tends to hold the temperature down.

The more intense cooling process, however, takes place through the evaporation of water from the surface. The week or ten days' additional time which it will take a wet soil to become sufficiently warmed in the spring for the ready starting of plants is no small disadvantage to the farmer in the Wisconsin latitude. Good drainage, if it accomplished no more, would often mark the difference between profit and mere existence to the Wisconsin farmer. The necessity of securing a proper temperature for the soil is emphasized by the careful work of a noted experimenter, who found that the germination of wheat, rye, oats and flax goes forward most rapidly at 77 degrees to 88 degrees F. He found that while corn would germinate in three days at a temperature of 65 degrees F., it required eleven days when the temperature of the soil was as low as 51 degrees F. He found, further, that while oats would germinate in two days under a temperature of 65 degrees, it required seven days to do the same work under a temperature of 41 degrees.

As a further advantage which should be mentioned in this connection it has been found that the germs which develop nitric acid from humus cease to develop when the temperature falls below 41 degrees; that their action is only appreciable at 54 degrees, and becomes most vigorous at 98 degrees. Nothing has been found so efficient in increasing the temperature of the soil as drainage by tile, and I may add that the advantage is of paramount importance in northern climates, where longer growing seasons are a great desideratum. The changing and perfecting of the soil as deep as the drains are laid, making a depth of three or four feet of soil available to plant roots, instead of one or two feet, making possible the continual development of plant food; the increased storage capacity for moisture to tide over seasons of drought—these are but suggestive of the important benefits which accrue from the improvement under discussion.

The practice of the art is not difficult, though there are well-defined principles which must be followed. Clays for the manufacture of the necessary tile are conveniently distributed by nature in your State. The profits accruing from such work are so well assured by examples found elsewhere that it is devoid of all speculative uncertainties. Should the tile manufacturer be pushing enough to urge upon you the sale of his ware, you may think that he is doing it in self-interest, if you please, but rest assured that the history of this phase of the clay business teaches that this is one of the instances where the purchaser usually receives a greater profit than the seller. Many can apply the trite saying of Caesar, "I came, I saw, I conquered," to themselves in the inception and development of their drainage projects.

I have but dropped a few pertinent hints and admonitions in this brief paper, and take occasion, in closing, to assure you that the subject to which I have called your attention is a most attractive one from every standpoint, and that tile drainage of land offers to the agriculturists of Wisconsin greater profits than anything in which they can now engage.

The President: We are ahead of our regular time of closing, but I know that the lobby work of these conventions is sometimes of the greatest importance. We have representatives of the various clay journals and machinery men here, and they can keep you busy. Let us use the balance of this time for such discussion and visiting as you like, but do not forget that the Wisconsin Clayworkers' Association wants your name on its rolls. We want all of the clayworking industry of this State to be enrolled with us. There is a vast and a great advantage coming to gatherings and associations of this kind which it will take some time to bring out and develop, but which once brought out, will be thoroughly appreciated, and the only way we can do that is to lend our hearty approval and co-operation to it. These associations cannot live unless we as individuals join them, and they have to have not only our support when we are back home reading the reports of them, but they have to have our support while we are here at our Convention, so excuse me if during this Convention I bring this to your notice quite often that we want you as members of our Association. Mr. Buckley will be very glad to meet all of you who have not become members of our Association, and those who joined a year ago, he will be glad to meet them also.

F. L. Sanborn, Portage, Wis.

Adjourned.

—Second Session.—

January 29, 1902, at 10 A. M.

The President: I wish to read a notice or two. The gentlemen who have ladies with them in the city are requested to have those ladies meet this afternoon at 2:30 o'clock in the parlors of the hotel on the second floor, and a committee of local ladies also will be there to see to their entertainment during this afternoon. If any of the gentlemen who have come since yesterday, and who either came yesterday and did not receive tickets for the banquet tonight, please let that fact be known to the committee who have the tickets in charge and they will supply them.

The report of the Treasurer was then approved.

The Secretary then read some proposed amendments to the by-laws, which were discussed and referred to a committee of three.

The President: On Thursday you will find that at 10:15 o'clock we have a question box. I don't know that we have received any questions as yet. If any of you gentlemen have questions to ask which will not come into the general discussion, or that may not be otherwise discussed or answered, anything that you want to know in regard to clayworking, just write it out and give it to our Secretary, and it will be answered, wisely or otherwise, before the Convention is over.

The President: The first paper upon our programme is by Mr. F. L. Sanborn, of Portage, "Our Experience in the Manufacture of Soft Mud Brick."

Mr. F. L. Sanborn: Preparing papers for conventions is not in my line. I have, therefore, confined my paper entirely to our experience in the manufacture of soft mud brick.

"OUR EXPERIENCE IN THE MANUFACTURE OF SOFT MUD BRICK."

Our first experience in brickmaking dates back to 1830, when we used soak-pits and horse-power machines. The brick were carried out by hand and dumped on the yard, where they were exposed to the weather until they were dry enough to put into hacks.

While on the yard a hard rainstorm would ruin them, or a hot sun and drying wind would cause many of them to crack, so that at times the loss would be quite heavy.

We burned our brick in a clamp-kiln, scoved up with a wall 8 inches at bottom and 4 inches at top, plastered with mud. Brick were set three on three, with three brick benches, thirty-six brick high.

After a few years we put in a steam-power machine, manufactured at Haverstraw, N. Y. While using this machine we were very much annoyed by the brick sticking in the molds; they would not dump readily on the yard.

While using this machine we ran out 20,000 in the forenoon. In the afternoon we hacked brick, hauled clay and wheeled brick to the kiln. After adopting this plan, in good drying weather we were able to put into hacks during the afternoon a large percentage of the brick we had cut during the morning, so that but a small percentage of the day's output was exposed to the rain during the night. This, of course, was a pleasant feature of this arrangement.

About this time we put up solid walls, 20 inches thick at bottom and 12 inches thick at top, for our kilns. These walls were built of bats and refuse brick, slushed in with very thin mud, which made them very strong and durable, if kept properly covered from storms and thoroughly braced when burning. We consider these permanent walls much more economical in the end than to scove up and remove the scoving from each separate kiln, besides the larger per cent. of hard brick that we get from the kilns.

We also put in doors and grates, set four brick benches instead of three brick benches, and set our kilns forty brick high. We found by this change that we were getting a larger per cent. of hard brick and using less fuel per thousand to burn them.

After a few years, the machine needing repairs, we discarded it and returned to pug mills and hand-molding. The mills were turned and clay hauled by steam.

For several years we depended on molding entirely, but finally put in a Creager machine and pug mill, and put up sheds and adopted the pallet system, which is very satisfactory. Our loss from storms and cracked brick on the yard has been almost entirely overcome. We make quite a saving in the handling of the brick, as they are only edged up after they are placed on the pallets in the sheds until they are wheeled to the kiln, while formerly the brick were hacked up, the hacks covered and uncovered until they were dry enough for the kiln. We consider the pallet and shed system the most satisfactory way of handling brick for out-door drying.

Our clay is about 16 feet deep, covered with from one to four feet of sand. There are veins of white sand all through the clay, so we get our clay and sand from the same bank. Our clay is quite stubborn, and much of it needs to be crushed, frozen or sun-dried to pulverize it. It requires a very high degree of heat to properly burn it. We use wood and coal for burning, using block coal in the mouths of the arches after the watersmoke has been driven off. Our brick are cream-colored and of excellent quality. We think no better are made in the State.

Our wood costs us about $4 per cord at the kiln. We would like to know if coal or oil alone can be successfully used in this style of kiln. If so, it would relieve us from investing so much money in wood, to lie idle for several months.

Patent kilns, we understand, are quite expensive to start with, and the repair bills are quite heavy.

Our heaviest expense is the burning. We have been very fortunate with our labor, never having been troubled with strikes or lock-outs.

Of all manufacturers, we think the brick manufacturer has reason to be proud of his products, as they will endure long after other building materials have gone to decay, a lasting monument that shall be in evidence ages after he has passed to the world beyond.

(Applause.)

The President: Mr. H. L. Cordes, of Watertown, was also to deliver a paper, but he is not present. The paper just delivered is open for discussion, and we would like to have several of you gentlemen who are manufacturing soft mud brick and some of those who are not, if you have thoughts and ideas on the question, to present them.

Mr. Youngren: I would like to ask the gentleman whether or not his bricks swell any during burning or just before they get the heat on them.

Mr. Sanborn: They do, probably. We have to be very careful. Years ago we overheated a kiln, and it would not burn; stopped it up entirely. We burned it fourteen days. We have to be very careful not to get it too hot before getting the watersmoke out. It takes about five days to get it thoroughly dry.

Mr. Youngren: What I want to find out is whether or not the brick swell before the watersmoke was off. I judged from what I heard it was a limy clay. I would like to know whether or not it has the peculiarity of swelling under certain conditions after the watersmoke is off.

Mr. Sanborn: I don't think they do after the watersmoke is off. I think they swell during the taking off of the watersmoke, just before the top of the kiln is thoroughly dry.

Mr. Hinkley: If no one else has any question to ask, I would like to ask one, though not, perhaps, directly in the line of Mr. Sanborn's paper. In a recent trade paper I noticed a communication on the mixing of coal dust with clay while the brick was being made. I would like to ask if any gentleman here who has had any experience with this process can give any additional information in regard to it. I would like to know whether or not it is of benefit.

Charles Burredge, Tecumseh, Mich.

Mr. Sanborn: We tried that years ago, but we didn't see that we derived any benefit from it whatever. We mixed coal screenings with the clay before it was molded, and then we poured it in the openings around the heads down into the kiln. Our experience went to show that the coal was burned out and gone before the brick were got hot enough for it to do them any good. But I think at the same time Watertown was using coal screenings and claimed they were a benefit, but this was not our experience.

Mr. Randall: I remember an amusing incident that occurred at the National Association some years ago regarding this thing of mixing coal dust with clay. An old, experienced brickmaker thought he would go home and try it. He didn't ask what kind of coal was mixed with the clay, so he used soft coal, with the result that the brick all swelled up and were spoiled. He came to the next Convention and roared that it was a mistake, but when it leaked out that he used soft coal they ridiculed him severely about it. Along the Hudson river they do this all the time. A certain part of the common building brick are "coalers," as they call them. They mix about 5 per cent. of coal screenings with just a certain per cent. of their brick, and these they put in alongside their kilns where they have the most trouble to burn hard brick. This is done universally along the Hudson river, and I think that in Chicago coalers are used all the time, and I guess that in almost all the common brickyards coal screenings are mixed in with the clay before the brick are formed, and those brick burn easier.

The President: There are plenty of gentlemen here who have been using coal screenings. Let us hear from some of you. Tell us whether you have found it beneficial or not.

Mr. Finnegan: At the yard which Mr. Hinkley is working now I used coal dust for years, and the only difficulty I had was when they put in too much and when they didn't put in enough. It was hard to determine whether it was a benefit or not. Where they put in too much it made the brick shaky; that is, the coal got afire before the moisture was all gone. Unless you can get the coal for almost nothing, I think you had better let it alone.

The President: That is what we did in Milwaukee. When we got the coal dust for nothing we used it; when they charged for it we quit it.

Mr. C. G. Stoll: I will say that in Chicago they are using coal dust in nearly all of their factories. They use three shovelfuls for each carload of clay that came from the bank. For use round the heads and sides of the kiln they use five shovelfuls of coal. They use hard coal screenings altogether.

Mr. G. J. Schwarz: For the information of the gentlemen present, I would say, regarding the cost of this coal dust, the Chicago people all use anthracite screening, and the cost at the yard is $1.55 a ton. It will vary 5 or 10 cents a ton from time to time, but it runs from $1.25 to $1.55 per ton.

Mr. C. S. Morris: I would like to ask Mr. Sanborn if he knows about what proportion of his brick are sand. I have used many of those brick and I look upon them as one of the best weather and sewer brick that are manufactured in Wisconsin, and I think there must be quite a large proportion of sand. They are certainly made of material that is adapted to this climate. Have you any idea, Mr. Sanborn, about what proportion of your clay is sand?

Mr. Sanborn: No, sir, I have not. As I said before, it lays in the bank and they cave it down and mix it. Of course, there are some parts of the bank that are richer than others; and we have to mix it occasionally, but as a general thing the bank can be used from top to bottom. I would say that there is a peculiarity about those brick—the longer they stand exposed to the weather the harder they grow. I know years ago I had occasion to veneer an office building, and for the purpose I used some soft brick from the top of the kiln, and they were very tender. We could not ship them and never pretended to. We only used them occasionally about town. I used those brick for veneering that office building, and in ten or fifteen years I had occasion to move the building, and I pulled off the brick and found them as hard as flint. That is our experience with soft brick; if placed above the ground and exposed to the weather they will grow hard. However, I don't know just the proportion of sand and clay.

The President: The next paper on the programme will be by Mr. P. L. Youngren, of Milwaukee. "The Minimum Cost of Burning Cream-colored Brick from Wisconsin Calcium Clays, and How It Can Be Accomplished."

THE MINIMUM COST OF BURNING CREAM-COLORED BRICK FROM WISCONSIN CALCIUM CLAYS AND HOW IT CAN BE ACCOMPLISHED.

Under the distinctive name of calcium clays we generally class all clays in which the carbonate of calcium or the double carbonate of calcium and magnesium enter as predominant or characteristic ingredients, constituting the principal fluxing ingredients and imparting to the burnt product a light yellow or cream color.

The presence of these carbonates in the clay is desirable within certain limits, when they exist in sufficient quantity only to form, when reduced to oxides, the necessary flux for the other clay ingredients. However, when they reach such proportions that they constitute from 40 to 50 per cent. of the clay they become dangerous factors in the ordinary way of burning in a kiln with an oxidizing atmosphere.

By the old method of burning in use here in Milwaukee a splendid building brick is produced from material of this composition, but it has been accomplished at a very great expense, the length of time required and the amount of fuel necessary to burn a kiln being almost beyond the comprehension of those who have not had actual experience with it. It is by no means due to lack of enterprise that this system has been continued in use, as many different and approved styles of kilns and methods of burning have been tried from time to time, but without success, and, until recently, it has been found necessary to revert to the old system.

This system consists in part in maintaining, during the burning stage, a neutral or reducing atmosphere. This is an atmosphere in which there is no free oxygen present, and is necessarily of imperfect combustion, as in practice there can be no perfect combustion without the oxygen being present in considerable excess of what is actually required to form a combination with the fuel.

Imperfect combustion is, of course, not productive of a great amount of heat, and accounts in some measure for the length of time required to burn a kiln, the average of which is about sixteen days.

The exact chemical reactions taking place between the various elements of the clay during the burning and the manner in which the kiln atmosphere influences these reactions, has not, as far as my information goes, been satisfactorily explained. It appears that everybody concerned has been contented with knowing what conditions are necessary to produce the desired results without going deeply into the whys and wherefores. I regret that is but recently that I have taken up this matter seriously, too recently to have arrived as yet at any definite results. However, I take this opportunity to express my views on the subject, hoping to draw forth some instructive discussion of the principles involved.

If we observe the behavior of this clay under fire, under different conditions of kiln atmosphere, we are soon led to the conclusion that the composition of the kiln gases has a very decided influence on the reactions during the calcining as well as during the vitrifying period.

When the operation is carried on in an oxidizing atmosphere, which facilitates the decomposition of the carbonates, we find that the brick will commence to expand or swell just before visible red heat is reached and continue to swell until the calcining stage is completed.

After the brick is thus freed from the carbonic acid gas it will stand up under what would ordinarily be termed a good white heat without any apparent change taking place, regardless of how long that heat is continued. The brick at this stage will be found to have increased about 5 per cent. in lineal measurement, as compared with the original brick, and has decreased from 15 to 20 per cent. in weight. At this stage the brick is, therefore, very porous and appears to be only baked together. If the temperature is increased by degrees until the fusing point of the calcium oxide is reached, reaction takes place very suddenly and quite vigorously, and as there are not, at that temperature, any refractory ingredients present in the brick to hold up its structure, it will crush and warp, in addition to undergoing an immense shrinkage in volume, and under a little further increase of the temperature it will collapse into a shapeless mass.

P. L. YOUNGREN, Milwaukee, Wis.

When, on the other hand, the brick is burned in a neutral or somewhat reducing atmosphere, which retards the dissociation of the carbonate, there will be formed but very little, if any, expansion or swelling during the calcining stage; the brick will fuse and solidify gradually, with very little, if any shrinkage, and at a considerably lower temperature than what was necessary to cause fusion of the swelled brick mentioned above.

An example in support of my assertion that the burning of this clay is not a single question of temperature will be seen if we place the bricks close together in the kiln in such manner that the kiln gases cannot come in contact with the surfaces of the brick except at its ends. This prevents a free escape of the carbonic acid gas from the central portion of the bricks. If the brick are now burned in an oxidizing fire and the heat raised as quickly as possible after the watersmoke is off, the ends of the bricks will be found to have swelled and show but a slight degree of solidification, while the middle or central portion will be found thoroughly hard and sound, of normal size and dark cream color. To all appearances these bricks look as if their ends had been protected from the fire in some manner, whereas, in reality, the heat has been conducted from the ends to the interior, where the material gives every evidence of greater fusibility than at the ends.

These peculiarities are not a result of any particular style of kiln, or with any particular kind of fuel used, but seem to be clearly identified with the composition of the kiln gases in reference to their oxidizing or reducing character.

The fact that the bricks will solidify under the influence of a neutral kiln atmosphere, at a comparatively low burning temperature, without swelling and subsequent shrinking, so that the burnt bricks are practically of the same size as the original raw brick, has led me to believe that the presence of the carbonic acid gas in the kiln atmosphere is effective in preventing the complete dissociation of the carbonates until the melting point of the basic carbonate is reached, when it acts as a flux to the silica and silicates.

I appreciate that this is an unusual theory of the reactions in the burning of calcium clays and one that requires absolute proof before it can be accepted. Nevertheless, the fusibility of partly decomposed calcium carbonate, or basic carbonate, has been demonstrated in the laboratory, and the melting point of the same found to be 1020 degrees Centigrade, but it was found necessary in making this determination to inclose the carbonate in a vessel to prevent the escape of the carbonic acid gas.

This melted basic carbonate solidifies upon cooling to a mass having the physical characteristics of marble.

The main point at issue in this manner of reasoning would, therefore, be the possibility of the existence of the basic carbonate as such at the time the fusing temperature is reached.

Looking further into this subject, we find that the decomposition of the carbonate of calcium is dependent upon the temperature and the presence of the surrounding carbonic acid gas. According to experiments, the tension of dissociation becomes equal to atmospheric pressure at 812 degrees Centigrade. In view of this, we find it is possible to heat the normal carbonate to a temperature of 812 degrees Centigrade, in an atmosphere of carbonic acid gas, before decomposition commences, and as decomposition does not proceed very rapidly, even above that temperature, as long as the pressure of the carbonic acid gas in the surrounding atmosphere is kept up, it appears very feasible to reach the melting point before the decomposition has proceeded very far, and the remaining basic carbonate would, therefore, possess a lower fusing point than the calcium oxide produced in the oxidizing fire, which would probably occur at about 1100 degrees Centigrade.

Expansion, as a characteristic of limestone during its calcining, is partaken of by clays in proportion to the amount of the carbonate present, and the above theory of reactions would account for the absence of expansion of the brick in a neutral kiln atmosphere.

The presence of sulphur in the kiln gases must, of course, also be taken into account in burning calcium clays, as it adds to the difficulties of burning with an oxidizing fire by forming sulphuric or sulphurous oxide, which in the presence of water vapor would displace the carbonic acid gas in the carbonate and form a less fusible sulphate.

The extraordinary requirements outlined above have rendered the application of the continuous system of burning a rather difficult problem, the reason of which will appear more conspicuous when we bear in mind that one of the principal sources of fuel economy in the continuous system is the use of hot air, taken from the burned bricks, for supporting the combustion of the fuel; hence it requires but a small amount of fuel to raise the temperature to the required degree, resulting in a very oxidizing atmosphere.

Realizing that an extremely oxidizing fire was unsuitable for this clay, I designed a kiln in which it would be possible to regulate the composition of the gases to suit the requirements. This is attended, however, with a greater fuel consumption than is ordinarily required in kilns of this kind.

The kiln consists essentially of two parallel tunnels, connecting at both ends. These tunnels are provided with drop arches at intervals of 18 feet, against which the bricks are set in tight walls, transverse to the direction of the draft, in such manner that when the kiln is set full and in operation it forms a series of eighteen up and down draft compartments, each holding 34,000 brick.

The fuel is introduced into the kiln in the form of gas, of which carbon monoxide and free carbon constitute the principal ingredients.

The gas is generated in furnaces, located in the outside retaining wall, and is led through an uptake and a transverse flue up over the main arch, and thence into the kiln through slotted openings in the arch. On reaching the interior of the kiln these gases are mingled with hot air drawn from the cooling bricks. The products of this combustion, with a large surplus of air, are drawn through the next compartment, and, after having traversed it, are mixed with the gases from the next furnace. This operation is repeated in the next two compartments.

The amount of hot air taken from the burnt brick directly into the burning chambers is so adjusted that it is practically all consumed after having passed the last gas inlet and the products of this last combustion are then suitable for applying the finishing heat in the compartment ahead of it

The bricks in the intermediate compartments, through which more or less oxidizing gases have passed, are already burnt and are, therefore, not susceptible to the chemical influence of these gases.

A separate system of flues furnishes means for transferring surplus hot air from the cooling to the watersmoking compartments, which it is not desirable to take directly through the burning compartments.

During the progress of burning this clay I have found it necessary to curtail the drafts of hot air from the burnt or cooling brick into the burning compartments to a very great extent, and instead admit more cold air through the last fire. This cold air requires the admixture of more gas than the hot air, and the resulting products are, therefore, less oxidizing and more suitable for the purpose, but it means the expenditure of more fuel.

In the burning of brick containing a fair per cent. of clay base the first mentioned system of operation proved satisfactory, and the fuel consumption per thousand brick averaged about 250 pounds of coal.

With the last mentioned system of operation, necessitated by a larger percentage of carbonate in the clay, the fuel consumption has been increased to 330 pounds of coal per thousand brick.

The quality of coal used is Hocking Valley, in proportion of two-thirds lump and one-third screenings.

With the object in view of curtailing the expenditure of fuel and waste of heat resulting from the taking of more cold air from the exterior and less hot air from the cooling brick for supporting the combustion, only for the purpose of creating carbonic acid gas with which to convey the heat through the kiln, I have commenced some experiments in setting the brick which is intended to retard the dissociation of the carbonates, so that the heat can be carried through the kiln with a more oxidizing atmosphere.

FRED GUNTHER, Port Washington, Wis.

Those experiments consist in placing the bricks close together in 4 and 8-inch walls from bottom to top, with suitable arches along the floor and spaces between the walls to allow a proper distribution of the heat.

Placed in this manner, the bricks will require a slower drying, but the ill effects of an oxidizing atmosphere will be reduced to a minimum.

(Applause.)

Mr. Youngren: The result of these experiments have not been ascertained to the present time. Perhaps in a day or two they will turn out, and, if successful, I have no doubt that the fuel consumption can be slightly reduced.

Mr. Joannis: I suppose, as the French say, it is the first steps which cost. and there is not room for very much discussion of this paper. I think it is more a subject of questioning to get more information from the gentleman who contributed so able a paper. You mentioned in connection with the results of the oxidized atmosphere that the brick first swelled perceptibly and shrank afterwards. Can you give us the proportion of shrinkage and swelling?

Mr. Youngren: If the kiln is heated uniformly from top to bottom before any part of it has commenced to shrink, the swelling in a kiln of thirty courses, depending some upon the proportion of the carbonate in the clay, would amount to as much as four or five inches.

Mr. Joannis: And the subsequent shrinkage would be how much on that same brick?

Mr. Youngren: If the same brick was properly burned, that is, burned hard in that atmosphere, it would shrink down 9 to 10 inches at least above the highest swelling.

Mr. Joannis: You say it would lose 4 inches, then?

Mr. Youngren: Yes, or more.

Mr. Joannis: In this new method of setting your brick you talk about the increase of fuel consumption necessary to attain that result. Is there any perceptible percentage of better brick?

Mr. Youngren: These bricks have not been taken out yet, and we only set four chambers, about one hundred and fifty thousand, or less, for experimental purposes. The brick are being taken out of the kiln now, and any of the gentlemen who wish to go out to-morrow afternoon can see the results of this experiment.

Mr. Buckley: I don't feel in position to question in any manner the theory which Mr. Youngren has evolved with respect to the chemical reactions taking place in the burning of calcium clays. However, I felt from what little I knew of the calcium clays of Wisconsin and other calcium clays, that the action and reactions involved in burning those clays—I speak of the chemical reactions —are not exactly in accord with those which Mr. Youngren has outlined. I do not think, however, that this is just the place to bring forward or discuss those reactions. I think that the work which Mr. Youngren is doing is exceedingly important. About three - quarters, I guess, I can say easily three-quarters of the brick manufacturing establishments in Wisconsin are dealing with calcium clays, and the problem which these men have before them is that of reducing to a minimum the cost of burning these clays. The first thing that they want to know, the first thing they ought to know, is the actual amount of heat required to burn the brick under what I might term ideal conditions; how much heat is required to burn the clay to what we know as a hard brick. The next problem, then, which presents itself to the brickmaker is to acquire as nearly as possible these conditions. He wants to reach as nearly as he can these possible conditions. The only way that this question can be solved is for some person to work out by experiment the actual cost, the actual minimum cost—combining the calcium and magnesium carbonates in the clay, with the silica, iron oxide, potassium and sodium contained in the clay, to form a silicate, such as is found in a hard-burned calcium clay brick. I am inclined to believe that the percentage of sodium and potassium, soda and potash and iron contained in the clays influence to greater or less extent, perhaps to a considerable extent, the temperature at which the calcium clays are burned throughout this region. That percentage varies considerably in different parts of the region, and even in clay from different parts of the clay bank which you are working.

So, I might suggest that while Mr. Youngren is experimenting along this line, he take into consideration the potassium, sodium and iron in these clays, because these constituents are sure in the process of burning to lower the temperature at which the condition which we know as incipient vitrification is produced. It is rather a difficult matter to discuss this problem, which is really a scientific and chemical problem, in such terms that it will be understood by the brick manufacturers. I think we must have the problem worked out from a scientific basis, and the result given to the brick manufacturer in a form in which he can apply it himself without the necessity of his following through an intricate maze of chemical reaction which takes place in the burning of the brick in the kiln. Therefore, I do not wish at this time to begin a discussion of the chemical problems involved in this paper.

Mr. Youngren: I would like to say a word or two with reference to the fluxes existing in the clay. I have noticed very clearly in the burning of clays here which contained a larger per cent. of the clay base, and, consequently, a larger per cent. of sodium, potassium and iron, that they can be burned much cheaper and much easier than the clay ordinarily called sand clay, which really has more carbonate in a gritty form than the other clay. The clay which contains a great deal of clay base can be burned much easier, due to the influence of these other fluxes, and I am inclined to think that I can disregard the carbonates in that case entirely; but when we come to a clay that contains very little clay base and more carbonates, we have to work on a principle of utilizing the carbonates as fluxes. As I said in my paper, when we do it in such manner so as to expel the carbonic acid gas from this material and reduce the carbonates to oxides, the swelling and subsequent shrinkage is so great that we cannot produce a marketable brick under these conditions. There is a question in my mind, of course, whether or not the sulphur has any great effect on the carbonates in transforming them to sulphates, which would be less fusible, and I would like to ask Mr. Buckley whether, in his opinion, transforming a carbonate by the presence of sulphuric acid into a sulphate would increase the volume of the brick or body in which it was contained.

Mr. Buckley: I think, under ordinary natural conditions in the kiln, that there would be an increase in the body of the brick through the presence of the sulphate. That would be my opinion in reference to that matter. I don't know what your experience has been.

Mr. Youngren: I have not taken any close observation as far as that is concerned; that is, not sufficiently close to be able to determine.

Mr. Buckley: I should judge that it would be a difficult matter to determine when it is taken in conjunction with the effects of the carbonates of magnesium and calcium. The high percentage of calcium and magnesium carbonates in the clays have such a marked effect on the swelling of the brick during the process of oxidization that it would be a very difficult matter to measure the effect of the sulphate.

This certainly is an admirable paper, and it is an excellent, and, in fact, I may say, the best contribution to the subject of calcium clays which we have had in the State. I am very greatly pleased to know that the subject is being taken up and an attempt is being made to solve this problem, and if it is worked out with respect to the Milwaukee calcium clays it is going to be applicable not only to Milwaukee, but to the entire eastern part of the State, with slight modification. If the principle governing the problems are worked out, they can be applied to other sections of the State and be made available to all the brick manufacturers, and I trust that Mr. Youngren will stick to the problem and work at it until it is solved to the satisfaction of the brick manufacturers and the scientific interests connected with the brick industry.

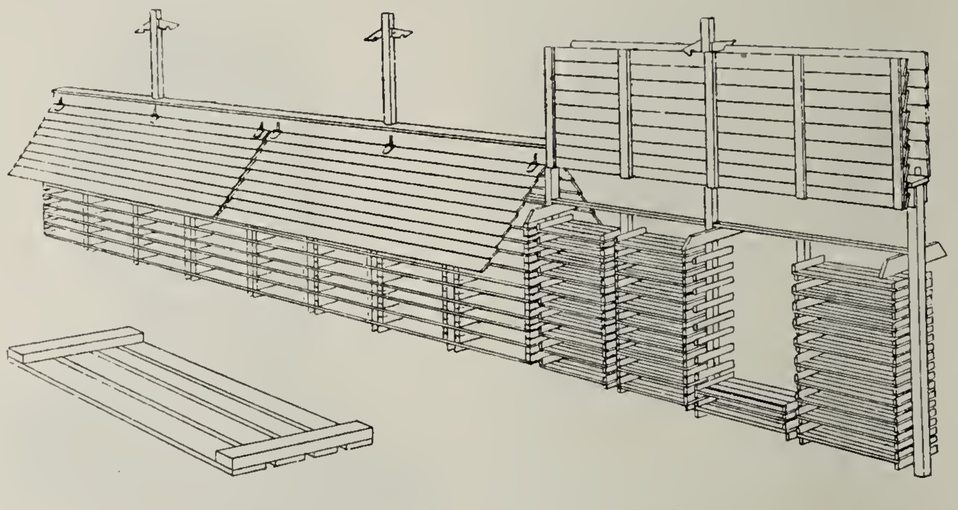
The President: The next paper on the programme will be, "What We Have Learned About the Manufacture of Stiff Mud Brick," by Mr. William Meadows, of Burlington, Wis.

"WHAT WE HAVE LEARNED ABOUT THE MANUFACTURE OF STIFF MUD BRICK."

I did not expect to be called upon for a paper until I saw my name on the programme. I did not then, nor do I now, think I can say anything edifying or instructive to this intelligent body of men, but not wanting to be benefited by the relation of others' experience without an attempt, at least, to render an equivalent, I have decided to give you a brief description of our modus of operating and manufacturing stiff mud brick.

Our plant is located in the western part of Racine county, and our output is largely on farm drain tile—in fact, the plant was mainly built for the manufacture of that commodity, and we only turn out from one to two million brick per annum, which I am aware is a small amount compared with the output of many firms represented here.

Our clay is a surface clay, from 12 to 15 feet in thickness, a very stiff blue clay, and very free from lime or grit of any kind, so much so as to require it to be mixed with one-fourth to one-third sand. We have two clay bins and a Pott's disintegrator accessible to both. Each bin holds clay enough for a day's run of thirty or thirty-five thousand brick. When working out of one we are filling the other, one man being engaged in spreading the clay evenly over the whole surface of the bin as fast as dumped. Three loads are spread and tempered, then one load of sand spread, and continuing thus until the bin is filled. The clay is then shoveled to the disintegrator with long-bladed tile spades, and thus the clay and sand are evenly mixed. After passing through the crusher the clay drops on a conveyor made of a 12-inch canvas belt and is taken to the machine.



Rack and Pallet System Used by Mr. Meadows.

Our brick are a side-cut—ten brick at a time, and taken from the table five at once with a clamp, and placed on a pallet holding ten brick, with five pallets on each truck—making fifty brick for each wheeler for each load. Each wheeler, while the brick are being placed on the pallets, is required to separate them a little, so the air can get all around them, thus securing uniform drying and preventing warping, which operation is very important, in order to have straight brick when burned. Each pallet is then placed on shelves in the racks. A diagram of our racks is on the Secretary's desk, to which your attention and criticism is invited. Our motive power is a 35-horse-power engine with a 55-horse-power boiler.

A day's work of ten hours is thirty to thirty-five thousand brick. A minimum working force, when running on brick, is ten men, one engineer, two pitching clay to disintegrator, one cutting off, one placing brick on pallets, four wheelers and one man to assist in placing the loaded pallets on the racks, where they remain untouched until dry enough to be placed in the kilns, three or four days, according to the condition of the weather, is required for the drying process. Two wheelers to one setter is necessary to get the brick in the kiln for burning—each setter placing 20,000 brick a day—six on six face to face.

We have three kilns of ten arches each and 25,000 brick to an arch. Our kilns are clamps, the walls being made of refuse bricks, 20 inches thick at the bottom, narrowing to 8 inches at the top, outside slant. In order to use coal in burning we have put in a 30-inch coal grate in end of each arch.

We use both wood and coal in burning—watersmoking with wood only for thirty-six to forty-eight hours, or until steam ceases to rise, then we burn wood and coal at the same time, sliding the wood to center of kiln, using best lower vein Brazil block, because it burns freer with more flame and less clinkers. We burn from seven to seven and one-half days, the last day with light flashy wood.

For the last twelve years we have made only a stiff mud brick, believing that process, without style of machinery, to be the most economical to manufacture and productive of the best quality of common stiff mud brick. We have never tried repressing for the reason that our brick closely resembles a repressed brick, and besides the demand for that class of goods in our locality is not sufficient to warrant the outlay.

I have given you this brief outline of our manner of making a stiff mud brick, not because we claim for it superior merit over every other maker, but because it is the best our limited experience and judgment has been able to devise, and if I have enabled someone to catch a new idea that may be beneficial to him for future use, my effort has not been in vain.

Thanking you for your kind attention, I will not consume more of your time. (Applause.)

Mr. Meadows: I will say that this paper was gotten up for the sole purpose of discussion. I will willingly answer any questions which the members desire to ask.

Mr. Clifford Chase then read the following paper on the same subject:

MANUFACTURE OF BRICK BY THE STIFF MUD PROCESS.

In the manufacture of brick by the stiff mud or wire cut process, we deviate most entirely from the older and better known method of molding brick, where, in the molding process, soaking and pugging the clay for a longer or shorter period, so as to reduce it to a plastic state, is resorted to. In the stiff mud process very little, if any, water is used where the clay is taken direct from the bank.

The degree of success which enters into the manufacture of brick by this system depends not only upon the brick machine itself, which should be of the best pattern obtainable for the work required, but with the different machines used in preparing the clay. I think that numerous failures to operate successfully by this system can be traced to the lack of this necessary adjunct.

The machines used for this purpose must be strongly built, as instead of a yielding mass, you have the tough raw material, with lumps of greater or less size, which have to be cut and worked up, and that quickly, too, and as the clay is generally dumped into the first machine or granulator in quantities of from one to two yards at a time, it means an unequal strain on the wearing parts of the machinery.

In this illustration I have reference to machines of large capacity, such as are in use in or near this city. The clay, as stated above, is dumped direct from the bank or pit by cart or car into the first machine or granulator, which is horizontal and provided with the shaft, in which the knives are fastened by keys and so set that the clay is worked from the end into which it is dumped to the opening at the farther end, where it falls of its own weight onto the crushing rolls, where it is further reduced, and the stone taken out. Directly under these rolls, which are conical and tapering, runs the belt conveyor on a frame set at the proper angle or incline, which takes the clay as it comes from the rolls to the second floor, where it is deposited in a machine very similar to the granulator, and where water can be added if necessary. The clay is here worked over as before and carried towards the opening at the end directly over the brick machine, into which it falls through a hopper, where the knives of the brick machine take up the work and pass the clay along the auger, which, with a powerful twist, forces the clay through a die in an endless bar on to a belt, which carries it along on rollers to the table, where the bar is cut automatically into the proper length for brick and turned on edge ready to be taken off. The green brick should be of a consistency to permit hacking six high, free from finger marks. Throughout the operation, from the depositing of the clay in the granulator to the finished product ready for drying, the clay is not handled.

Clifford Chase, Milwaukee, Wis.

To operate this machinery the power required would vary according to the toughness of the clay, 150-horse power, in my judgment, being the minimum.

In 1883 we installed a small auger machine of the brick and tile variety, on our yard, which, without any machines to assist in preparing the clay, was a dismal failure. We could pile the whole outfit, with engine included, into two of the clay preparing machines of the present day. What was learned by that failure is evident.

First—A machine of insufficient strength for our tough material and a total absence of clay preparing machinery.

Second—A boiler and engine of too small capacity.

The same argument applies to any system that you have or may contemplate. You will find it to your advantage not only to have ample strength in your brick machine proper, but suitable machinery to help prepare the clay. Not only this, but you must have ample power to drive it, the tendency always being to increase the lead. Numerous instances in our immediate vicinity could be cited where wire-cut machines have in the past been tried, and in the majority of cases failed for the reasons above referred to.

After all, every clayworker must use his own judgment and solve for himself the question of a suitable system for the manufacture of brick from clay at hand in his particular locality.

I maintain that it is the use of auxiliary machinery which in a continuous process reduces and tempers the clay, destroying the lumps and removing pebbles, in fact, making it fit to be worked in a brick machine, which has done so much towards perfecting this system and made the manufacture of wire-cut brick with our clay a possibility. (Applause.)

Mr. Buckley: It is not my purpose to discuss all of the papers, but I simply want to emphasize the very important fact that Mr. Chase has brought out in the admirable paper which he has just read, and that is that it is the auxiliary machinery which has done so much to perfect the stiff mud process of manufacturing bricks, not only in this State, but in every other State. It is the proper preparation and handling of the clay before it is introduced into the brick machine that controls very largely the character of the brick as they are carried to the dry yard. During the last two weeks, in my wanderings through Missouri, I have had this very point brought to my notice several times, and brick manufacturers of prominence in Missouri have said to me: "We never knew how to make brick until we learned how to prepare our clay before it entered the brick machine;" and so I don't think that this point can be emphasized too strongly or can be brought before this convention too many times: the necessity of thoroughly preparing the clay before it enters the brick machine; and I wish to thank Mr. Chase for bringing this point out so strongly before this Association. It is an exceedingly important matter.

Mr. Chase: That is something I brought out in my paper last year at Madison, and Mr. Finnegan sat down on me. He said if he had so much money to buy the machinery and so forth, what would he need with a brickyard?

Mr. Finnegan: In my experience, if I had known as much twenty-five years ago as I do to-day about pulverizing clay I would be better off. I don't care how good a machine these fellows give us, we must prepare the clay; we only ask that machine to do the molding. The clay must be in the proper form to make brick when it goes into the clay machine, and then you can go to bed with a good conscience.

The President: You have special reference to the soft mud process?

Mr. Finnegan: Soft mud and stiff

mud. Everything has to be prepared before it goes into any machine, and just as soon as the brickmakers will take that into consideration they won't get gray-headed so fast. (Laughter.)

Mr. Randall: Mr. Finnegan makes the remark, and I don't know whether I understand him right or not—something about the conscience before going to bed. I want to know if that is the reason why some of those fellows didn't go to bed at all last night.

Mr. Finnegan: They were not making bricks. (Laughter.)

Mr. Fifield: In Mr. Meadows' paper I got a very valuable idea, not particularly from the paper, but from the sketch in the way of opening the pallet sheds and racks. I have been looking for a way for a good while, so that we could raise the roof. I see he has that solved.

The President: For any brickmaker who is contemplating the building of racks the sketch drawn by Mr. Meadows will give some good ideas.

Mr. Finnegan: I think Major Hinkley has the most complete pallet yard in northern Wisconsin.

Major Hinkley: I didn't know that there was anything remarkable about it; we simply followed out a pattern which Mr. Finnegan had set when we bought the yard (laughter), only that he had room for, perhaps, only thirty or forty thousand brick, which would be about a day's run of the yard; when we bought it we extended the sheds and made room for 400,000, and we used 80,000 pallets. In our work we use one of the box machines of five brick molds, and as the molds come from the machine they are dumped on to a pallet large enough to hold five bricks. These pallets are removed to wheelbarrows and wheeled to the racks. These racks are between the machine and the kiln. The wheelers take the pallets and slip them on to the racks. We have some boards that hang down along on the sides to protect them from the weather, and we find that in fairly good drying weather it takes about ten days to dry the brick sufficiently to send them to the kiln. In very bad weather it takes about fifteen days. We calculate to have shed room enough for fifteen days' run in case it is bad weather. I don't know that we have ever lost a brick from the weather since we have been working on that system. I think we have a fairly economical method of drying for our northern climate.

Mr. Buckley: I will say that if any one expects to visit a brickyard in southern Wisconsin, I suggest that he visit Mr. Meadows' yard at Burlington. I think he has some features, especially connected with the construction of pallet sheds, that will be very valuable to you, and I assure you that, if you visit this plant, you will be shown everything connected with its economical working. There has just come into my mind a little device which I saw last week in Missouri for transferring the pallets from the brick table to the trucks. I have not the device clearly in mind, but instead of the man at the table taking the pallet in his hand and lifting it around and placing it on the trucks, he has a pedal that he works with his foot, which raises the pallet up on an incline plane, down which they simply run. They move by gravity to the man whose duty it is to load the trucks or barrows. It is a very simple little device, and if any of you would care to know definitely what it is, I will be very glad to give you a careful description of it if you care to write me. I never have handled brick from the table, but I understand that it is a very tiresome job, and that most men are wearied before the day is over, simply by the process of handling the pallets from the table to the truck in which they are carried away. The machine which I have mentioned is a very novel and interesting little labor saving device.

Mr. Hinkley: Before we adjourn I would like to get back to that amendment to the by-laws, and for the purpose of bringing it in good shape before the convention this afternoon I move that a committee of three be appointed to revise the amendment as offered here to suit the views of the convention.

J. G. Hamilton, Grand Rapids, Wis. Treasurer-Elect.

Motion seconded and carried.

The President then appointed the following

—Committee on Revision of By-Laws.—

J. W. Hinkley, E. R. Buckley and Clifford Chase.

Adjourned.

—Third Session.—

Wednesday Afternoon, Jan. 29, 1902,
2 O'Clock P. M.

The committee appointed on the amendment to the by-laws then reported through the chairman, Mr. Hinkley, as follows:

Your committee have had this subject of the amendment to the by-laws under consideration, and we offer the following as our recommendation:

That Article V, Section 4, of the Constitution and By-laws be amended by striking out the words "And he shall also receive moneys and pay them over to the Treasurer and keep an account of the same," and inserting in lieu thereof "Compile and keep a correct list of all clayworking factories in Wisconsin, with the names of their owners or operators and superintendents," so that when amended the section shall read: "It shall be the duty of the Secretary to keep a record of each meeting and compile and keep a correct list of all clayworking factories in Wisconsin, with the names of their owners and operators or superintendents, conduct all correspondence and other business as the Association may direct, and make a full report at such annual meeting."

Also amend Article V, Section 5, by striking out the words "From the Secretary all moneys belonging to the Association," and insert in lieu thereof, "All dues and other moneys belonging to the Association," so that when so amended the section will read: "It shall be the duty of the Treasurer to receive all dues and other moneys belonging to the Association and receipt for them, to keep an account and pay out the same on the order of the Secretary when countersigned by the President, and make a full detailed report at each annual meeting of all receipts and disbursements."

And as amended your committee would recommend the adoption of the same. Signed:

J. W. Hinkley, Chairman.
Clifford Chase,
E. R. Buckley.

Moved and seconded that the report be accepted.

Motion carried.

Appointment of committees and miscellaneous business.

The President appointed the following:

—Committee on Nominations.—

William Finnegan, of Green Bay, chairman.
J. S. Fifield, of Janesville.
E. R. Buckley, of Rolla, Mo.

—Committee on Resolutions.—

J. B. Theriault, of Chippewa Falls, Wis., chairman.
A. W. Hilker, Racine, Wis.
J. W. Brownrigg, of Merrimac, Wis.

—Committee on Time and Place of Next Convention.—

J. H. Hinkley, of Green Bay, Wis., chairman.
F. L. Sanborn, of Portage, Wis.
M. Klerme, of Sheboygan, Wis.

—The President's Address.—

The President: I will confine myself to manuscript for one or two reasons: First, that I will know what I have said when I get through—if you don't; second, I recognize the fact that it is a great deal easier to give advice than it is to follow it out, and it is a mighty sight easier to preach than it is to practice. It is a great deal easier to tell how these things ought to be done than it is to do them yourself.

PRESIDENT DRAKE'S ANNUAL ADDRESS.

Delegates and Friends of the Wisconsin Clayworkers' Association—I wish to congratulate you upon this auspicious beginning, when we remember that this Association is not quite a year old. When we look at this splendid convention, it makes us feel like prophesying great things for the future of this Association.

In the space of time allotted to me I wish to consider the clayworking industry in comparison with the many industries connected with building material, and I shall not enter into details of management or methods of operation, nor shall I discuss the clayworking industry from a technical standpoint, for on the programme there will be gentlemen who will tell you how to make, burn and market your product, or anything else that you may want to know; in fact, more than you or they ever knew or dreamed of before. For this is the winter time, and who ever knew a brickmaker who did not know more about making brick in the winter time than any other man on earth. But to-day I want to look at our business in its relation to other lines of industry. Of its past we shall not say much, although it is exceedingly interesting, for recent research, as it unfolds to us the history of the past, proves clearly the fact that burned clay is among the most enduring products of nature's creation or of man's handiwork, and because of the enduring qualities of burned clay it has been the means of bringing down to us much of the early history of the ancients, and thereby added a new interest in the life and pursuits of the fathers of the race. In comparison with other material used for building purposes our product is far in advance of them all; wood is shortlived at best, iron will rust, corrode and crystallize, and even granite will succumb to the disintegrating elements; but we know that above and beyond them all, burned clay has stood the ravages of time, and that from the misty morning of earth's first day down through the ages of a buried past, brick has been the one enduring substance upon which man has recorded the rise and fall of civilization long since forgotten. And because of these qualities of endurance and usefulness, the industry has been recognized in all ages as one of much importance. In the time of Egyptian and Assyrian supremacy, and later in the Roman ascendancy, brickmaking was under governmental direction, and was looked upon as a necessary part of the civilization and advancement of these respective nations. The higher the scale of progress the more perfect was the art of brickmaking, and the more important a place was it given In our own time many of us have watched the growth and development of the clayworking industry as it has advanced from the hand processes in the backwood, under all the discouraging influences and hinderances thereunto, up to the present time, when continuous kilns, steam shovels, hot blast dryers and a vast amount of machinery are the equipments of most yards. All of this has been the means of making the brickyards one of the important factors in the growth of any city, and has placed the manufacturer among those prominent in the advancement of organized society. And so I recognize that to-day I am talking to business men, who are representative men of the several localities from which you come, and as such, you are worthy and representative citizens of our great State. And I trust that while here some thought suggested in this or some other paper on the programme will give you an inspiration which will be the means of a determination on your part to excel in your chosen vocation. As a business proposition, gentlemen, do we realize the importance of excelling? You know the old adage which says, "That which is well bought is already half sold." The same principle is true in the clayworking industry, "'That which is well manufactured is already half sold, and especially so when competition is keen." For this is a progressive age, demanding the very best and being satisfied with nothing less. If there ever were a time when the exemplification of the truth contained in the principle of the survival of the fittest asserted itself, it is to-day, as it applies to the products of this industrial and commercial age. Because of the superiority and fitness of American products, the markets of the world are opening up to us in a wonderous way, and do not for one moment think that because your market is in some instances local, you are liberated from the above rule. We must keep up with the demand of the hour, or without our knowledge or consent we shall be superseded, and others with more energy and a more competent conception of the wants of the people will come in and replace our product with something better. The whole possibility before us does not lie in the making of one article alone. Acquaint thyself with the needs of the present time, and rise to the opportunities they offer. The pendulum of commercial and industrial life today is swinging toward vast achievements, made possible by concentrated action, corporate supremacy and co-operation, the keynote of the hour. He who does not recognize this fact will lose in the race. Concentration of forces for mutual benefit is the thought, while heretofore, in many instances, it has been concentration of force for demoralization. For instance, a keen competition, carried too far, will result in war of prices and of interests, which, like all other kinds of war, proves disastrous, will likewise prove a waste, even to the one who is victorious. Rather use the means which gives added power to accumulate force to the direction of vast business enterprises by the ablest minds under the most successful methods, and to the bringing to your business not only your own ability, but the ability which every other man in your especial line of business possesses. This does not mean that you must go home and place your business in a trust or combination, not by any manner of means, but it does mean that for the best interest of our business we must get in touch with the most advanced thoughts of the day; the brick that hasn't brass in it is of no value. Get in touch, either through the current literature, which is abundant; through the experience of others, which is brought out in gatherings of this kind, or through the methods which to-day are applied to nearly all kinds of business. We must apply the principles which underlie the improvements of the time. You know the Irishman is quoted as saying, "Nothing succeeds like success," and it is true, for the methods applied to business which succeeds are the methods from which we can expect success. Gather the best results from the experience of others and apply them to your own condition. Do not be afraid to copy that which is good and practical. It may lead you to improvements which would never be made without the hint from some one else to guide you. Look favorably upon new improvements in machinery; do not think that every agent who approaches you or wishes to talk new machinery is trying to swindle you; investigate—of course, you must have a mind of your own on matters like this. But remember that we are much indebted to machinery for the advancements in the art of clayworking. Encourage the efforts of those who are giving of their ability, thereby helping to make our product better than before. Use the facilities for improvement which are at hand, for they are numerous to-day compared with those of other decades. These facilities, namely, the press, the Geological survey, the information furnished by our schools and colleges, the work of the Ceramic societies, the general discussions at conventions and the experiences of your neighbors as they relate to the clay industry all have one end in view, and that is a higher intelligent conception of what it means to transform a quantity of clay into a thing of beauty and usefulness, remembering at all times that he who carries to the highest perfection his special vocation in life, not only benefits himself, but gives to the world an added impetus toward the goal for which we are all striving, and confers upon mankind a lasting benefit. For that one who invents something new, thereby setting idle hands to work, has done more good in a practical way to help mankind than he who merely gives his wealth to the poor but does not help them to build for themselves.

H. A. Nelson, Bristol, Wis.

The clayworking industry is of necessity one of vast importance. Wherever the pioneers of civilization have led the way, and were obliged to use perishable material for present habitation, it was only a temporary guide post pointing the way to that which was to follow. For when the marts of trade were established and great enterprises made possible, the accomplishments and comforts of mankind, then the enduring product of our kilns was brought into use, and as the homes were reared and great structures marked the cites of prosperous cities, they all, with one accord, told the story, as do the beauty and solidity of our own "Cream City of the Lakes" in its unlimited testimony to the necessity of clay products. In the building of any great city all that is beautiful in thought or artistic in design has been made to sing in mute, yet in no uncertain sound, the praises of our product. In fact, the brightest minds of this world's production have been in their times chosen to perpetuate their conception of the beautiful through the great edifices that have marked the advancement of the race. And the architectural monuments that have been the pride of mankind have likewise been a witness to the enduring qualities of brick.

At no time has there been a more urgent call for the best and most practical building material than to-day, and never was the usefulness and necessity of our product more forcibly recognized. If we would keep this fact ever in the mind of the architect and builder, it must be through a process by which we make our product indispensable to them. Make the product of your kilns, gentlemen, so good, and thereby so necessary to the builder, that it will be impossible almost for him to construct the abodes of man without your assistance. For is it not patent that more and more the world must recognize clay products as the only building material of the future?

As wealth becomes more abundant and stability more sought after, wood as a building material will give way. Iron is not practical only in the sky-scrapers of the city, and then the users thereof will have to call upon us to clothe their skeletons for them, and when it comes to all other edifices, that which will endure the longest, that which is the most comfortable, that which is as cheap as other materials, even of a lower grade; that which is ornamental and beautiful will take their place. And when we have all these qualifications combined in one, that one is destined, beyond a doubt, to become the universal choice of builders. The future generations may see a scarcity of constructional materials, such as wood, iron and stone, in the localities where they now abound, and to transport some of them would mean an exhorbitant price. But when we see how kind and generous, aye even how lavish, nature has been to the clayworker, we know that our product can never be exhausted. For when the Creator flung from His puissant finger tips this old world into space, He must have had a special thought concerning the future clayworkers, for so lavishly did he provide for us that there is no limit to the amount of material placed at our disposal. Let it not be said by our posterity that we have abused our advantages, or that we are behind the times in which we live; rather let it be said by those who in years to come shall read the signs of present advancement, that this epoch in the world's history was one of great importance to the clayworking industry, and as we shall labor to put our chosen profession on a par with any of the important industrial or commercial occupations of this wonderful people, in this wonderful age, we shall do so knowing that we have just cause for being proud of the record of the past, and bright with expectancy for the future. But the future can only be made bright by our continual advancement, and that with a continual persistency which will command attention and win respect.

Is it not a fact that the endurance of burned clay is one which is little understood? Are not the masses too apt to compare it with wood and other perishable materials? Would it not be advisable to publish a work dealing with this subject in the light of revealed facts? Does the world appreciate the fact that we are manufacturing a commodity which is the most enduring of all materials? Would the builders continue using wood if they truly realized that at best it is but a perishable article, while we offer, at about the same price, a commodity which if properly constructed will last while ages come and go, and is as enduring as the very hills from which it is made?

But all the honor does not accrue alone to he who manufactures the material from which the happy homes and business establishments of our land are reared. We are just beginning to realize in this country the great importance of proper drainage. We have had so much land under our control that we have not seen the necessity of making the little produce the much. As the population increases, and the large farms are divided up, and we touch elbow with our neighbors more closely than ever before, we shall begin to understand the importance of putting the soil in such a condition that it shall be described, as was the promised land of old, "A land flowing with milk and honey." In order to do this the tile machinery will become busy and profitable, as well.

I dare say there is not one among us who has not a high ambition, a noble purpose, an ideal, to which we are striving. We are told to aim high above the mark we would hit, or, according to the laws of gravitation, we will strike below the mark. So, in the clayworking industry let us aim at perfection. Is it too high? Certainly not to aim at. Let each man's yard be a likeness of his individuality; leave your impress on your surroundings, put your personality into your product, and bring forth that which shall be an imitation of your own life and character. Now, this does not imply that you have got to be a "brick," as the term is sometimes understood by the boys, but that the stability of purpose possessed by you shall be reproduced in that which you manufacture. Elevate that which you come in contact with, thereby making your occupation a necessity to that community in which you live and labor.

Clay products have been a necessity in all the ages of the past, ever since primitive man undertook to climb above the clouds, over a pile of brick and mortar. Your vocation has been one of the important enterprises of mankind, and shall not an industry so time honored and useful hold the first place among the enterprises of the world? And as a higher conception of its importance comes to us, in this noonday of earth's great achievements, shall we not unfurl our banner and march forward in the very van of the industrial hosts which to-day are striving to make our land blossom like a rose, our people prosperous and happy and our flag the proudest and best of them all?" (Applause.)

The President: The next paper on the programme will be "Paving Brick, Sewer Pipe and Other Clay Products Used in City Improvements," by Mr. C. H. Stanchfield, city engineer, Watertown, Wis.

The Secretary: Mr. Stanchfield is unable to be present to-day. He has sent his paper, however, and Mr. Randall has very kindly consented to read it.

Mr. Randall then read the paper, as follows:

"PAVING BRICK, SEWER PIPE AND OTHER CLAY PRODUCTS USED IN CITY IMPROVEMENTS.

In taking up this subject I cannot expect to describe to you the process of manufacture of these different materials, for this is a matter which is a part of your business and not a part of mine. All that I can do or expect to do is to outline the properties which are desirable or essential in these materials, relying upon you to produce, in practice, the results desired. In the discussion of the clay products with which we have to deal in city work one's mind naturally turns first to the consideration of paving brick, as this material forms the largest and most important part of such products at the present time, and I am bound to say that of all the paving materials which have come under my observation good brick, all things considered, approaches nearest to the ideal street surfacing material when used in a climate as severe as that of Wisconsin, and unless some more desirable material is brought into the field, we must look to this material for so-called permanent street improvements. In the production of paving brick the first object to be accomplished is the rendering of the brick impervious to water and thus to frost, as the latter only invades material to its detriment, when the former is present. This property of imperviousness is also of greatest importance from a sanitary standpoint, which is one of the strongest arguments in favor of brick for paving purposes, as against wood or other porous material. To attain this end the clay must be capable of being vitrified to a degree approaching perfection without losing its form and be capable of being annealed to such a degree as to prevent chipping or breaking under the heavy traffic which it is the lot of most brick pavements to carry. But, above all things, the brick must be uniform in texture and hardness to insure equal and even wear. It is a deplorable fact that paving brick cannot be, or, at least, thus far has not been, produced in this State. The market is extensive and the financial returns of a plant able to produce the proper material would be far in excess of those from a building brick plant, and would at the same time be of great benefit to the citizens by rendering good street surfaces possible, without the great outlay which is now necessary on account of the distance which our brick must be transported.

About the same remarks as have been made in regard to the physical properties of paving brick will apply with equal fitness to sidewalk brick and tile, except that the process of vitrifying may not be carried quite so far, since the wear is less severe. About the greatest enemy to be encountered is frost, so that a brick which can be made impervious to water within reasonable limits, say not to absorb more than 6 to 10 per cent. of its own weight of water when thoroughly dried and immersed for forty-eight hours is most desirable for sidewalk purposes. A brick, if it complies with the above requirement, will naturally withstand all the wear which it will be called upon to endure, and will, therefore, be entirely satisfactory for sidewalk purposes. I am sure that such a brick can be produced from many of our clays with proper manipulation. Brick will necessarily have to compete with cement as a sidewalk material, and will have to be produced at a less cost than cement walk when laid, as it is the opinion of most property owners that the latter is more desirable as far as appearance is concerned, although when the safety of pedestrians is concerned brick meet with greater favor. With reasonable care in the removal of snow from brick walks the well-known slippery condition which is so common to the surface of cement walks will be avoided. When we take into account the progress which has been made in the manufacture of Portland cement within the past five years and the corresponding reduction in the selling price it is evident that brick for sidewalk purposes must be sold at a price much below the present cost of cement in order to compete with that material at its lowest figure.

Sewer pipe, being called upon as it is to resist the invasion of both moisture and gases, must even, more than the previously mentioned clay products, be impervious. In case of sewer pipe, however, this condition is reached in part by the process of salt glazing. This method of making the ware impervious is entirely satisfactory, as the interior of the pipe need not be vitrified further than to give it the strength necessary to resist the pressure which it is subjected to from without.

In municipal work drain tile are used only in underdrains, and as they are not called upon to carry much load, it is only essential that they be porous, true in form and burned sufficiently to prevent crumbling. Drain tile may be made of almost any of our good brick clays.

Another use of burnt clay which so far has not come into very great prominence in this country is in the building of roadways. It has been used more or less extensively as a ballasting material by some railroad companies where gravel and crushed rock are not available, and has proven very satisfactory and very reasonable in cost. It would seem that much of the impure clay, which is most desirable for this purpose, and which is now a menace to some of our yards, could be manufactured into this material. To this could be added the accumulation of broken bricks, having been previously crushed, and the whole turned into cash at a profit. At the same time the yards would be cleared of undesirable material and assistance given the movement for good roads, in which we are all interested, and, inasmuch as no expensive machinery or skilled labor is required in the production of this material, I hope we may expect the members of this Association to give instructions in this work to those having more direct supervision of our roads and streets, to the end that good roads may be built, even though the materials which we have heretofore believed necessary, viz., gravel and crushed rock, are not available. The impure clay, which renders our highways impassable, may be utilized for their improvement. As stated by Mr. Charles R. Keyes, in a recent issue of the Review of Reviews, this may be accomplished with no more expenditure of money and effort than is now put on country roads. Ballasting with burnt clay will produce in a dozen years a system of highways equal to any of those for which France has so long been famous. (Applause.)

Mr. Randall: I hope the gentleman does not draw his inferences as to the necessity of getting rid of waste materials and brickbats from the Milwaukee yards; I don't believe he does.

The President: We don't have any waste. I will take the liberty of calling upon Mr. Hinkley, of Green Bay, previous to Mr. Clas, for his paper on "Technical and Trade Literature and Its Value to the Clayworkers."

"TECHNICAL AND TRADE LITERATURE AND ITS VALUE TO THE CLAYWORKER."

When I consented to prepare an article with the above title, to be read before this meeting, I fully realized that it was a subject that I knew little about, and the attempt has only confirmed me in that opinion, but our Treasurer, Mr. Finnegan, told me that Secretary Buckley said one of us had to, and he would not, so there was nothing left but for me to try it.

J. W. Hinkley, Green Bay, Wis.
President-Elect.

My first impression was that literature had been more indebted to the clayworker than the clayworker to literature, and this was confirmed when I read that "on every brick that was made during the reign of Nebuchadnezzer it was his custom to have his name stamped, and that Sir Henry Rawlinson, in examining the bricks in the walls of the modern city of Bagdad, which is built on the borders of the Tigres, very largely of brick from the old ruins of Babylon, discovered on each brick the clear trace of that royal signature. His Royal Highness was at least indebted to the clayworker for having his name handed down to modern days in imperishable material, which distinction he shares with many other kings of Assyria and Egypt. And while it does not appear that any of these ancient clayworkers had a "technical and trade literature" in our meaning of the term, yet there are found painted upon the walls of tombs in Egypt, more than six thousand years ago, pictures of potter's wheels and the potters working with them. Also, pictures of the potter's kiln, which forcibly remind one of the advertising section of a modern trade journal. These pictures give us a good idea of how they made and burned pottery. The kiln was a tall, circular chamber of brick, with a perforated brick floor near the bottom and an opening for fuel in the side under the brick floor. The pottery to be baked was piled in the upper part of the chamber. The artist has left us in doubt as to whether he was advertising somebody's patent kiln in the hope of getting a job to build others, or whether he was the editor, trying to instruct his less informed brethren how to run the business, or whether it was simply to inform the world that the deceased made pottery. Probably the latter, but in the modern trade journal we have all three objects combined. Something like three or four thousand years after this Egyptian artist had illustrated the making and burning of pottery in his trade journal a Greek artist near Corinth made a picture of a kiln upon a potter's tablet, and this picture has been handed down through nearly thirty centuries to our day.

Those old clayworkers were conservative. I think I may say fully as much so the clayworkers of our own day. The Corinthian kiln differs from the Egyptian only in being covered over. Of course, that was some progress, but when we consider it took over three thousand years to make that much advance, we must conclude that "technical and trade literature" had a small circulation. Another reason for this opinion is found in the fact that the Greeks claimed the invention of the potter's wheel, and, according to Homer, various cities contended for the honor, although the wheel was in use by the Egyptians three thousand years before.

Such little "technical and trade literature" as has come down to us from the ancient clayworkers, either painted upon the walls of tombs or stamped or marked upon their clay products, shows that they knew not only the use of the potter's wheel and the potter's kiln in nearly the shape that we use them to-day, but that they attained a perfection in the art of glazing and enameling brick and other ware that has not been equaled in modern times. The trade literature of that time only suffices to let us know that this work was done; not how it was done.

The Romans, as well as the Greeks and Assyrians made brick and terra cotta. Inscribed tablets have been found in all parts of the Eastern countries which are practically books, and whole libraries of these are known, and if they have left no trade literature they have left a large amount of very valuable historical information, which is being gradually deciphered from them.

The Romans made great advance in the use of baked clay for all useful purposes, making bricks, roofing tiles, floor tiles, flue tiles, drain pipes, baths, and even coffins. Glazed pottery has been found in most of the countries occupied by them, and clay lamps were very largely used. Great numbers of Roman kilns have been found in various countries, but all are similar to the Greek kilns in use a thousand or more years before.

As we come down into more modern times we find but little more trade literature, clayworkers in general being inclined to keep their process a secret as much as possible. In 1671 an Englishman named John Dwight took out a patent for his special methods of making pottery and porcelain. Many of his receipts for porcelain exist and have been published. Since that date there have been many patents granted and much literature published for the benefit of clayworkers, but it has been mostly confined to porcelain manufacture, which is not of especial interest to us. Brickmaking by machinery seems to have developed in the last fifty years, and the literature of brickmaking is a product of the last twenty years. In the ninth edition of the Encyclopedia Britannica, published in 1888, the process of brickmaking by methods in use near London is described as follows: "The molder stands at a table or stool, on which is placed some tempered clay in front of him, a little dry sand to the right and left, a small tub of water with the strike in it, a brick mold and a stock board. The brick mold is a rectangular case of sheet iron without top or bottom, having the two sides strengthened with wood. The molder received from the clot molder (usually a woman) a piece of clay somewhat larger than a brick. Having sprinkled sand on the stock board he places the mold and dashes the clay into it with force, then pressing it with his fingers so as to fill the angles." And in the same connection we are informed that substantially the same method is used in France and Holland. In the end, however, this writer says that in recent years there has been great activity in the invention of brick molding machines, but that it is only in brickmaking on a considerable scale that they present any advantages over hand molding. The only guide to the date when this article was written is a description of some brick exhibited in 1874. In America some excellent brick were made by natives of Peru and Mexico, long before the advent of the Spaniards, and pottery and its remnants are found all over both North and South America. The date when this was made cannot be told, as burnt clay is indestructible and under ordinary conditions will last indefinitely. Less than twenty years ago Charles T. Davis, of Washington, D. C., put out a book, entitled, "A Practical Treatise on the Manufacture of Bricks, Tiles and Terra Cotta," and in the preface in his book he says: "The manufacture of bricks, tiles and terra cotta, as well as a consideration of the modern methods and appliances by which they are produced, has never heretofore been practically treated in any work." That being the case, "technical and trade literature," as applied to modern conditions of clayworking, has but a short history. He, however, tells us that the works of Ruskin, Street and others have revived the taste for ornamental and polychromo brick work, so extensively used as a means of external decoration in the highly ornamental architecture of Italy and Germany during the middle ages, until it promises to revolutionize the ecclesiastical and domestic architecture of Europe and America, and that the great advance that has been made in the manufacture of colored relief, molded and inteeglio bricks during the past few years now bids fair to rival the standard of earlier days. Much valuable information for the brick and tilemaker was contained in this book, and brickmakers who bought and studied it found it full of ideas that were a help to them.

There have since been a number of books published which are helpful to the clayworker, a very complete list of which will be found in the January number of Brick, and, perhaps, in other trade papers.

The Clay-Worker, of Indianapolis, was the pioneer trade journal. Its first number was issued in January, 1884, and the appearance of its editor leads me to believe that it is a prosperous publication. Other trade papers have followed, until the field is now well covered. The extreme modesty of the publishers of these trade journals and the diffidence that they display about commending their own work leads me to say for their benefit that any of them are well worth the subscription price, and that I have obtained from a single number information that was worth the price of a subscription for all of them. I think I can safely say that more real progress has been made in the methods of making brick and tile, and all clay products in the last fifty years, or, perhaps, I might say in the last twenty years, than had been made in fifty centuries before. Perhaps we do not make them so very much, if any, better, but we make them with much less labor. We make steam do the work of muscle, and may we not attribute very much the largest part of this saving to the general diffusion of information about labor-saving devices by our trade journals? And is it not a reasonable conclusion that the clayworker who does not read a trade journal will fall behind in the race?

(Applause.)

Mr. Randall: As a matter of fact, and for truth and history, I will make one statement in regard to the book of Mr. Charles T. Davis, which Mr. Hinkley mentioned. That book was not issued until nearly two years after the Clay-Worker was first started, so the Clay-Worker is really the pioneer publication in the interest of the clayworking art.

Mr. Joannis: The extreme modesty with which I was born prevented me from getting up until I was called, but I think, however, that there are one or two things which Major Hinkley touched upon which he did not fully explain, and, without any disrespect to his admirable paper, I wish to call attention to a class of literature too often not classed as such, namely, the admirable catalogues produced by our machine men. I think these contributions to clayworking literature are extremely valuable. The catalogue which you handle so carelessly when it is sent to you will, if you turn over its pages, reveal to you machines of every conceivable variety. Nevertheless you will simply glance at it, and, if you don't want to buy at that particular time, you will throw it into some old rack which is covered with dust, where it will remain until the next one comes around. Then you will fire the old one out to make room for its successor. I assure you, however, that a great deal of profit may be gained by the careful perusal of machine catalogues. The machines which these catalogues advertise represent hours of labor, thousands of dollars' worth of failure and experiment, and, finally, a triumphant success which enables you to prosecute your labors with pecuniary profit.

Another very valuable paper which we may consider for a moment is the literature issued by the government, the geological reports of the various States, the sheets which we get from year to year showing the annual increase in the production of the various clay products, and the enormous increase in the value of these products. I don't think there is anything which is so helpful to the clayworker as to see that there is general and increased prosperity from year to year, showing that this literature has a reason for its being. It is a reflection or mirror of your efforts. That is another feature of clayworking literature.

The President: The next subject on the programme will be "Clay Building Materials from the Standpoint of the Architect," by Mr. A. C. Clas, of Milwaukee.

Mr. Clas then read the following paper:

"CLAY BUILDING MATERIALS FROM THE STANDPOINT OF THE ARCHITECT."

The title of this paper implies that my remarks will be from a practical rather than scientific standpoint.

Brick architecture may be made to possess great beauty. Burned clay can be molded into shapes as elegant and as artistic as can be carved in stone, and the various colors which it is easy to impart to brick or terra cotta may be used to form mosaics of the most beautiful pattern.

Terra cotta or brick architecture has been traced as far back as 400 years before Christ, and fine examples of that time exist to-day in the Louvre, and British and Berlin museums; also many places in Italy possess fine collections. Some of these examples show beautiful reliefs, which appear to have been largely used for decorations of flat surfaces of walls, pilasters and friezes.

The Greeks adapted terra cotta on a large scale for architectural ornamentation. Many fine examples have been found at Olympia and other places. It was generally used in the construction of the cornices, which were blocked in stone, and veneered with molded terra cotta plaques, which were tightly fitted around angles and corners.

In the first and second centuries A. D. the Romans copied the Greeks closely for their statues and architectural ornaments.

Terra cotta was used extensively in the fourteenth and fifteenth centuries throughout Europe for architectural purposes, in a most elaborate and magnificent manner. Of late years it is being used more or less all over the civilized world, and we are constantly taking more and more advantage of the opportunities it affords. Why employ stone when we can with greater economy make use of a material which offers so many advantages—facility in transportation and handling? Its durability, its dense texture, the opportunities for colors, and its smooth surface make it especially suitable to an atmosphere filled with acids and soot.

Why, in our buildings, should we forego the use of glazed terra cotta? The architects of the renaissance in Italy and France did not hesitate to employ such materials, which are economical as well as decorative.

Brick is one of the elementary materials which is used, perhaps, more than any other. The growing scarcity of wood will make a still greater demand for brick and terra cotta, and the manufacturer will in consequence have to extend and simplify the manufacture in order to promptly meet the increasing demand at prices which will allow of their being used more generally.

There is no question but that in many localities in our State clay occurs from which terra cotta may be made, that possesses all the necessary qualities, although one of our largest firms of terra cotta manufacturers in the West say that they have received a great many samples of Wisconsin clays, none of which have proven satisfactory. The great difficulty to be overcome in the making of terra cotta is the uncertain shrinkage of the clay and warping which is so liable to take place when it is made in large pieces. To obviate this as much as possible different clays are mixed together, then ground glass, pottery and ofttimes sand is added. Clay which is fit for terra cotta must be plastic and have sufficient tensile strength in its raw condition to avoid cracking during its drying process. Terra cotta must be comparatively pure and uniform, and have a capacity for resisting heat.

There is no reason why tile cannot be manufactured in Wisconsin. It is made of somewhat the same material that ordinary bricks are made of, with the exception that the clay must be ground finer. Encaustic tiles are also made from ordinary clays and marls, carefully prepared—sometimes mixed with finer clays and different coloring substances.

The fact that numerous tests have been made and pronounced lacking in merit does not necessarily mean that we do not have clays that are in every way suitable for the manufacture of tile, terra cotta, roofing tile, etc.

Perhaps one reason why we have no terra cotta or fireproofing plants in our State is because the use of brick has been so great in the past few years that it has kept our manufacturers busy supplying the demand. Let us hope, however, that capital may be invested in the near future in the manufacture of other clay materials besides brick.

The value of terra cotta shipped into the State in 1901 will aggregate $195,000.

The amount of fireproofing shipped into Wisconsin will easily run to 12,000 tons. The face brick shipped in 1901 into Wisconsin will total 1,250,000 and the average cost of said brick is about $21.50 per thousand f. o. b. destination.

(Applause.)

The President: The programme committee for the banquet has tried to give you something that will fill you to the extent of your mental capacity. The local committee will undertake to fill you physically to-night to your capacity. That is, you gentlemen; we recognize that we have some whom we cannot fill. We tried at Madison to fill one gentleman, but we could not, but the most of us, we think, will be well supplied. I don't know whether the local committee feels competent for the task of filling that individual to-night or not. We suppose, of course, you will all be at the banquet. We want to meet you, and around the board to-night we shall sing songs and tell stories and exchange the good feelings of the hour, and we are going to adjourn early so as to give you a good opportunity to get yourself in readiness for that occasion. We possibly shall have to call your attention to the hour of opening our session tomorrow, for you might forget it when the morning comes unless you all have a programme so that you can keep that in mind.

The banquet on our programme is for 7 o'clock, but you won't get at the tables at that hour. It will be about 8:30. If you can tell stories and if you can make it interesting for the machinery men and trade journal men and yourselves from now until that time, we will guarantee that you will have enough to eat later. We believe that the period of suffering which must be endured from now until then will be fully repaid by the feast that is in store.

The convention then adjourned.

—Fourth Session.—

Thursday, Jan. 29, 1902, 9:30 A. M.

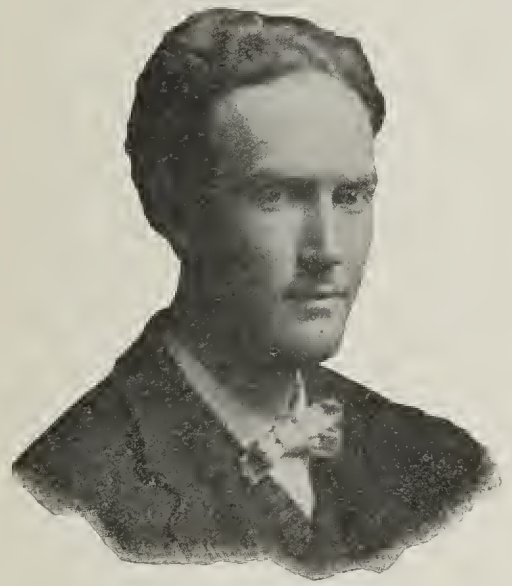
Called to order by President Drake.

The President: They say that after a battle it is the veterans that show up first; those that are used to the hard usages of warfare come in first; after that the raw recruits come in. You must all be veterans in entertainments such as last evening, and so you are on hand first.

The first number on the programme this morning is by our Secretary, Mr. E. R. Buckley.

"WISCONSIN CLAYS AND SOME OF THEIR CHARACTERISTICS."

Mr. E. R. Buckley: I have prefaced my discussion of the clays of Wisconsin with a few remarks as to the classification and charactertistics of clays, thinking that my discussion of Wisconsin clays might not be altogether intelligible unless I explained myself before beginning the discussion. So I have first to explain to you that the term clay as we ordinarily use it is applied to any earthy substance which contains a moderate quantity of kaolin, and which may be used in the manufacture of clay wares. In a general sense clay contains a great variety of minerals, and usually has a very complex composition. The composition of clay is even more complex in many cases than the composition of the rocks which compose the exterior portions of the earth's crust. Clay consists primarily of an aggregate of minerals, and if we analyze the composition of the clay still further we find that each individual mineral is composed of an aggregate of elements, of elementary substances. All of the material substance of the earth can be resolved into elements, and thus, if we analyze clay we can resolve it first into the great in the past few years that it has minerals of which it is composed, which minerals can be mechanically separated one from one another. Then, if we take the individual minerals, we can by chemical means separate them into chemical constituents or elements. So we frequently have in any investigation of clays two kinds of analyses, one of which has for its object a determination of the minerals which together compose the clay substance; and another which shows the various elements of which the clay is composed. We speak very inaccurately of the content of aluminum, content of calcium, content of magnesium or content of potash, soda and iron. These various substances, these various elements, speaking more correctly, are combined one with the other to form minerals. This aluminum, oxygen and silica are combined chemically to form the mineral which we know as kaolin, etc., and kaolin is the mineral which in the strict application of the term is clay. When we speak of pure clay we mean clay which consists of one individual mineral, and that one individual mineral alone is kaolin, and kaolin is the white clay, such as is used in the manufacture of the finest kind of porcelain.



SECRETARY E. R. BUCKLEY, PH. D., Rolla, Mo.

The clays as they are found in Wisconsin do not consist of a single mineral, but of a great variety of minerals. And so, if I wanted to burden you with a lot of difficult names to remember, which I am sure my friend Finnegan would object to, I would tell you that the clay which you are working in various parts of the State consists of various admixtures of kaolin, which is the essential constituent of clay, quartz (which you ordinarily know as sand), feldspar, calcite, dolomite, hematite, magnatite and ilmenite, and many other varieties of minerals. If we desire to have a thorough understanding of a mass of clay, that is, if we care to go to the very bottom of the subject and investigate clays, so that we may know and give a cause for every condition which presents itself in the manufactured product, we should know the percentage of each one of the minerals which constitutes a part of the clay; we should know the composition of those various minerals, and know how the associated minerals or the group of minerals which are found in the individual clay; we should also know what becomes of the minerals when they are subjected, under definite conditions, to various degrees of temperature, both in drying and burning. These are the problems which confront the man who investigates the subject of clays. In order to understand the reasons for different percentages of shrinkage in different brick, and in order to know the cause for the warping and frequent cracking of the brick, on the yard, we must know and understand each of the individual minerals, and understand how they are affected when the water which you have added to the clay is driven off by heating. Now, it is not expected that the brickmaker or the manufacture of clay wares will devote his time or can devote his time to a study of this part of the subject, and, as I have said before, the clay manufacturer can only take the results of some person who has devoted his life and his constant attention to this work and then apply them to the manufacture of his clay wares.

If you investigate more broadly the department of ceramics, of which brick manufacturing is only a small part, you will find that the manufacturer of the best wares, of the finest art works, of porcelain, and of all kinds of fancy pottery, must go back to the standpoint of the man who investigates clays from a scientific basis and understands the chemical and mineralogical composition of the clays, as well as the way in which they behave under different conditions of drying and burning.

It may be interesting to you to have me tell you something in regard to the origin of clays. I am very certain that many of you are familiar with this subject, but it will do no harm for me to make an attempt to place before you in a somewhat systematic manner the origin of clays. In this connection I will say that all clays, whether they occur along the lake shore, along some stream channel, yonder in central Wisconsin, in the vicinity of Eau Claire in the form of shales, or at Stockbridge and Oakfield in the form of shales, no matter where they occur, they are the result of breaking down, the decomposition of igneous rocks, rocks which have been formed from molten material, solidified within or at the surface of the earth. It is supposed that all the earliest rocks formed were of igneous origin. We have two classes of rocks, the igneous and the sedimentary rocks. The sedimentary rocks have been derived from the igneous rocks, largely through the mechanical breaking down of the latter rocks; and thus the sedimentary rocks, sandstone, limestone and slate which cover a large part of Wisconsin are often spoken of as secondary; simply meaning by the term secondary that they have been derived from some other rock. If this should be carried still further, it might be said that the clays are sometimes tertiary rocks. They may be either tertiary or secondary, depending upon whether or not they have been derived directly from the igneous rocks. If they have been derived directly from the igneous rocks, they will be secondary, and if they have been derived by the breaking down of the sedimentary rocks may be known as tertiary. In this connection I speak of the clays as rocks from the fact that scientifically any accumulation of mineral matter, whether solidified or not, comes in under the head of the term rock, that is, the scientific application of the term rock.

Clays may be conveniently divided into classes, known as residual and transported.

A residual clay is one that results from decomposition of a rock in place. Take, for example, a thousand acres of land in the northern part of Wisconsin, covered with naked rocks, and let it be subjected to the atmospheric agencies for an indefinite term of years, and you will have the rocks broken down into a loose earthy mass. The rain water seeps into the rock, and the breaking down of that rock simply means that certain constituent elements are separated from the minerals which compose that rock and are carried off by the underground water. That part of the rock which remains is known as a residual clay, provided the rock originally contains the clay constituent.

In a great many cases the small particles that have been broken from the different rocks which cover the surface of the earth are picked up by the water which flows off from the surface, carried into the streams and by them into the oceans, lakes or flood plains of the streams, and there deposited. These particles are sorted out according to their size and specific gravity, particles of like size and the same specific gravity being accumulated in one place. Thus we have accumulations of sand, gravel and clay, as a result of transportation. These are deposits formed of the products of the breaking down of the rocks that have been carried to some distant point and there deposited.

There it is that we distinguish two classes of clays, based entirely upon their origin, the residual clays, which result purely from the decomposition of the rocks in place, and transported clays, those which have been carried away and deposited in a new locality.

We have representatives of both of these classes of clays in Wisconsin, and I will attempt at this point to give you some illustrations of these classes of clays as they occur in Wisconsin. I am not going to subdivide this classification, because you would not carry it in mind, and it would be of no importance to you.

The residual clays are best represented in Wisconsin in the southwestern part of the State, the portion which is represented by the purple color on the map which is hanging before the window. The residual clays are also indicated—the irregular green colored area in the central part of the State. The residual clays in these two sections of the State differ very materially in their characteristics. I do not wish you to infer from this that in these two sections transported clays do not occur, because the two kinds of clay often occur associated with each other. I simply mean by this map that the predominant clays of any value in the areas indicated are residual. Our friend Mr. Ringle, of Wausau, is working mainly a residual clay, and our friend from Grand Rapids, Mr. Hamilton, and Mr. Bright, from Black River Falls, these men are all working residual clays. The residual clays of this area, as I have said, differ very materially from those in the southwestern part of the State, and if we go to Platteville we will find Mr. Grindell working a very different clay, and yet it is residual clay.

Now the question arises as to what causes the difference in the composition of the residual clay in these two different sections of the State. The composition of the residual clay depends upon the composition of the rock which immediately underlies that clay, and from which it has been derived. We find that in the southwestern part of the State the predominant rock is limestone, although there are areas of sandstone throughout that entire region. Limestone does not consist entirely of calcium and magnesium carbonate, but is composed of calcium and magnesium carbonate combined with iron oxide, quartz, kaolin, potash, soda and other minerals. Through the decomposition or breaking down of the limestone rock, which predominates in that section of the State, the calcium and magnesium are taken into solution and largely removed. Calcium and magnesium are the two elements which are most readily taken into solution. These are removed, leaving behind a mixture of kaolin, quartz, iron oxide, potash, soda, a little titanium and some manganese, in various proportions, constituting the residual clay of the southwestern counties of the State.

In contradistinction to the clays of this southwestern region there are the clays of the central portion of the State, which are indicated on the map by the green. Here the underlying rocks are what I have explained to you as the igneous type, ordinarily known as granites, although they consist of a great variety of igneous rocks. These are primary rocks, and they contain greater percentages of kaolin than the limestones in the southwestern part of the State. In some areas in this central region they contain a large percentage of iron oxide, and the quartz, iron oxide, kaolin, potash and sodium content varies with the different varieties of igneous rocks. Thus, when we have two feet of rock decomposed in the central part of the State, we have resulting therefrom a clay which contains, as a rule, a greater quantity of kaolin, and a clay which is more liable to contain a greater percentage of potash, soda and iron than that which results from the limestones in the southwestern part of the State.

In each of these cases, however, we can excavate through the clay down to the rock, finding, as a rule, as we go down that the rock becomes less and less decomposed until it is hard and insufficiently decomposed to be utilized in the manufacture of clay wares. Those are typical examples of residual clays that occur in Wisconsin.

I do not think that it is necessary or appropriate for me to give you a chemical analysis of these clays. I omit this out of deference to Mr. Finnegan again. I will say, however, that in the little report which I have issued on Wisconsin clays and clay industries these analyses are given, and you can have access to them any time you wish by requesting for a report.

I will say, however, that the clays or shales of the central region very often have a percentage of aluminum as high as 21 per cent., something which is unheard of in the residual clays in the southwestern part of the State, where the aluminum does not exceed 13 or 14 per cent.

The fact that these clays in central Wisconsin contain such a high percentage of aluminum makes them stronger than those in the southwestern part of the State.

Let us turn for a moment now to the transported clays, which are perhaps the most important source of material for the manufacturer of clays in Wisconsin. First, however, I must explain that at one time the entire northern, eastern, southeastern and southwestern portions of Wisconsin were probably covered with residual clays, resembling very closely those which are found now in the southwestern and central parts of the State. And, if I should go further into ancient history, I would tell you that after this decomposition took place the country was visited with an enormous ice sheet, and the residual clays which occurred in the northern part of the State and throughout the eastern and southeastern portions were removed—were simply swept from the surface of the rocks and carried away. All the results of this early decomposition were practically removed. So we find throughout the area which is indicated by the pink and brown on the map, throughout this vast region, we find no residual clays which are suitable for the manufacture of clay wares, all the important deposits being the result of transportation and known as transported deposits.

I will now call attention to this region which is indicated by pink on the map—this great north central region of Wisconsin. Here we find clays which are the result of the transportation and melting of ice. The ice carried material in its body in a manner in many respects similar to the way in which water carries sand, silt and gravel, and we have great thicknesses of deposits, resulting from the presence of the ice sheet. We also have in this region old stream channels in which the water which came from the melting glacier deposited great thicknesses of clays. Following the incursion of the ice sheet the country was very largely covered with water, and the stream channels were flooded. Along these stream channels we find in various places considerable deposits of clay. These deposits can be examined at Tomahawk, Medford, Whittlesey and many other localities. So we have two kinds of clays being worked in this great central region, two kinds of transported clays—those which have been deposited by the ice and those which have been deposited by the water.

What is the difference between these two clays? The ice alone was a very good transporter of clays, but not a very good assorter; that is, the ice does not have the capacity of sorting and rearranging the material, depositing the fine particles in one place and the bowlders, pebbles and gravel in another. So where the brick manufacturers in north central Wisconsin are working what are known as ice deposited clays we find them shoveling around bowlders, which they are obliged to leave in the fields or carry away. They shovel the clay from between the bowlders and if you should take a trip through that section of the State you will find quite a number of yards mining their clay from a bed of two three feet at the surface, and shoveling it from between the bowlders which were deposited by the ice. We find an entirely different condition of affairs when we go to Menominee or Tomahawk, where the clay has a thickness of 40 or 50 feet. The deposits, however, were formed by the rivers, in which the sediments had been assorted and from which the bowlders, gravel and other fragments had been removed. Through this region we find an abundance of very excellent stream deposited clay.

The stream deposits of this region differ very materially from the deposits which are found along the streams in other parts of the State. The reason for this is found in the fact that the source of the materials were different. Throughout the central region the clay materials have not been derived from limestone rocks, but very largely from granite rocks. These rocks have contributed very small percentages of calcium and magnesium to the clays, so little that the men who are working in the central and north central part of Wisconsin are not troubled with the excessive temperature required to burn the calcium and magnesium clays of the lake region.

We find, however, that in this region throughout central Wisconsin, the clays contain a considerable percentage of iron oxide, and that nowhere is it possible to burn a cream-colored or white brick. The igneous rocks from which the clay is derived contain a considerable percentage of iron oxide and a very low percentage of calcium and magnesium, and the two are combined in such proportions in the clays of the central region as to permit the burning of only a red-colored brick. As far as my experience goes the cream-colored brick manufacturers of Wisconsin need never have any fear from competition in the cream-colored brick business from the brick manufacturers of that section. I would make an exception to that rule—perhaps in the region which is colored green on the map, where the white clays occur, a white brick may sometimes be manufactured. But in this case the white color of the brick will not be due to the presence of high percentages of calcium and magnesium, but to the absence of iron, the freedom of the clay from iron oxide.

Turning our attention to the eastern and southeastern portion of the State, we find a region where glacial action has been very pronounced, and in which transportation and assortment by the rivers and lakes have been very active. The source of the materials which constitute the clays in this portion of the State is the same as it is in the southwestern portion. The clays have been derived from the limestones which occur throughout the eastern part of Wisconsin, but they have been derived in a different manner. They have not resulted from decomposition of the minerals which compose the clay, with the removal of the soluble constituents; but they have been the result of the mechanical breaking down and pulverizing of the rock. The clay resulting from the disintegration of limestone has been mixed with materials brought in by the glaciers from the north. The limestone has been broken down into small particles, resembling fine sand or silt, and this limestone powder has been mixed all through the clays which occur in the eastern and southeastern portions of Wisconsin. The limestone has been broken down mechanically, and not chemically. It is for this reason that the clays in the southeastern and eastern portions of the State contain by analysis such large percentages of calcium and magnesium.

At the close of the incursion of the ice sheet it is supposed that the entire eastern portion of the State, the portion which is indicated on the map by the dark brown color, was completely submerged by an extension of Lake Michigan. It is also supposed that the rivers which flowed into Lake Michigan and into Green bay were very greatly extended, that the stream channels were filled with water, and that in these quiet estuaries of the rivers and along the shores of the lake were deposited the clays which are now being worked by the brick manufacturers of the eastern part of the State. The clays which occur at Manitowoc, Port Washington, Sheboygan, Milwaukee, Racine and Kenosha were all deposited in water which at one time constituted a part of Lake Michigan. The clays which are being worked at Merrimac, Jefferson, Endeavor, Burlington and Edgerton were deposited in the estuaries of the streams which flowed to the east and southeast. Thus it is that these great thicknesses of clays, composed of material resulting from the disintegration of the limestone mixed with decomposed material brought in by the glaciers from farther to the north, have been formed.

There is only one other area in the State which I need to call attention to, and that is the region indicated by the brown color in the northern part of the State. Not only was Lake Michigan extended during the close of the glacial period, but Lake Superior likewise covered a larger territory than it does at the present time. Consequently deposits of clays were formed, which are similar, in many respects, to those which occur along the shore of Lake Michigan. The important difference, however, is this, that the clays were not as thoroughly assorted, the pebbles were not as carefully removed from the clay deposits as they have been in the eastern and southeastern portions of the State. It is consequently a much more difficult matter to find a workable deposit of clay in this region which is free from the limestone gravel. The limestone gravel in these deposits came from the northern peninsula of Michigan, and perhaps further to the north, where deposits of marble occur. The breaking down of the marble by the glaciers to the north and northeast has contributed calcium and magnesium to these deposits and made the working of them a very difficult matter.

There is still another small area which, I think, I should mention in this discussion, and that is the little area indicated on the map by light green, situated in the eastern part of St. Croix county. At this place there is a deposit of pure white clay extending in patches over an area twenty-five miles long by twelve wide. I have examined numerous deposits of clay in this region, which are pure white, containing practically no iron, very little calcium and very little potash. These deposits are unique and exceptional, but the explanation of their origin I prefer to leave until another time. I know that they come under the head of transported clays, and, I think, it is very probable that they had their origin in the decomposed granitic rocks which occur north of the area in which they are found at the present time.

I might say, with reference to this kaolin, that it has been tested not only by the Geological Survey, but also by porcelain manufacturers, and these tests indicate that it is one of the very best clays that is found anywhere in the United States; that it is a superior clay for the manufacture of porcelain and the very finest kind of art wares. The clay has been used, as you know, in the manufacture of paper, where the very highest grade of clay is required. Until recently the paper manufacturers of Wisconsin imported their clay, thinking that the home product was not sufficiently pure for that purpose. But now conditions have changed. If the clay is suitable for the paper manufacturing industry this is in itself prima facie evidence that it is a clay sufficiently pure, as far as chemical composition is concerned, to be utilized in the manufacture of porcelain ware.

I wish to say a word or two with reference to the future possibilities of the clays of Wisconsin, as they have presented themselves to me from the little study I have given them. The clayworking industries of Wisconsin, I am happy to say, are looking forward to the time when they can manufacture something outside of a building brick, that there are financial interests in the State ready to take up the development of any clays in the State which have been demonstrated to be suitable for the manufacture of other clay products. We were informed yesterday, in the paper which our friend, Mr. Clas, read, that there are great quantities of building materials imported into Wisconsin, none of which are manufactured in this State. That the question as to whether these clay products can be produced economically and with success in this State should be investigated there ought to be no question.

Perhaps the only question which has come to me more than any other, is the question of the manufacture of paving brick. I have had a great many inquiries from brick manufacturers and from people who are interested in the development of the resources in this State, as to whether there were deposits of clay in Wisconsin which could be utilized for the manufacture of paving brick. Along with paving brick, of course, come the manufacture of sewer pipe and other vitrified wares, such as electrical conduits. I wish to say, in this connection, that I do not anticipate ever having the pleasure of seeing a successful paving brick plant, as now understood, established in the eastern or southeastern part of Wisconsin. I think that any one who has taken the time or had the opportunity to investigate the characteristics of the clays which are being used throughout the United States for the manufacture of vitrified wares will concur with me that as far as the present state of knowledge goes throughout the country, there is not the least probability that vitrified brick or sewer pipe can be manufactured in the region which is represented by the brown colored part of the map in the eastern or southeastern part of the State.

If I were to offer a suggestion to you I would ask you to relieve yourselves of serious thought along this line—turn your attention to the manufacture of wares which do not require vitrification. Give your attention to drain tile, brick and earthenware products, many of which are not manufactured at the present time in Wisconsin, and the manufacture of building blocks. Direct your attention into those avenues which experience throughout the country has shown that calcium clays are suitable for. Do not devote your time to experiments along those lines in which experience has shown such investigation to be practically without compensation.

In the southwestern part of the State the clays differ somewhat in general characteristics, but as far as my experience goes I have not found in this region a clay which corresponds in its characteristics to the clays and shales which are manufactured into vitrified wares in other sections of the country. I might say, speaking scientifically, that the aluminum content is too low: a 13 to 14 per cent. of aluminum in the form of kaolin is not sufficient to manufacture a first-class paving brick, and I am sure that no one in Wisconsin would care to undertake an enterprise in which they could not turn out the very best product that could be placed on the market. With the rigid inspection which is now given to wares of this kind, which are required to withstand the inspection, not only of the engineer of the city, but of every man, woman and child that passes over the thoroughfare, no man can risk his money or his capital in an investment the success of which is questionable. You who live in the region marked with the purple color, to you, also, I would say turn your attention to some other avenue.

In the central region, which is represented by the pink, the characteristics of the clay approach more nearly that which is required for vitrified wares, and yet there is still the question whether an amount equal to 15 or 16 per cent. of aluminum is sufficient for the manufacture of this kind of wares, and if I were to give an opinion on this region I would say that as far as our experience and investigation goes (and it has not covered that entire region by any means—there are thousands and thousands of acres of land that have never been examined, about which very little is known)—I say as far as experience goes, the clays do not offer the ideal characteristics for the manufacture of these kind of wares. The same may be said in respect to the region bordering on Lake Superior.

The only region which I have in mind today which offers possibilities for the manufacture of vitrified ware is that in the central part of Wisconsin. This region, which is known as the kaolinic shale region of central Wisconsin, contains clays which correspond not only in their chemical composition, but in their physical characteristics, to the clays which are used for the manufacture of vitrified wares.

West of these shales occur a few deposits of plastic clay, which also have physical and chemical characteristics of the clays which are used in the manufacture of vitrified wares.

I want to discuss a step farther this subject of the manufacture of vitrified wares. I want to call your attention to the full problem. You must take into consideration the problem of fuel when considering the establishment of plants for an industry of this kind. When you have once found a deposit of clay or shale which is suitable in all respects for the manufacture of vitrified wares, you must then carefully consider, before erecting your plant, the cost of operating and the cost of burning the clays. I would caution you about doing as one of our friends did in Menominee. He erected a plant, constructed his kilns, bought his machinery, and when it was completed found that he didn't have enough clay to run the plant. Such mistakes seem absurd, and yet they are common.

I have taken more of your time than I had expected to, and am going to close this paper. I could talk to you from now until this afternoon on this subject, but know that you must be getting bored. I regret very much that my knowledge of Wisconsin clays is so limited. I feel that it is limited; that there is an exceedingly important field in Wisconsin for further investigation; that the investigation of the clay resources of Wisconsin has only begun, and that none of us—not I myself—are capable of contemplating the future development of Wisconsin clay resources.

Because I have cast a shadow of a doubt on the possibility of manufacturing paving bricks and sewer pipe out of the calcium clays does not mean that there are not many different avenues in which these clays can be used. You do not know, you manufacturers of eastern and southeastern Wisconsin, the uses to which the calcium magnesium clays can be put. They are many and varied, and it behooves you to look forward to a time when you will have, alongside your brick plants other structures manufacturing different wares out of the same clays.

I thank you very much. (Applause.)

The President: I want to express, on behalf of the Association, our appreciation for this able work that Prof. Buckley has given us. It surely gives us somewhat of an idea, as far as we can grasp it, of the immense possibilities that are before the clayworkers of this State.

—Question Box.—

The Secretary: I should judge, from the number of questions which I have received, that no one is having any difficulty in the manufacture of clay wares in Wisconsin; that every one is satisfied, and that things are moving on perfectly. I have one question which was sent to me. The gentleman who sent the question is not present, and I don't know that it will be of any value to attempt to answer the question; however, I will place it before the convention.

"As the time of the convention is near, and I have a question to ask, I write you. I was bothered last summer with the molds; couldn't get the mud to slip out. I was bothered with the brick cracking on the yard, and the only way I could stop it was to use lots of sand, but I was afraid the sand would make the brick tender. Now I would like to know how it is best to handle sand to get best results and best quality of brick."

This is from Mr. Post, of Spring Green. Mr. Post is working a residual clay, which is covered with about a foot or a foot and a half of black humous soil at the surface. He has been mixing about a spadeful, I think, of this black soil with a spadeful and a half or two of his clay, as near as I have it in mind. He dries his brick in hacks on the yard and burns them in scove kilns. The question which he has asked is, how can he prevent the clay from sticking in the molds and how can he prevent the cracking of the brick in drying? As far as the matter of molds is concerned, I am not competent to answer that question. I think, perhaps, it is very probable that his molds are not properly constructed; they may not be properly cleaned, or his sander may not work properly, although I think that his molds are sanded by hand. Regarding the cracking of the brick on the yard, I attribute that very largely to the mixing of too much black soil with the clay and to the manner of drying. I think that these are the two main reasons for his brick cracking as they do. If any one else has anything to say with regard to the character of the molds we would be glad to hear from them. Some one may also have some suggestions with respect to the cause for the brick cracking while drying.

Mr. Finnegan: I would like to help him out, but the only way I could fix him up is to move him into the Fox River valley and let him move the whole business up there, and we will go right around to his yard every day and help him out.

Mr. Chase: I think it has been the experience of a great many brick manufacturers to have difficulties in getting the brick out of the molds at times, and I think in a number of cases it is largely owing to the quality of the sand that is used for sanding the molds. If we should use at our factory a gritty sand, or anything like the lake sand found here, we could not begin to get them to slip. We use a very fine, soft sand, almost like flour, and with that we get our brick to slip readily out of the molds. It may be that this gentleman has the same difficulty, and it may be attributed to the same cause. So far as cracking is concerned, that may arise from improper pulverizing of the clay; it may be caused from small, hard lumps that have not been soaked. If he uses a pug mill he may be able to overcome this difficulty by thoroughly pulverizing his clay. I think these are two difficulties with which we have had more or less experience in our Milwaukee clays.

Mr. Ringle: The slipping part may be remedied if they have sufficient sand, so that the mold is very easily taken off, and you will find that these don't crack; there are others which will be badly cracked.

Mr. Sanborn: I will say that was the trouble we had years ago with the machines from New York. The brick would not slip, and we were finally compelled to throw out the machines. We used the same sand which we now use in hand molding. In our case the trouble was certainly not with the sand, but we were never able to determine just where the trouble came in.

President Drake: We will now hear the reports of committees.

Mr. Randall: Your Treasurer tells me you have more money than you know what to do with; that it is a burden to him; so I will suggest that you (the Association) assume the cost of the stenographer's report, furnish a copy to each trade paper, and the one publishing the convention report in pamphlet form submits a proof of same to the Secretary for revision before its publication, just as we did last year.

After considerable discussion the matter, on motion of Mr. Hinkley, was left with the Executive Committee.

—Report of Committee on Nominations.—

Mr. Finnegan: I have the honor to say to you that the men we picked out are the best men in the State for the best clayworkers' organization in the United States, and your committee recommends their election.

For President—Maj. J. W. Hinkley, of Green Bay.

For Vice President—William Meadows, of Burlington.

For Secretary—Geo. J. Schwarz, of Milwaukee.

For Treasurer—J. G. Hamilton, of Grand Rapids.

Signed:
Wm. E. Finnegan, Chairman.
J. S. Fifield.
E. R. Buckley.

The gentlemen named were unanimously elected and duly installed.

—Report of Committee on Resolutions.—

Mr. J. B. Thierault, chairman, submitted the following report:

This committee reports that in view of the successful execution of the most enjoyable and helpful Convention it has been its lot to attend, that it be

Resolved, First, That the thanks of this Association be tendered to the brickmakers of Milwaukee for their most generous hospitality.

Second, That we express our sincere appreciation of the presence of the ladies at our banquet and the hope that future years may see an increase in their interest and attendance.

Third, That the Association tenders its thanks to its officers for the past year for efficient and conscientious service rendered.

Fourth, That the Association received with deepest gratification the cordial welcome of Mayor Rose to the Cream City.

Fifth, That the Association extend its thanks to the press of Milwaukee for the appreciative mention of the proceedings of our Convention.

Sixth, furthermore, That this Association desires to express, by a rising vote of thanks, its acknowledgment of the heavy debt of gratitude due to E. R. Buckley, of Rolla, Mo., for the excellent organization we now possess, and also its regret for the enforced transfer of Mr. Buckley from our beloved State to Missouri.

Seventh, That the thanks of this Association be expressed to all those who so efficiently aided in our evening's enjoyment.

Eighth, That this Association hopes that the members who have traveled so far to meet with us will do all in their power to swell our numbers at the next annual convention.

(Signed) J. B. THIERAULT, Chairman;
A. W. HILKER,
J. W. BROWNRIGG.

Moved and seconded that the resolutions be adopted.

Motion carried.

The President: After we have adopted the report that brings with it the rising vote of the Association for the sentiment that is in all of our hearts, and that is expressed in the resolution, I know that anything that we can do and the only thing we can do, and that which will be appreciated most by our brother who, during the last few years, has worked so efficiently for the clayworking industries of this State, is to give him this expression of our appreciation of his labor, and that as years come and go and he is enforced to be absent from us in the State, he may carry this with him: that in the hearts of the brickmakers of the Badger State he holds a near and dear place, and I ask you all as a testament to him to arise.

The convention then arose.

Mr. Buckley: Mr. President and Gentlemen—I am much more capable of discussing the clays of Wisconsin than I am of expressing the feelings which come to me from such a testimony of appreciation as that which has just been passed by this Association. I can simply reiterate what our President, Mr. Drake, has said: that I can receive no better pay, that nothing gives me greater pleasure and satisfaction, and there is nothing that will abide with me longer or give me greater pleasure in the years to come than a knowledge of the fact, so eloquently expressed in this resolution, that the feeble efforts which I have put forth in the investigation of the clays of Wisconsin have been appreciated by those in whose interest they were conducted.

The President: We will be glad to hear from our new President.

Major Hinkley: Mr. President and Gentlemen of the Convention—On account of the lateness of the hour, I will refrain from making any extended remarks, but I desire to thank you for the honor you have conferred upon me, and which I appreciate fully. I think it is an office, like that of the presidency of the United States, that should never be sought after or declined, and for that reason I accept with thanks. (Applause.)

The President: I think the Association would like to hear from our new Secretary.

Mr. Schwarz: Mr. Chairman and Gentlemen—When we first came into this room our chairman talked about veteran warriors—I think he must have referred to me. I think I have fought very hard for this office, and I don't think I ought to thank you. I think I have done it all myself. I think I canvassed every vote. However, seriously speaking, as inefficient as I think myself to be, I will endeavor to do all in my power to fill this office as well as I know how. I think you. (Applause.)

The President: We would be glad to hear from our new Vice President, Mr. Meadows.

Mr. Meadows: Mr. President, I have

simply nothing to say. I asked the convention one request, and they failed to grant it; now it is my turn. (Applause.)

The President: We will be glad to hear from our new Treasurer.

Mr. Hamilton: I can hardly find words with which to express my gratification to the members of the nominating committee and the members of the convention in electing me to the responsible position of Treasurer of this Association. I feel as if this office and the honor which accompanies it should have been tendered to some of the older and more active members of this Association. But since it is the wish of the Association that I should accept the position, I thank you for it and assure you that I shall endeavor to carry out the duties of the office to the best of my ability. (Applause.)

Mr. Finnegan: In picking out Mr. Hamilton we thought we ought not to give it to some of the older fellows. The old fellows know too much; the young men don't know any of the crooked ways of the world yet, and I will bet he will bring back every cent. (Laughter.)

The Committee on Time and Place of Holding the next Convention reported in favor of holding the third annual meeting at Green Bay, and it was so ordered after much discussion, the exact date of holding the meeting being left to the discretion of the Executive Committee.

The President: There being no other business, I now declare the convention adjourned, subject to the call of the Executive Committee at the time they may determine.

LIST OF MEMBERS WISCONSIN CLAY-WORKERS' ASSOCIATION.

W. E. Johnson	Augusta, Wis.
H. A. Nelson	Bristol, Wis.
William Meadows	Burlington, Wis.
W. H. Bright	Black River Falls, Wis.
C. S. Morris	Berlin, Wis.
B. E. La Dow	Chicago, Ill.
George H. Hartwell	Chicago, Ill.
H. S. Hopkins	Chicago, Ill.
H. De Joannis	Chicago, Ill.
F. S. Kenfield	Chicago, Ill.
J. Moroney	Chicago, Ill.
William Padget	Chicago, Ill.
Leader Mfg. Co	Decatur, Ill.
Charles Bishop	Council Bluffs, Ia.
J. B. Theriault	Chippewa Falls, Wis.
George F. Thompson	Eau Claire, Wis.
Royal Parr	Edgerton, Wis.
Loveland & Wade	Elroy, Wis.
W. M. Ellis	Endeavor, Wis.
H. G. Hass	Fond du Lac, Wis.
W. L. Haumerson	Fort Atkinson, Wis.
Syme, Baldwin & Co	Glenwood, Wis.
Wm. E. Finnegan	Green Bay, Wis.
J. W. Hinkley	Green Bay, Wis.
J. G. Hamilton	Grand Rapids, Wis.
T. A. Randall	Indianapolis, Ind.
C. & A. Potts & Co	Indianapolis, Ind.
Janesville Red Brick Co	Janesville, Wis.
J. C. Walsh	Janesville, Wis.
Kemmeter Bros	Jefferson, Wis.
F. E. Dickinson	Kendallville, Ind.
C. Brockenhauser	Kenosha, Wis.
T. Charles Tyson	Kenosha, Wis.
A. D. Stephens	Madison, Wis.
D. Stephens	Madison, Wis.
Stephen Bertler	Manitowoc, Wis.
Ed. Fricke	Manitowoc, Wis.
G. W. Kennedy	Manitowoc, Wis.
Lyons, Reese & Lyons	Marshfield, Wis.
J. W. Brownrigg	Merrimac, Wis.
Charles Burnham	Milwaukee, Wis.
J. Q. Burnham	Milwaukee, Wis.
Clifford Chase	Milwaukee, Wis.
G. J. Schwarz	Milwaukee, Wis.
E. W. Drake	Milwaukee, Wis.
N. Devaaler	Milwaukee, Wis.
James Drought	Milwaukee, Wis.
Henry Hermann	Milwaukee, Wis.
Emil Kraatz	Milwaukee, Wis.
J. D. Rowland	Milwaukee, Wis.
P. L. Youngren	Milwaukee, Wis.
F. Voigt	Milwaukee, Wis.
O. H. Zielsdorff	Milwaukee, Wis.
Fred Freese	Monroe, Wis.
Zerrener Bros	New London, Wis.
Ed. Brevold	New Richmond, Wis.
Otto Krauss	Plymouth, Wis.
F. L. Sanborn	Portage, Wis.
Samuel Guenther	Port Washington, Wis.
William Baumann	Racine, Wis.
A. W. Hilker	Racine, Wis.
H. A. Block	Rockford, Ill.
William Schmuhl	Rockford, Ill.
E. R. Buckley	Rolla, Mo.
A. Klemme	Sheboygan, Wis.
A. Zimbal & Son	Sheboygan, Wis.
Joest Ramaker	Sheboygan Falls, Wis.
M. J. Williams	St. Louis, Mo.
Illinois Supply and Construction Co.	St. Louis, Mo.
W. E. Jeannot	St. Paul, Minn.
J. H. Duke	Tomahawk, Wis.
John Ringle	Wausau, Wis.
F. F. Weshner	Wautoma, Wis.
F. E. Swift	Washington, Ia.
L. H. Cordes & Co	Watertown, Wis.
G. C. Stoll	Wheaton, Ill.
Ben Truber	Wonewoc, Wis.

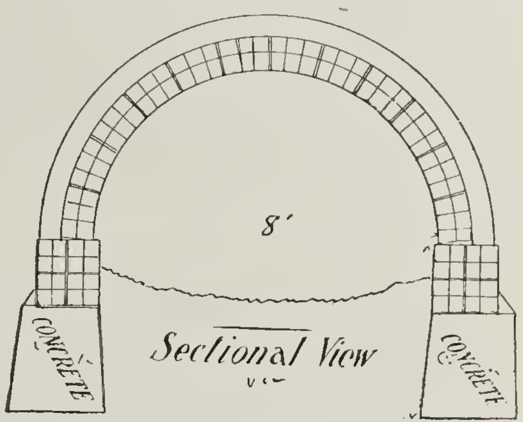
ROAD CONSTRUCTION.

HOLLOW BLOCKS FOR CULVERTS AND BRIDGES.

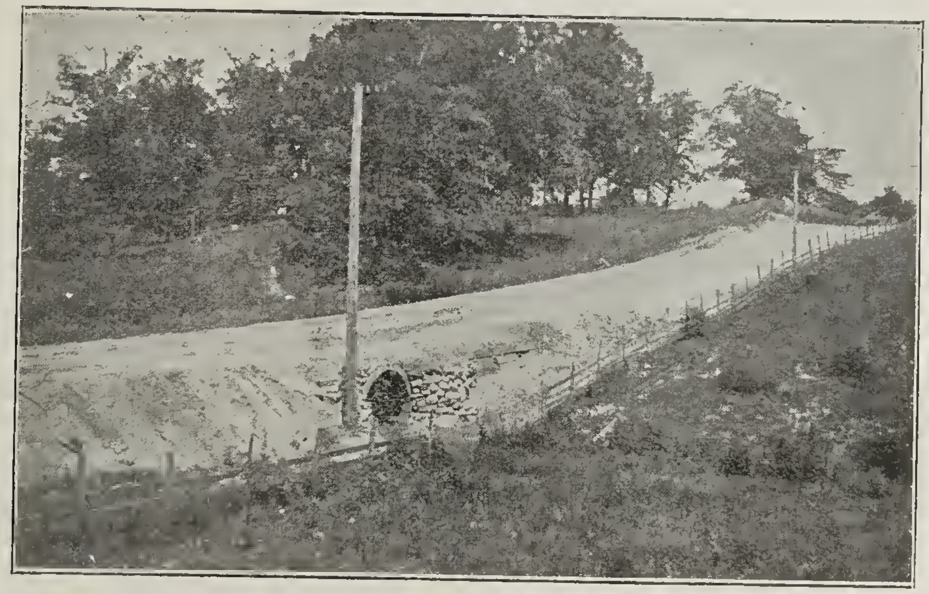
The use of hollow blocks of proper form and quality for highway bridges which are built upon the arch principle is now receiving the attention of highway authorities. A new company called the Block Bridge and Culvert Company has just been organized to build culverts and bridges under patents issued to B. L. Blair, of Indianapolis. Their attention will be given to railway, interurban, township and county bridges. The design of a culvert accompanying this article is intended for small streams and ditches, and is the one used by county and township officials.

The claims made for this bridge or culvert seem to be logical and well sustained by the hundreds of bridges built throughout the State of Indiana during the past five years. Sixty-three of these culverts are now in use in Marion county, Indiana. This culvert is made of a hollow block, vitrified, of the same material from which a paving brick is made. It will absorb no moisture, the blocks being laid in the best Portland cement mortar, one part cement to two of clear sharp sand, the same as sidewalks or cisterns are finished with. This mortar when set will absorb no moisture, and hence block and mortar are free from any deterioration from the action of the elements. It is therefore said to be equal in endurance to the best cut stone and much cheaper. Stratified stone or rubble stone is not to be compared with it.

While concrete arches are made and recommended by many engineers, their indorsement is only on perfect work, which is difficult to secure; on small jobs it is especially difficult. The points in favor of this construction may be enumerated as follows: The blocks are light, but strong, having a web which divides each block into four compartments. They are molded to fit an arch of given radius, and when laid in good cement mortar form a wall sufficiently strong for any bridge purpose. They are rapidly laid. The ends of the blocks exposed at the ends of the culvert are filled with concrete and mortar, making them complete and solid. When covered with earth like other road arches they form a lasting waterway. The cut shows a finished roadway and hollow-block bridge, as built in Marion county, Indiana.



Sectional End View of Block Culvert.



A Country Road with Block Culvert.

The improvement of the roads in all parts of the country is calling into use more permanent road structures. The difficulty of obtaining stone in many localities leads the road authorities to cast about for some serviceable substitute. This material is worthy a careful investigation by highway commissioners.—Drainage Journal.

OBITUARY.

Death of Henry Martin, a Pioneer Brick Machine Manufacturer.

One of the best known manufacturers of brick machinery in America, Mr. Henry Martin, died at his home in Lancaster, Pa., March 4, after a protracted illness, due in part to old age, the deceased being in his seventieth year.

Mr. Martin was born in Derbyshire, England, in 1832. He learned the trade of a millwright and carpenter and then went to work in an English brickyard, where he remained until seventeen years of age. He afterward served an apprenticeship to a builder at Birmingham, and by going to night schools acquired a knowledge of mathematics and some ability as a draftsman. In 1858 he came to America and early in the sixties made the models for his first brick machine. The prejudice against machinery of any sort made it difficult for him to get a start. He began his career as a manufacturer in New York. Those associated with him failed in the panic of 1873. He then located at Lancaster, Pa., and began in a small way the manufacture of brick machines, and in time built up an immense business, which brought him both wealth and fame. The name Martin is not only a household word among brickmakers throughout the United States and Canada, but is familiar almost everywhere in the world where brick are made. Mr. Martin was a man of fine impulse. His sterling integrity and kindly nature won for him the respect and good will of all who knew him. Several years since Mr. Martin relinquished the active management of his business to his sons and spent the remainder of his days in the quiet contentment of home life. He was a Knight Templar, Thirty-second Degree Mason and Shriner, and was buried with Masonic honors. Five children, three sons and two daughters survive him.

The Late Henry Martin, Lancaster, Pa.

James D. Aldrich, general manager of the Cayuga (Ind.) Pressed Brick Co., died February 27 at Union Hospital, Terre Haute, Ind., where he had been operated on for appendicitis. Mr. Aldrich, while having charge of the Cayuga Co., made his home in Detroit, where he was taken for burial.

CONVENTION ECHOES.

Gates's Gratitude.

My Dear Randall:

We are on the train, my director and I, en route for the sunny gulf. She is constantly talking (and I thinking) of the marvelous hospitality of the Cleveland brothers and of the enjoyment and the wonderful good-fellowship we there enjoyed. I marvel more and more at what a wonderful lot of good fellows there are in the business.

With kindest regards, and wishing you were all with us,

On the Train, Feb. 18. WM. D. GATES.

The Greatest Convention of Them All.

My Dear Randall:

I arrived home safely after my exciting trip, our train being seven hours late, and have fully recovered from the effects of the greatest Convention of them all. Too much praise cannot be given the Cleveland organization for the perfect system with which they handled the large number of delegates in attendance, and certainly nothing more could have been done for our entertainment. I shall always look back with pleasure on the meeting just over, and trust it may bear good fruit for us all. Sincerely yours, C. H. YOHE.

Alexandria, Va., Feb. 19, 1902.

The N. B. M. A. Field of Usefulness Widens.

Mr. Secretary:

The Treasurer arrived at home safely, with an undiminished surplus and prospects of the coming year adding greatly to the same. I have just written ex-President Hunt, congratulating him upon the very successful and profitable Convention, and I take this opportunity to express to you my sentiments on the same.

Our Association continues to increase in numbers as its field of usefulness widens, and every one, I am sure, feels amply repaid for the expense and trouble of attending the Conventions, as from year to year they seem to become more and more interesting and enjoyable.

With kindest regards, yours very truly,

JNO. W. SIBLEY, Treasurer.

After the Banquet.

Permit me to address especially the Ohio branch of the late Convention.

Though I have been your next-door neighbor all my life, it has never before been my pleasure to look into the friendly faces of so many of my Buckeye brothers. I call you my brothers not only because every impulse of my heart demands it, but also because I claim blood relationship to you. My great-grandfather's brother was an officer in the Revolutionary War, and had the honor to fight not only for his liberty, but for ours, in the much-hounded and heroic army of the "Father of His Country"—bless his name! This officer's son, Returned Jonothan Meigs, Jr., was Governor of Ohio nearly one hundred years ago; therefore, brothers, I claim relationship, and trust the claim may be allowed. I esteem it a privilege to have snuggled in the nest where buckeyes breed and where Presidents are hatched. And when I remember that two of the four of our very greatest of all great Americans sprang from your neighborhood, I feel as though I was treading on sacred soil, indeed.

I was charmed with your city. It seems to me to be the very hub and heart of harmony and hospitality—the very center and core of push, patriotism, prosperity and pig iron!

As I stood on a fitting eminence in your beautiful city, a few days ago, and looked westward over your ice-bound lake, there came into my heart a flood of historic memories. I recalled that eventful Sept. 10, more than eighty-nine years ago, when that courageous young commodore, the irrepressible Perry, took the British bull by the horns, disarmed and dehorned him, and gave him such a lesson in conduct he has not forgotten in nearly a hundred years. Perry not only proved himself master of the lakes, but also master of the language. Could any genius have said more in so few words than Perry expressed in his immortal message: "We have met the enemy and they are ours?" That message will fill and thrill the hearts of posterity as long as the American eagle emblemizes the greatest country that God ever made. Brave Perry! Pugnacious Perry! Peerless, patriotic, imperishable Perry! We love to honor thy name.

Thanking you sincerely for one of the pleasantest and most helpful experiences of my life, I am, most gratefully,

Lafayette, Ind., Feb. 18, 1902. M. C. MEIGS.

First Impressions.

Friend Randall:

Who said the N. B. M. A. was not a success? This was my first attendance, and perhaps I am not a judge of such matters, but it seems to me that we were well repaid for our time and money spent in order that we might attend the National Convention of clayworkers. It did not at all seem like a body of strangers to me, for the names and faces of the old-timers had been made so familiar to me through the columns of The Clay-Worker that I knew a great many of them without an introduction.

The papers read were of a high order and of great interest to every student at the Convention—and there must have been nearly four hundred of that class, for I did not meet a man who seemed to think he knew it all. I swapped a great many experiences with fellow-brickmakers from all parts of the United States, representing all phases of the different work of our craft, and, though I was not born in New England, I got the best of the bargain nine times out of ten. Perhaps it was not the first time in my life that I perverted Scripture to suit my needy condition, "It is more blessed to receive than to give." I got more than I paid for. Perhaps in the future I may be able to pay part of this back, but for the present I am content to enjoy the best end of the bargain.

Long life to the N. B. M. A. and to the old-timers who first conceived the idea of establishing such a great free school for future brickmakers. L. C. MOORE.

Memphis, Mo., Feb. 22.

National Convention a Good Place to Get Pointers.

My Dear Randall:

I want to congratulate the officers and committees of the N. B. M. A. on the success of our late Convention. A very lively interest on the part of those having Convention matters in hand was manifest several weeks prior to the date of meeting, and I believe every delegate left home with the feeling that the Cleveland meeting was to be the best in the history of the Association, and I am sure this was the prevailing impression throughout the whole time of our stay in Cleveland, and, speaking for myself, I am still of the same opinion.

There was a hearty good cheer among the boys, and not a grumbler was to be found, and they were there not only for pleasure, but business as well. Nearly every man I met had some particular reason for being there aside from the social feature of the meeting. I met several men who told me they had come to the Convention to learn most particularly about some one point in their business, and to converse with men whom they knew would be posted on that subject. From those of whom I inquired before leaving I learned that each one had secured the desired information, or was placed in position to get what he wanted. I believe there was more "buttonholing" at this meeting and more real good derived from it than at any previous Convention. Every clayworker who attended the Cleveland meeting has made a good start in the new year, and I believe the benefits derived therefrom will insure a large attendance next February.

With best wishes, I remain, yours truly,

Findlay, O., Feb. 22, 1902. W. H. HOAGLAND.

Expects a Still Larger Convention Next Year.

Editor Clay-Worker:

Our exhibit was located in the south side of the basement, surrounded by all of our competitive friends. We did not have any machinery on exhibition, but furnished our friends with useful souvenirs in the shape of pencils and calendars, and, owing to the fact that everybody had forgotten and left their pencils at home, they were very much in demand. With each pencil our friends were given an envelope containing circulars of our press, pulverizer and mixer and brickyard supplies, and we have no doubt that they will find them equally useful.

The chilly atmosphere did not seem to affect the feelings of the exhibitors and their friends in the basement, and we consider the plan an unusually well-arranged one, and cannot well be improved upon except in the stove line.

We were specially pleased with the numbered button system, as it enabled us to find out who the man was we were talking with, without asking his name. The hotel accommodations were splendid. Everybody seemed to have a good time in a general way, and, altogether, we are satisfied this was the most successful and satisfactory Convention ever held. We have no doubt that if next year is a prosperous one the Convention will be more largely attended, and the great good that has already been done by the National Brick Manufacturers' Association will be increased in proportion. Yours very truly, THE FERNHOLTZ BRICK MACHINERY CO.

THE YOUNGEST BRICKMAKER AT THE NATIONAL CONVENTION.

Everybody had a good time at Cleveland, but the individual who enjoyed Convention week to the fullest is Master Melvin Hasbrouck, the five-year-old son of H. L. Hasbrouck, of Kirkville, N. Y. We are pleased to include among our Convention Echoes the following characteristic letter from Master Melvin and to add his bright face to our picture gallery:

Master Melvin Hasbrouck, Kirkville, N. Y.

Kirkville, N. Y., Feb. 16, 1902.

My Dear Mr. Randall:

I got home all right. It was dark night when we got home and Mr. Plopper came over to the train for us. I went to bed right after I got home. I had a very nice time at Cleveland. I thank you for being so kind to me. I will be there next year and will be glad to see you. I hope my cold will be over to-morrow. Do you ever get a puzzle in your paper? I would like to say a little more, but can't think of it. Good-bye this time. Sincerely your little friend, MELVIN HASBROUCK.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

NINETEENTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

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Six copies, " "	10.00
Ten copies, " "	15.00

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☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
27 Monument Place.] T. A. RANDALL & CO., Indianapolis.

XXXVII. MARCH, 1902. No. 3.

CURRENT COMMENT.

Prospects are bright for another busy year in the building line. From all present indications, the only thing to be feared is a lack of structural steel. If the great steel mills can turn out a sufficient quantity of that material to meet the demands there will be no falling off in building operations.

* * *

It is rumored that D. V. Purington, of Chicago, has sold his stock in the Illinois Brick Co. and severed his connection with that concern. If this be true, it will enable Mr. Purington to devote his entire time and attention to his immense paving brick interests, which alone are sufficient to keep half a dozen ordinary men very busy.

* * *

What seems to us a confirmation of this rumor is the announcement that George H. Drew, for many years superintendent of the Purington-Kimbell Brick Co.'s plant at Blue Island—latterly known as the Illinois Brick Co.'s yard No. 23—has accepted a position with the F. H. Wolf Brick Co., Detroit, Mich., and will henceforth make that city his home. We congratulate Detroit.

* * *

The Republicans of the Hoosier capital recently had a new experience. For the first time here county and township officers were nominated by primary election. Many candidates sought office. The contest waxed fierce. Finally, the more enterprising and aggressive aspirants appealed for support in glaring advertisement on bill boards and immense display ads. in the daily papers. Now that the votes are counted, it is found that those who advertised the most extensively secured the plums. Thus we see the power of printer's ink, properly used, fully demonstrated in a new field. Advertising pays. The successful candidates all bear testimony to that. It is a novel demonstration of the value of publicity. The moral is plain: If you want to get there, advertise, and advertise big.

* * *

Our readers generally, the Wisconsin contingent in particular, will find our full report of the Milwaukee Convention very interesting reading. It is a marked contrast with the "alleged" reports of our cotemporaries. Comparisons are odious, we know, so refrain from further comment in this connection. The only thing lacking in our report is the photograph of the new Secretary. Mr. Schwarz objects to the use of his picture. Just why we are unable to say, unless it is that, being an exceptionally handsome man, he fears the charge of undue vanity.

BRICK FOR FOUNDATIONS.

It was only a few years ago that any one who walked along the street where a good building was being put up saw anything but stone foundations. This condition has changed. Builders used to think that a man who had a brick house with a stone foundation and slate roof had reached the acme of excellence. As it is now, stone foundations are rarely known. The old stonemason is now practically out of a job. And for what reason, may we ask? Merely because of the excellence of brick. A better foundation, one more solid, one cheaper, one more satisfactory, one straighter and altogether better can be built from brick than from stone. It is one of the changes that have been made within recent years because of the high character of brick. Stone may be used for facing for alleged artistic reasons, but it is backed up by brick, and below the facings we find brick. This was slow in coming, but at this time the best buildings of all classes are provided with foundations not of stone, but of brick, and for the reason that brick is the better material.

THE INSURANCE TAX.

The annual fire waste of the United States has averaged within recent years $150,000,000. This is about 1 per cent. of the taxables. Every ten years the people are called upon to pay a sum equal to the national debt for the protection against fire. This is the greatest tax that is known in this country, and it is the one that is paid most willingly. The task of the taxgatherer is a thankless one at best. On the other hand, the task of the insurance man is surrounded with profit and satisfaction. He is always a distinguished citizen. The people of the United States pay a higher fire tax than any other civilized country, and for the very good reason that their building is of a more flimsy character than is known elsewhere in the civilized world. The best builders are the French. In France the fire loss is about 6 cents on $100. In Great Britain it is 9 cents. In New York it is 58 cents; in Massachusetts it is 60 cents; in Texas it is $1.10; in Arkansas it is $1.31. Here is a variation from 6 cents to $1.31 on $100, which difference is represented in the character of the building.

BEAUTIES OF TERRA COTTA.

On the first page of this issue is pictured a remarkable terra cotta production. It is an eagle for the Republic Building, at St. Louis, Mo., executed by the Winkle Terra Cotta Co., after the designs of Isaac S. Taylor, architect, of that city. We are pleased to illustrate this figure as indicating the artistic possibilities of terra cotta. There is absolutely no limitations in the use of that material. The hand and the mind of the artist are without restraint. In stone such a figure must have been heavy, crude and cumbersome, without a high regard for the actualities of the figures of nature. When it comes to the handling of clay, however, all of the delicate features, all of the life and vigor of a natural object, can be accurately presented, and without any of the conventionalities which are so often necessary in structural work. In terra cotta the actual thing can be presented. One does not have to depend upon imagination. Reproductions of figures in burned clay are not restrained by the use of the chisel and the mallet or by the handling of a brittle material. Clay is plastic. Clay responds readily and accurately to the pulse and the instinct of the modeler. Nothing proves this more clearly than this great eagle which we have illustrated.

CLAYWORKING INDUSTRIES IN ENGLAND.

Our English correspondent presents in this issue a very interesting article under the above caption. For many years the English clayworking industries outranked those of America. In some respects they do it yet to-day. In the manufacture of glazed brick and enameled brick they still stand well in advance of our brick factories, and in the laying of brick in ornamental and decorative forms they excel anything that we have so far done. When it comes to the manufacture of a good grade of common brick for ordinary building purposes and a high grade of pressed brick of varying colors there is no country in the world which equals the Americans. We make this class of brick better and cheaper than is made any place else in the world. It appears, however, that in the United Kingdom they are suffering to a greater extent in a lack of uniformity in size than are we in this country. Thickness varies from 2⅝ inches in the south of England to 3¼ inches in the north and in Scotland. In length and width there is a standard of 9 inches by 4½, the only variation being due to the differences of shrinkage. While it is true that American brick will contain from seventy-two to eighty cubic inches, an average English brick will contain from 126 to 130 cubic inches. The Roman brick, so popular in America, is practically unknown in Great Britain. It appears in the article in question that the mechanics of brickmaking are by no means so well developed as in this section of the world. However, it is true, as indicated by the pictures which accompany the article referred to, that the factory buildings are of a much better character, much more prominent and entirely more creditable than those which belong to the average American plant. There is a quality of brick made in England which is practically unknown to us; that is, the blue brick. They are very hard, not altogether uniform, but very pleasing in appearance and very popular in many sections of England.

TRADE LITERATURE.

H. BREWER & CO., TECUMSEH, MICH., are sending out their forty-third annual catalogue of clayworking machinery. It is a tasty book of sixty-odd pages. The cover is a very dark green heavy paper, with the title lines and decoration embossed in silver—a very pretty and effective combination. Their entire line of brick and tilemaking machinery is carefully described and illustrated. An unusual feature, it seems to us, is the exclusive use of hand-made engravings. Though there are nearly half a hundred cuts in the catalogue, there is not a half-tone among them. All of their die and mold machines are well illustrated, also a series of cutting tables, including both automatic and hand-power machines for brick and tile, as well as their well-known line of stone separating clay crushers, pug mills, clay elevators, drum hoists, clay cars, brick barrows and other brickyard supplies. The closing pages of the catalogue are given up to brief testimonials from users of Brewer machines. Copy of the catalogue will be sent free to any of our readers who will write for it.

BECHTEL'S RAPID HACKING AND TRUCKING SYSTEM is the title of a neat booklet received from Byron E. Bechtel, Box A, Waterloo, Ont. The cover is a rough-finished russet brown paper, upon which the lettering is printed in gold bronze ink, making a rich contrast. The advantages of the Bechtel patented system of hacking and trucking is fully set forth. The book ought to be interesting to every brickmaker who uses the outdoor system of drying. This class of our readers are requested to write for a copy, mentioning The Clay-Worker.

STEEL PLATE FANS is the subject of a very handsome catalogue issued by the American Blower Co., Detroit, Mich. The cover is a dainty combination. The lettering and ornamentation is printed in black and white ink on brown paper, and is unique both in design and color effect. Between the covers the reader will find some very interesting matter on up-to-date methods of heating and ventilating factories and mechanical draft, etc. Their various types of fans are beautifully illustrated. From a printer's standpoint, the work done in this catalogue is par excellence. The book contains much useful information on the subject of mechanical draft, and a series of useful tables, giving the areas of circles, horse power of leather belting, cost of coal for steam power, weights of steel, volume and density of air at various temperatures, moisture absorbed by air, etc. A postal card inquiry to the A. B. Co. will bring The Clay-Worker readers a copy.

THE DUNN CONTINUOUS BRICK KILN is attractively illustrated in a little catalogue received from H. C. Dunn, patentee, Erie, Pa. General views of three different Dunn kilns are shown, and sectional views and drawings will give to practical brickmakers a very clear idea of the method of construction, arrangement of flues, etc. A brief treatise on the continuous system of burning will prove of interest to brickmakers generally, and the testimonial letters from those who are using the Dunn kiln will convince the "doubting Thomases," if there are any, that the Dunn kiln is a success. Write for a copy, mentioning The Clay-Worker, and addressing I. M. Justice, sole agent, Erie, Pa.

SHAW'S BOOKLET OF SECOND-HAND MACHINERY, for brickmakers, contractors, mines, quarries, etc., is a neat little brochure containing list of second-hand machinery, which Mr. Willis Shaw, 614 New York Life Building, Chicago, Ill., offers at bargain prices. If any reader of The Clay-Worker wants a good second-hand locomotive, steam shovel, dump car for contractor's use, hoisting engine, derrick, wheel scraper, road roller, steam pump, steam engine, or most any kind of second-hand machinery, he is requested to communicate with Mr. Shaw.

"CROWN DRYERS" is the title of a twenty-four-page catalogue issued by the Crown Dryer Co., Cleveland, O. The cover is a brick red, on which the title is ornately embossed in jet black—a warm effect, very appropriate for a publication of a brick dryer, and very pretty as well. The advantages of the Crown Dryer are fully set forth, and those who are interested in this all-absorbing question should write for a copy at once, mentioning The Clay-Worker.

THE HENRY MARTIN Brick Machinery Manufacturing Co., Lancaster, Pa., are out with a new and handsome catalogue of their soft mud, wire cut and dry press brick machinery and brickyard supplies. It is covered with very rough, dark gray paper, lettered with gold bronze, with white ink decoration, presenting an artistic effect. It is a book of over one hundred pages, in which are pictured their large line of machinery and brickyard appliances. From the index it appears that the shops at Lancaster are now turning out every mechanical appliance that a clayworker may want, from a steam engine to a brick pallet. Copy will be mailed free on application.

THE CLEVELAND CAR CO., Cleveland, O., have favored us with a series of engravings of their steel dry cars, of which they make a large variety. The collection, which is bound between red covers, contains a fine half-tone engraving of each style of car made; also turntables, dump cars, steel foot pallets, portable wooden decks and a new yard push car, which is especially designed for use about quarries, foundries, machine shops and other plants where heavy materials are used and have to be conveyed from one point to another. Clayworkers wanting cars of any sort or character or for any purpose will do well to write for this collection of illustrations, which can be had for the asking.

THE CLINTON (IND.) PAVING AND BUILDING BRICK CO. are favoring their friends with a neat card case and memorandum book combined. It is a very useful souvenir and a good ad., in that it is a continuous reminder to the fortunate possessor that the C. P. and B. B. Co. manufacture the best quality of vitrified shale paving brick, Clinton block, sewer and sidewalk brick. We are indebted to them for one, and are duly grateful.

TRADE NOTES.

The Brookside Co. is the name of a new concern incorporated at Cleveland, O., to manufacture building and paving brick, and deal in builders' supplies. The officers are: E. A. Wagner, president and treasurer; J. H. Craine, vice president and manager; E. C. Plietz, secretary. Other incorporators are A. R. Nunn and L. C. Hettinger. The company has a new process for the manufacture of brick which it will put in operation.

C. B. Mayhugh, superintendent of the Garfield (O.) Brick Works, writes that his company desires to purchase an attachment for a repress that will turn the brick on the edge after they leave the dies of the repress.

D. C. Sage, a well-known brick manufacturer of Greenport, N. Y., died March 9. Mr. Sage had been engaged in the brick business for many years, and at the time of his death was president of the Long Island Brick Co. He leaves a daughter and two sons.

"EXCELSIOR," SAYS YATES.

Editor Clay-Worker:

Safe at home from the Cleveland Convention, I feel sure it was the best Convention we have yet held. Certainly the attendance was larger than ever before, and you can justly take great pride in the success of the National Association. Your earnest, untiring work is bearing good fruit; so, also, is that of your co-worker, Prof. Orton. The membership of the Ceramic Society is now larger than ever before. New members are being proposed from various quarters of the globe—from over the seas, even—which is convincing proof that the value of scientific knowledge in clayworking is more appreciated than ever before.

The new feature of exhibiting samples of our ware, I think, is a very wise move. I hope it will be repeated at our next Convention. Next to the interchange of personal experiences, the comparison of our products affords the most instructive object lessons. Aside from the real business of the Convention, it is really worth one's while to attend these meetings just for the help (inspiration, if you please) derived from such bright, brainy men as Hunt, Fiske, Purington, Gates and others too numerous to mention. He is, indeed, a dull man who cannot profit by friendly intercourse with such bright minds. You, Mr. Secretary, received many compliments at Cleveland, and they were deserved, and I think you are also entitled to great credit for having drawn to you and to the Association these representative men. Just think of Mr. Hunt retiring to be succeeded by George M. Fiske, of Boston. The motto of the Association may well be "Excelsior." Each year we think we have reached the pinnacle of success, only to find that at the subsequent Convention we again go on and up; at least so it seems to those of us who have attended the Conventions regularly for a number of years. Long life to our beloved Association and Godspeed to all its members. Sincerely,

ALFRED YATES.

Johnsonburg, Pa., Feb. 22.

THE MAN BEHIND THE PICK.

There has been all kinds of gush about the man who is "behind"—
And the man behind the cannon has been toasted, wined and dined.
There's the man behind the musket, and the man behind the fence;
And the man behind his whiskers, and the man behind his rents;
And the man behind the plough beam, and the man behind the hoe;
And the man behind the ballot, and the man behind the dough;
And the man behind the jimmy, and the man behind the bars;
And the Johnny that goes snooping on the stage behind the "stars;"
And the man behind the kisser, and the man behind the fist;
And the girl behind the man behind the gun is on the list;
But they missed one honest fellow, and I'm raising of a kick,
That they didn't make a mention of the man behind the pick.
Up the rugged mountain side a thousand feet he takes his way,
Or as far into the darkness from the cheering light of day;
He is shut out from the sunlight, in the glimmer of the lamps;
He is cut off from the sweet air in the sickly fumes and damps;
He must toil in cramped positions; he must take his life in hand,
For he works in deadly peril that but few can understand;
But he does it all in silence, and he seldom makes a kick,
Which is why I sing the praises of the man behind the pick.
He unlocks the bolted portals of the mountains to the stores
Hid in nature's vast exchequer in her treasure house of ores.
He applies a key dynamic, and the gates are backward rolled,
And the ancient rocks are riven to their secret heart of gold.
Things of comfort and of beauty and of usefulness are mined
By this brave and quiet worker—he's a friend of humankind;
Who, though trampled down and underpaid, toils on without a kick;
So I lift my hat in honor of the man behind the pick.

—Colorado Springs Gazette.

TABLE OF CONTENTS.

Beauties of Terra Cotta..... 326
The Status of the Clayworking Industries in England.. 327
Advising the Young Man.... 331
A Pottery Operated by Water Power 331
The Good Ship, Brick........ 332
A Successful Georgia Brick Plant 334
The Growth of the Clay Industries in Western Pennsylvania 335
A Sermon on Brick.......... 336
Enlarged Plant of the H. W. Caldwell & Son Co.......... 337
Obituary 358
Road Construction 357

THE WISCONSIN CONV'N.

Report of the Wisconsin Clayworkers' Association.. 338
Mayor Rose's Welcome to Milwaukee 338
A Brickmaker's Welcome.... 339
Response of Mr. Morris...... 339
Secretary Buckley's Annual Report 340
Treasurer Finnegan's Report 340
"Tile Drainage" 341
Our Experience in the Manufacture of Soft Mud Brick 342
The Minimum Cost of Burning Cream-Colored Brick from Wisconsin Calcium Clays, and How It Can Be Accomplished 344
What We Have Learned About the Manufacture of Soft Mud Brick 346
Manufacture of Brick by the Stiff Mud Process 347
President Drake's Annual Address 348
Paving Brick, Sewer Pipe and Other Clay Products Used in City Improvements 350
Technical and Trade Literature, and Its Value to the Clayworkers 351
Clay Building Materials from the Standpoint of the Architect 352
Wisconsin Clays and Some of Their Characteristics.... 353
Election and Installation of Officers 356
Report of Committee on Resolutions 356
List of Members.............. 357

CORRESPONDENCE:

Convention Echoes 358
Gates' Gratitude 358
The N. B. M. A.'s Field of Usefulness Widens 358
After the Banquet........... 358
First Impressions 359
National Convention a Good Place to Get Pointers...... 359
Expects a Still Larger Convention Next Year.......... 359
The Youngest Brickmaker at the National Convention 359
"Excelsior" Says Yates...... 362
Pacific Coast News........... 364
The New York Market....... 366
Iowa Notes 366
Chicago Brick and Building News 368
Among the Potters 370

EDITORIAL:

Current Comment 360
Brick for Foundations....... 360
The Insurance Tax........... 360
Beauties of Terra Cotta...... 360
Clayworking Industries in England 361
Trade Literature 361
Editorial Notes and Clippings 372

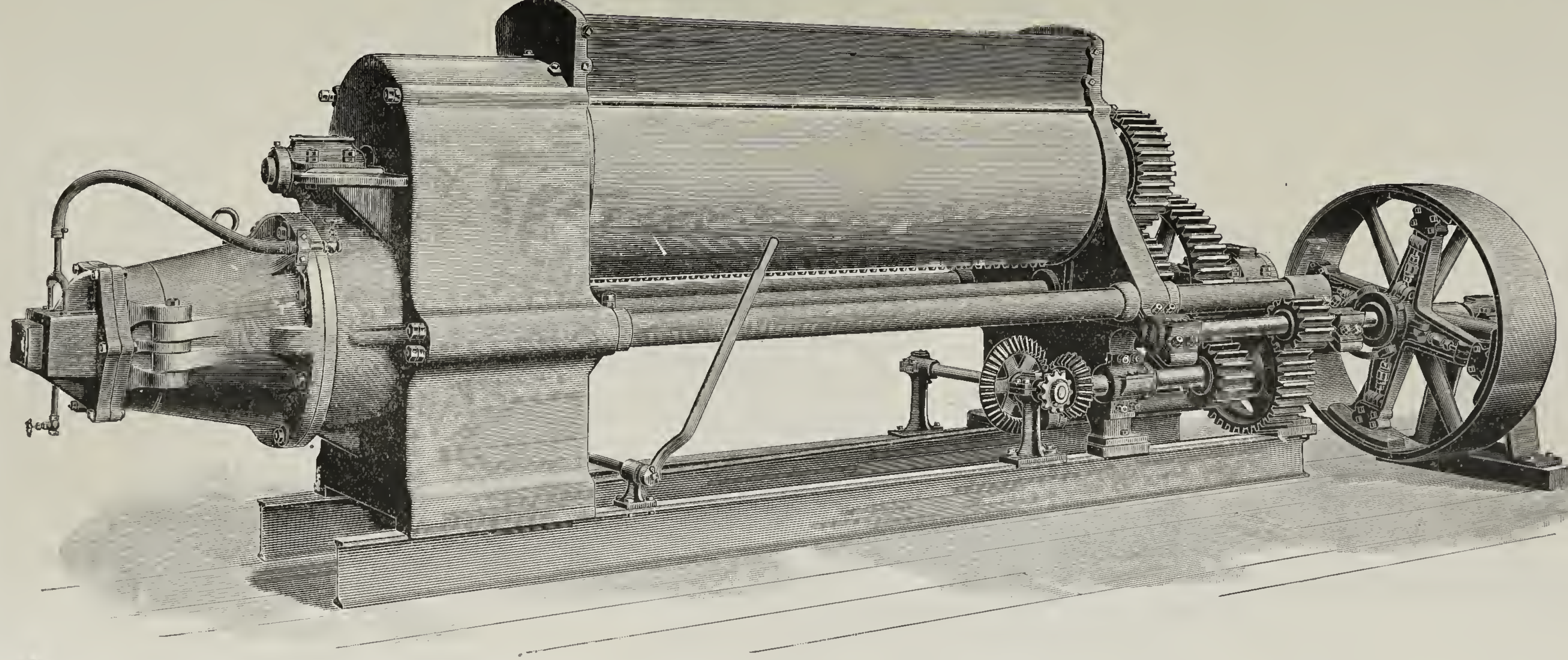
MISCELLANY:

Trade Notes 362
The Man Behind the Pick.... 362
In the Market for Brick Machinery, Dryers, Kilns, Etc. 364
Into Newer and Better Quarters 368

Index to Advertisements on Front Inside Cover Page.

THE HEAVY
BRICK MACHINERY

Is made by Raymond. ✠ It is not as Cheap as some others, but it lasts. ✠ It has Staying Qualities. ✠ You Avoid Expensive Break Downs, and Incidentally Break ups by using it. ✠ ✠ ✠ ✠ ✠



WE DON'T MAKE all the Brick Machinery sold in the U. S., but those who use it say it is the best. We have every reason to believe this is true because that is just what we try to make. We can attribute the unprecedented demand for our machinery to no other reason than the fact that it is strong and heavy and satisfies the trade. Users of our machinery are our friends because they get good value for their money.

The C. W. Raymond Co.
DAYTON, OHIO, U. S. A.

NEW YORK OFFICE: 39 and 41 Cortlandt Street.

PACIFIC COAST NEWS.

PREPARATIONS continue here for an active year in the clay industry. The month of February was in every way a favorable one for general business. All parts of the State and Coast have had an abundance of rain, and the building season will soon open with even more activity than was expected. Locally the building brick situation is somewhat complicated by the coming dissolution of the Brick Manufacturers' Combine. The combination will expire on the first of next month, unless some arrangement for a continuance is made. It is understood that a movement is on foot to extend the price agreement three months longer.

The Kirkham Art Tile and Pottery Co. has been incorporated to engage in business in Pasadena, Cal. The incorporators are G. F. Kerngan, J. F. Kirkham, T. M. Green, R. M. Furlong and A. H. Metcalf. The capital stock is $100,000, of which $58,500 has been subscribed.

The San Joaquin Valley Brick Co., of Stockton, Cal., is preparing to resume the manufacture of bricks at its old plant. The other brick company of Stockton is also getting ready for work.

The Simmons Brick Co., of Los Angeles, was recently awarded the contract for furnishing 1,400,000 brick for Milo M. Potter & Co., of Santa Barbara. The brick will be used in the construction of a large tourist hotel at the latter place. It will require 175 freight cars to transport these brick to their destination.

The Mexican Clay Manufacturing Co., with yards at Santa Julia, a suburb of Mexico, is now applying a large quantity of clay pipe for irrigation purposes to Carlos Hoagenbeck and Armour Bros., owners of large plantations near Mexico.

Henry Jensen, a brick manufacturer of Pelliessier street, Los Angeles, was arrested on February 27 for maintaining a brickyard in violation of the recently adopted city ordinance of Los Angeles. Mr. Jensèn has been established in his present location for about ten years, and declares that he will fight the ordinance through all the courts in the State, rather than give up his business.

Jesse Edwards, a brick manufacturer of Newberg, Ore., was recently in Portland looking out for orders for brick. He reports that there is to be an unusually large quantity of brick used in Portland during the coming season, and that his company will secure a substantial part of the orders. He expects to double the output during the coming season.

Last week a number of large shipping firms, including Balfour, Guthrie & Co., and Evans, Kohlman & Evans, secured title to 620 acres of land near Sumac, Wash., which tract contains clay suitable for the manufacture of Portland cement. A company will be formed which will erect a Portland cement plant at Whatcom, at a cost of about $1,000,000. The company will manufacture cement for the entire Pacific coast, including Alaska and the Oriental markets. It is announced that the factory and clay works will employ about four hundred men.

With the next week the Salt Lake Improved Brick Co. will commence operations at its new plant, six miles northwest of Salt Lake City. This company will soon be turning out baked clay at the rate of 1,000 bricks per day. D. W. Cummins, of Chicago, was in Salt Lake last week, installing the new machinery in the company's plant. The machinery was supplied by Chisholm, Boyd & White, of Chicago. The new addition to the plant will add 300,000 bricks to the local supply at Salt Lake City. The company will then be in position to turn out 80,000 bricks per day.

The Great Northern Clay Co., which was incorporated in Washington a short time ago with a capital stock of $500,000, is now erecting a new brick and clay plant four miles north of Ballard, Wash. The new plant is located on the line of the Great Northern railway, and will have excellent shipping facilities. The new company will manufacture brick, tile, sewer pipe and other clay products.

Charles Hulse, an expert glass and pottery manufacturer, is now in Stockton, Cal., superintending the construction of the local pottery of the Stockton Brick and Terra Cotta Co.

J. B. Moore, of Tucson, Ariz., has secured ground for a new brickyard north of Nogales, Ariz., and expects to turn out 2,000,000 brick during the coming season.

The Kern County Brick and Contract Co. will start its machinery to work at Bakersfield, Cal., in a few days. They intend to largely increase their output during the coming season.

The Ashton Fire Brick and Tile Co., of Salt Lake City, Utah, filed articles of incorporation several weeks ago. The capital stock of the company is $25,000, and the directors are: E. P. Ashton, president; George M. Cannon, vice president; N. L. Morris, secretary and treasurer; John P. Morris and D. C. Ashton. The company will manufacture various clay products, including fire brick and sewer pipe.

The Reno Pressed Brick Co., of Reno, Nev., has completed the building of its permanent kiln and is now installing patent dryers. Within a few days brickmaking will be resumed on a larger scale than ever. The management announce that the quality of the brick will also be considerably ahead of last year.

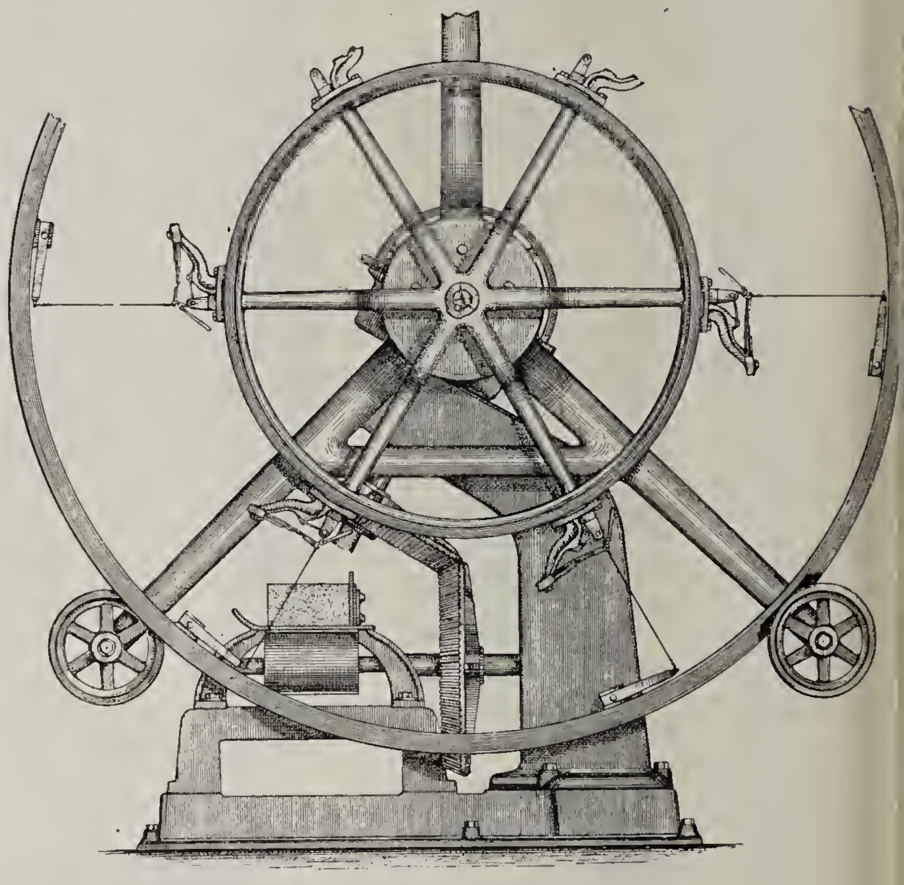
SUNSET.

San Francisco, Cal., March 5, 1902.

IN THE MARKET FOR BRICK MACHINERY, DRYERS, KILNS AND SUPPLIES.

The Macomb Sewer Pipe Co., Macomb, Ill., organized in 1883, manufacturers of vitrified salt-glazed sewer pipe, glazed farm tile, glazed wall coping and well tubing, and fire clay flue linings, have decided to spend about $30,000 in the immediate overhauling of their plant, doubling the size of the main building and increasing in like manner their kiln capacity.

A car line of about two miles will be built to the company's clay mines. The concern is now in the market for the purchase of the necessary lumber, roofing material, machinery, brick, light T rails, pit and dump cars, kilns and kiln irons, trucks, dies, barrows, fans and drying apparatus, clay screens, steam pipe, watchman clocks, time clocks and tools and appliances of all kinds used in the business.



End View of Chambers' Rotary Cutter—See next page.

SEGER'S COLLECTED WRITINGS.

This is the best book ever published on the clay industries. Indispensable to the practical man, as well as to the pottery chemist, Seger's articles on clays, brick, pottery, porcelain, glazes, kilns and kiln gases, etc., form the foundation of all modern ideas on these subjects. At the time of his death he was not only the most famous scientist in this line, but equally famous for the practical results which he obtained.

Vol. I, of 550 pages, is now ready. Vol. II, completing the work, will be ready in the near future. The price for this work is fourteen ($14) dollars, paid in advance. Send all subscriptions to

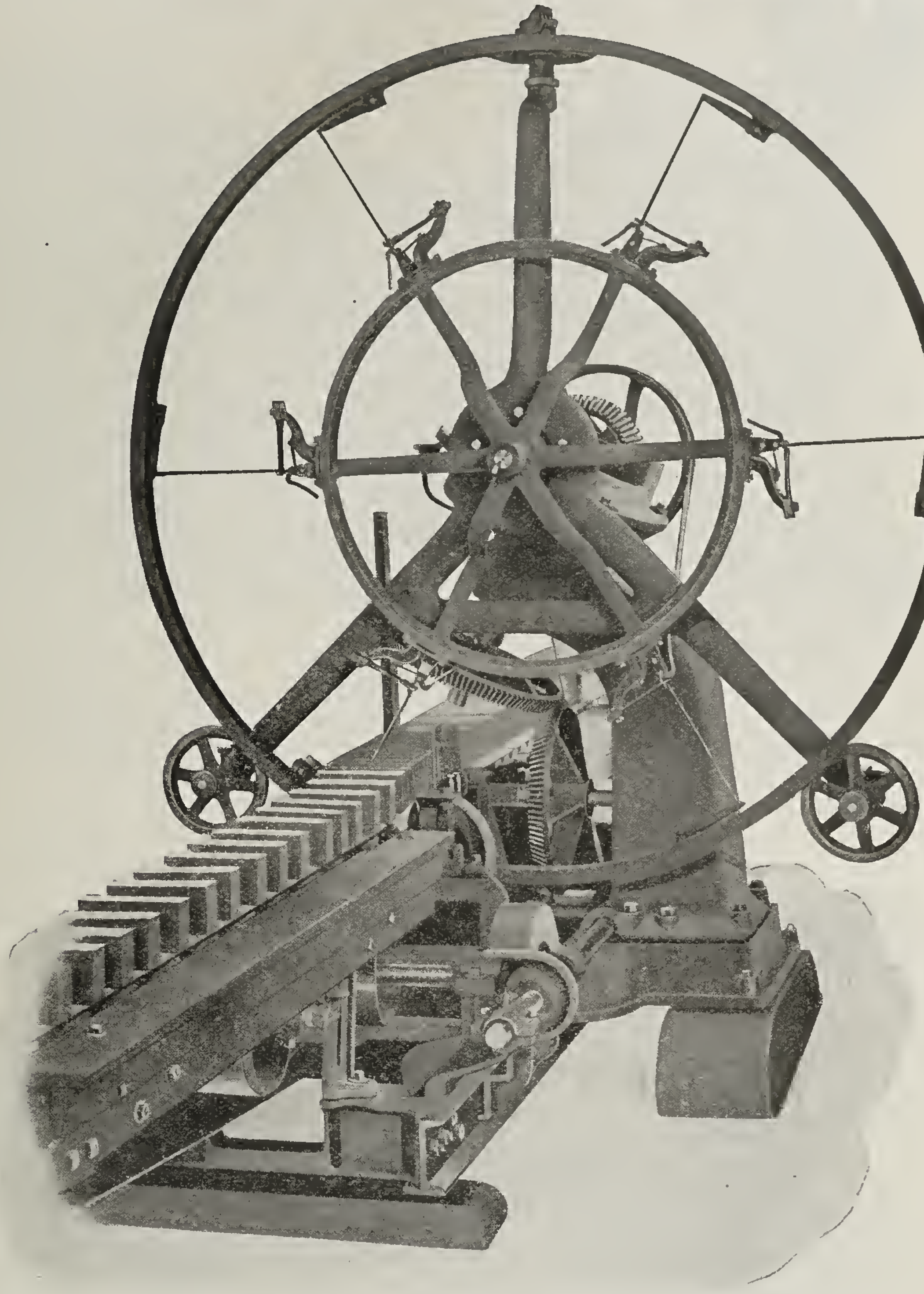
THE AMERICAN CERAMIC SOCIETY,
Stanley G. Burt, Treasurer,
Rookwood Pottery, Cincinnati, O.

The Chambers Automatic Side Cutter

TO MORE clearly show the plan and operation of the Chambers Rotary Side Cutter we invite attention to the accompanying photo engraving from an operating machine and to the line drawing showing particularly the end of the clay bar and the oblique shearing position taken by the wire while cutting the brick.

In the machine the pair of cut bevel gears shown are encased in a dirt-tight cover. These gears, with the measuring wheel immediately under the bar of clay, make the necessary connection between the cutting reel and the governing influence of the moving clay bar, so that no matter what speed the bar may travel the revolving cutter instantly and automatically adapts itself.

The bar of clay is supported by steel plates both on the bottom face and at one side, against which the wire is drawn, thus insuring a smooth, sharp cut. The slit through which the wire thus passes is only so wide as required for the thickness of the wire used, and the two vertical side plates are hinged so that they will open outwards if a stone or hard substance is pushed against them by the cutting wire. When the stone is thrown out the plates instantly return to normal position. The measuring wheel is of a given diameter for each thickness of brick and the only extra parts needed when changing from one thickness to another is a new measuring wheel. The change from one to another can be accomplished within a half hour. A recent improvement enables us to build this cutter so that paving brick manufacturers may make simultaneously builders and pavers—say two brick of every six cut at each revolution may be 2½ inches thick and the remaining four brick 4 inches thick, or any similar combination desired. The variations in thickness are by gradations of sixteenths of an inch, and the scope of the standard cutter is from brick two inches thick to block of five inches thickness. The large ring is turned with a two inch V groove in its outer edge, and is supported by the two smaller wheels engaging in this groove.



The weight of the large ring is thus entirely supported by the two wheels and the cutting wires subjected to no greater strain than is involved in the cutting of the brick. The looped wires are about twelve inches long only and attached to tempered steel springs which keep the wires taut yet permit a needed flexibility. A wiper, not shown in the illustration, automatically cleans the wires between each cut. The cutter is entirely rotary, the comparatively slow speed of seventeen turns per minute of the cutting wheel producing over one hundred bricks and there are no waste chunks of clay bar between cuts. Its entire success on all kinds of material suitable for making side cut brick has been clearly demonstrated by continued use. For further particulars please address patentees and manufacturers,

Chambers Brothers Company,

Fifty-Second and Media Streets.
PHILADELPHIA, PA.

Mention the CLAY-WORKER

THE NEW YORK MARKET.

THE TRADE IS beginning to show signs of life, after a long and very severe winter. The Hackensack river was closed to navigation five times, from December to the first of March. On that date a heavy easterly storm raised the ice embargo, and at the present time nothing like ice is in sight. Shipments are now in order.

—The Year 1901—

Made a good showing in the building line—better than for some years past. It entirely eclipsed the previous year. The total cost of new buildings in Greater New York, with the cost of alterations, was $150,072,657, while for the year 1900 the entire cost was $88,462,174. A marked difference in cost of buildings.

—Manhattan and The Bronx—

Lead in cost and number, as compared with the other boroughs which go to make up Greater New York:

Manhattan and The Bronx	$112,176,640
Brooklyn	18,198,617
Queens and Richmond	5,676,440
Alterations	14,020,657

Manhattan and The Bronx lead, in fact, the other parts of Greater New York are not in it. If the building operations in the rest of the city were near the proportion of Manhattan, the demand for brick would increase very much.

Flat buildings cost	$21,781,927
Dwellings	50,846,500
Office buildings	11,233,755
Schools	2,277,300
Churches	845,275

Total cost in the Borough of Manhattan and The Bronx, $86,988,757. The cost of fifty-seven private residences, of which all but three were erected in Manhattan, was $5,964,000.

—The Tenement House Law—

Will have quite an effect on the number of brick which will be required in the future. It has decreased the number of brick houses and increased the erection of frame. Before the law went into effect, from May 1, 1900, to February, 1901, there were 605 plans submitted for tenement houses, to cost $15,000 and less each. During the same period after the law became valid there were only eighty-two of the same character submitted. During the month of April, 1901, 741 plans for tenement houses were rushed into the department to be passed upon before the restrictive law went into effect. The following month after the law was in force only twelve plans were submitted.

—The Outlook for 1902.—

It is rather early to venture any opinion of what it is likely to be. To take the figures as furnished by the department of buildings, the reader can judge for himself. For the months of January and February, 1901, there were 399 plans submitted; for the same time this year there have been but 250, a falling off of 149. It looks as though there would have to be a careful judgment of the size of the output.

—The Fire at Paterson—

Will create some demand for brick, as it will no doubt be a brick city this time. The demand will not be as great as one would judge by looking over the extent of space burned, for there will be a great number of second-hand brick used in rebuilding. There will not be a hurry call for brick, such as to cause the price to soar out of sight. No danger in the least, as some of the manufacturers will take care of that by cutting prices. The second day after the fire some of the manufacturers were growling because an offer had been made for all that might be required below a figure, which, by the way the parties talked, they must have agreed upon as the price to be asked.

—The Market—

Has been a very quiet one during February, as that month has the record that when it did not rain it snowed, and as the month lengthened the snow was far deeper, until at last there was a fall of ten inches, stopping the trade in brick as well as other lines. The closing and opening rates remain the same, from $5.25 to $6.25, with these rates to remain in force unless the outsider has pity on the poor dealer and makes the rate lower, which no doubt is hardly possible. A. N. O.

IOWA NOTES.

SUBSEQUENT BUSINESS and inquiries lend strength to the belief that the coming season in the brick and tile business will be a record-breaker. Of the eight brick and tile plants in this county, all report bright prospects and a volume of inquiries and orders that are most gratifying.

While the prospects are bright for a prosperous season's business, the indications also point to a grand rush for material for early contracts. What is true of one plant is also true of the others. There is but a small amount of stock on hand and the weather is all that prevents the plants from opening up.

During the period of enforced idleness several of the companies have taken advantage of the opportunity to add new machinery and make such other improvements as will enable them to handle their business with dispatch. Realizing that the chances are favorable for a steady run through the summer and fall, with but slight hope of an opportunity for overhauling during that time, the owners are preparing as never before for a big business.

The general prosperity of the farmers in this section of the State and the fact that all of the plants run short of the common sizes of tile last season has given rise to the belief that the coming season will be an unusually heavy one in this particular line. Almost every farmer who has a piece of low land is figuring on putting in tile as soon as the weather will permit.

L. A. Thorsen, manager for the Fort Dodge Clay Works, stated that his company was only waiting for the weather to permit them to resume, when they expected to put on a full force of men and start the plant at full capacity. A nice lot of orders had been received lately, and all that delayed filling them was the weather.

The Fort Dodge Brick and Tile Co. have overhauled their entire plant and have everything in readiness for spring business. Their stock is reduced to a very small one, and the number of orders on hand will necessitate full capacity from the start.

H. R. Bradshaw & Co. were completely sold out of the common sizes of tile last fall, which indicates that a large share of their spring business will consist of unfilled orders, left over. Their plant has been overhauled and their facilities added to very materially. They anticipate a heavy business the coming season.

Johnson Bros., of Kalo, who started last spring, feel very much encouraged over the prospects before them. Their business last year was far beyond their expectations and the coming season promises a very prosperous increase. They expect to open an office at Fort Dodge, Mr. Robert Johnson, the senior member of the firm, having resigned his position as traveling salesman for the Fort Dodge Grocery Co., to devote his entire time to the business.

The Kalo Brick and Tile Co. are enjoying their share of the prosperity that is being meted out to the different plants in the way of spring orders, and anticipate an even larger business the coming season than they enjoyed last. They have their plant in good working order, awaiting the opening of the season.

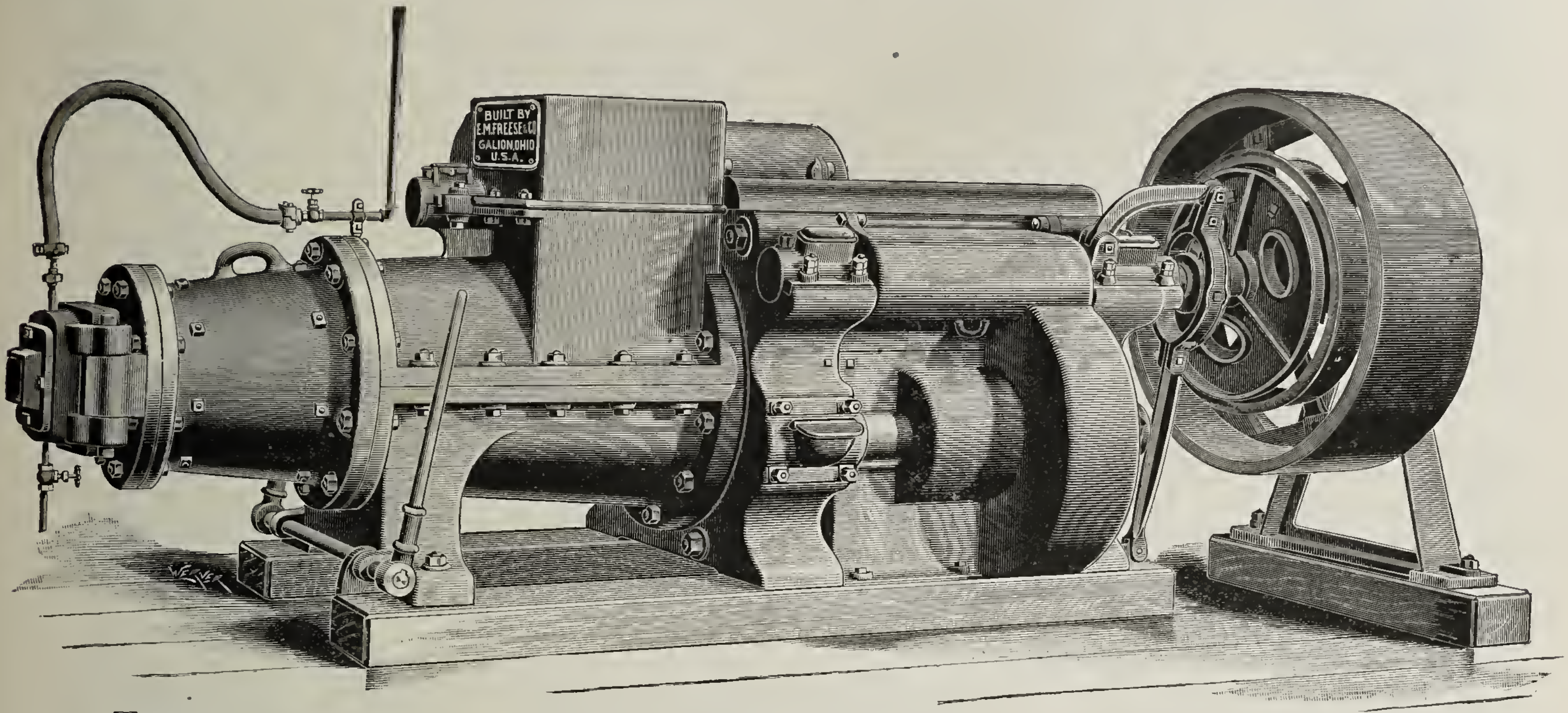
Messrs. Straight & Campbell, the new firm at Lehigh, announce that they will have their plant completed and ready for operations this month. They have built two kilns, and as soon as they can burn the brick will build four more. Their plant when completed will be 45,000 capacity. They will devote their attention to the manufacture of the common sizes of tile and brick. A little later on it is their intention to gradually work into the manufacture of sewer tile.

The Lehigh Clay Works announced that they are 100 cars of brick behind their orders. During the winter they have installed a hot air dryer and otherwise improved their plant. They have also increased their capacity and will run the coming season under a 40,000 capacity. They have been unable to handle all of the business tendered them and could have booked 100 cars more of stock than they have so far accepted. It is their intention to build two more kilns during the coming summer. They expect to place on the market a new product from their plant in the shape of a fancy chipped face front brick. Their capacity on tile has been sold up to June 1. JED.

Ft. Dodge, Ia., March 1, 1902.

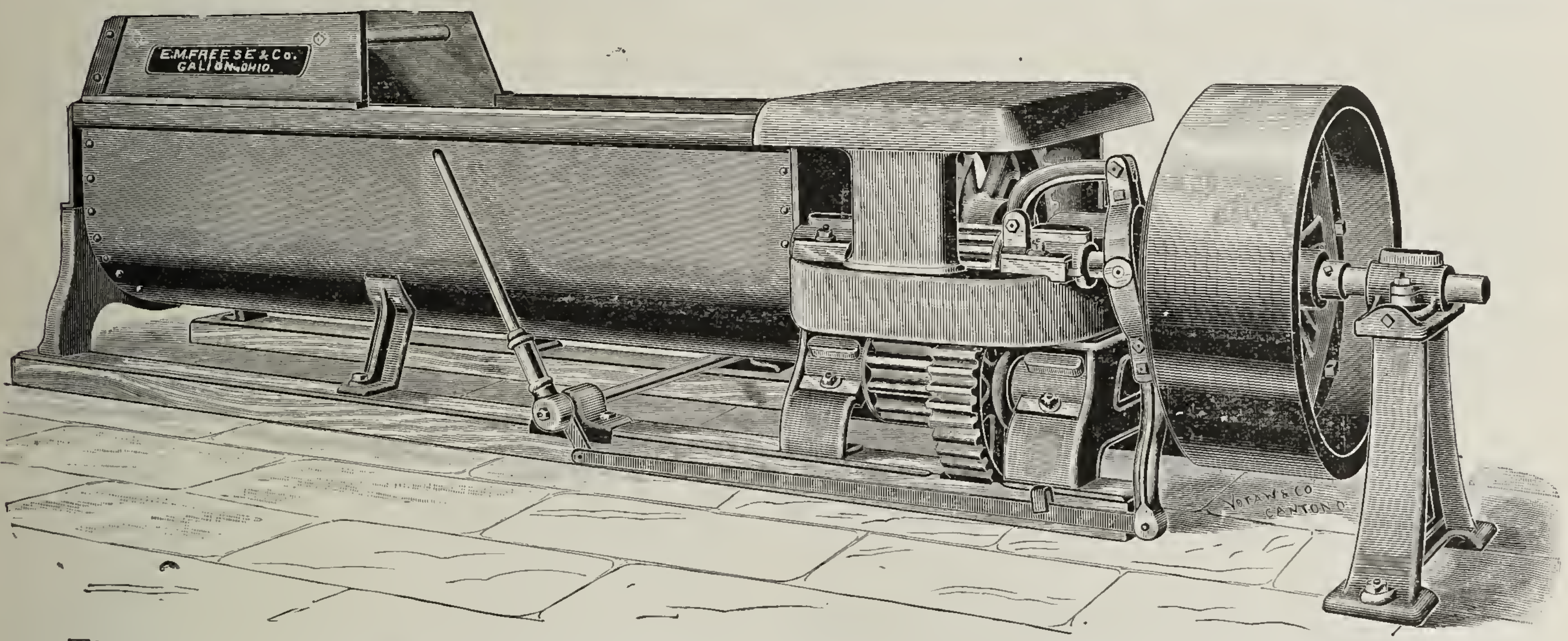
Louis Ruffing advises us that he expects to go into the brick business at Delphi, Ind., in the near future, and will be pleased to receive catalogues, etc., from machinery manufacturers.

Our Mammoth Brick Machine


BUILT BY
E.M.FREESE & CO.
GALION, OHIO
U.S.A.

THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug-Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.
VOTAW & CO
CANTON O.

THESE PUG-MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitted for making a fine quality of brick.

E. M. FREESE & CO., = = Galion, Ohio.

Mention The Clay-Worker.

CHICAGO BRICK AND BUILDING NEWS.

DECEMBER 31ST, 1901, brought to a close a year unequaled for prosperity in the Chicago building world since 1895. In all 6,053 substantial structures have gone up since January 1, 1901, costing in the aggregate $34,962,075, a greater sum than has been expended on buildings in this city since the great boom which attended the World's Fair in the years of 1891 and 1892. The building activity was greatest on the South and West Sides, the former ranking first in cost of structures and the latter standing ahead in number of buildings. May, June and July were the record months of the year, witnessing the construction of 2,005 buildings, at a total cost of $11,918,690. In comparison with the other large cities, Chicago ranks second to New York in total cost, to Philadelphia in number of structures, and to St. Paul in gain per cent. over the number and cost of buildings erected last year, Chicago's gain being 93 per cent.

This enormous activity has not failed, of course, to have its natural and good results with manufacturers of and dealers in building materials, many of them finishing the season still behind their orders, especially the terra cotta and roofing tile people, some of the last named being as much as two or three months behind. The greatest demand and the demand first to be filled fell upon the brickmakers, and the following rough figures will give some idea of the quantity of front brick disposed of by the principal dealers in and about the city: The Chicago Hydraulic, 16,000,000; the Thomas Molding Company, 10,000,000; S. S. Kimbell, 5,500,000; Charles Bonner, 5,000,000; scattering, probably about 3,000,000.

In spite of these immense quantities of front brick disposed of, however, the dealers have failed to make any great fortunes to speak of, owing to the price being cut to such an absurdly low figure. Instead of keeping the price up to at least a reasonable figure, as would have been proper in the face of such demand, some of the leading dealers cut it all the way from three to six dollars per thousand, believing that by so doing they would sell more brick, and not reckoning upon the fact that there would be the demand for just so many front brick anyway. The other dealers were obliged to meet this cut in order to stay in the market, and as a result there has been less than half the profit that there should, with perfect justice to the builder, have been in front brick during the season just passed.

The most encouraging feature of the activity of the past year has been its perfectly normal character, which gives good grounds for hoping that it may be continued through the year to come. Such at least is the opinion of the leading architects, contractors and building material men throughout the city, and the number of permits, reaching nearly 100, issued in the first two weeks of the new year seem to bear this opinion out. The usual amount of winter building is in progress, and already plans are being made for architectural ventures of especial importance, while extensive deals in undeveloped city realty which are going forward from day to day, point to still further activity in speculative construction.

The most important of the new structures which are to go up within the next twelve months is the new passenger station soon to be erected at Van Buren and LaSalle streets for the Lake Shore, and Michigan Southern and the Chicago, Rock Island & Pacific railroad companies. Work in tearing down the old structure is going on rapidly, and it will be a comparatively short time before the new building will begin to rise in its place. The new station will have a frontage of 215 feet on Van Buren street, with an extension back to Harrison street, covering a distance of 795 feet. The station proper will extend over 157 feet of this. Connected with this by a concourse 45 feet wide will be the train shed, 580 feet in length. Of the main building the two lower floors will be used for station purposes and the two upper floors will be used for office space by the two companies. It will have a height of eight stories. The first two stories will be of dressed granite, while the upper portion will be of vitrified brick, with stone trimmings. Frost & Granger, the architects, have the plans practically completed save for some minor details.

The most expensive apartment house for its size ever erected in Chicago is nearing completion. It is situated on Lake avenue, between Forty-ninth and Fiftieth streets, with annexes on Washington avenue, and involves an expenditure of $350,000. The main building is nine stories high, with a front of 140 feet and a depth of 75 feet. The exterior is constructed of pressed brick and cut stone. The interior will be divided into fifteen apartments of twelve rooms each. The annexes fronting on Washington avenue will be numbered 1 and 2. Annex No. 1 will be four stories high, fronting 60 feet, with a depth of 69, and will be of the English basement type. It will contain three apartments of twelve rooms each. This annex is now one story high. Annex No. 2, of which only the foundations are thus far completed, will likewise be four stories high, covering 61 by 111 feet on the ground. It will contain six apartments of eight rooms each. The architect, S. S. Beman, has designed many new features for this triple apartment home which have not as yet been made public. W. J. Bryson, for many years associated with Thomas B. Blackstone, president of the Chicago & Alton road, is the owner.

Another unique building of the type above has just been completed on the west side of Grande boulevard, between Thirty-eighth and Thirty-ninth streets. It will be three stories high and have the external appearance of five single three-story houses. T. E. Ryan is the owner.

Two large brick buildings being put up for the University of Chicago, on the northwest corner of Forty-eighth street and Ellis avenue, are now almost completed, the work upon them having been pushed along through the coldest weather. The power plant is the larger of the two structures. It is about 200 feet long and 55 feet in width. Aside from the iron work, it is constructed entirely of pressed brick. From the engines and dynamos in this building will be furnished heat and light to the twenty-odd buildings scattered about the campus, and power to run the machinery in the Press building, situated just southeast of it in the same block. The Press building is much the handsomer structure. The exterior finish on all sides is vitrified brick with stone trimmings, with false gables rising above a flat roof. The building is three stories in height, not counting a half basement in which the heavy presses will be located. The rest of the space in this building will be divided up into editorial rooms for the various publications of the university, composing rooms, book store and information bureau. The university has recently completed purchases of land which give it uninterrupted ownership of a half a mile of property fronting on the Midway, with a depth varying from one to two blocks. It has been stated on good authority that this land will be used solely for academic purposes, and it is not unlikely other buildings will soon be put under way, especially if, as is rumored, the university opens a school of law or engineering.

Other big buildings now sure of being started this year are: A building for the First National Bank, at the northwest corner of Monroe and Dearborn streets, to cost $3,500,000; a sixteen-story building for Otto Young, at 145-153 State street, to cost $1,000,000; a fourteen-story annex to the Hartford building, at the southwest corner of Madison and Dearborn streets; an eight-story building for Hibbard, Spencer, Bartlett & Co., at State and River streets, and a large building, exact size as yet undetermined, for Eugene S. Pike, at the northeast corner of Monroe and State streets. FAX.

INTO NEW AND BETTER QUARTERS.

In a recent letter the Fernholtz Brick Machinery Co., St Louis, Mo., say: "We beg to advise that our new plant at Boyle avenue and Old Manchester road is about completed and will soon be ready for occupancy. Our new building is a heavy brick structure 80x100, two stories high, with splendid light, as there is not a building within sixty feet of it and nothing can be built nearer than ten feet to it, with windows about two feet apart all around the building. Our new plant will be fitted with cranes, overhead trolleys and up-to-date equipment, making it one of the most complete machine shops of its size in the country. We are glad to report that among the most recent plants being erected by us is a complete four-mold outfit for the American Brick and Tile Co., Oklahoma City, O. T.; also a complete four-mold outfit for Mr. George H. Wilson, Sulphur Springs, Tex. We have also sold a nice outfit to the Fredericktown Brick Co., Fredericktown, Mo., and to the Joplin Vitrified Brick Co., Joplin, Mo. We have a number of nice orders for supplies from different parts of the country, and our inquiries indicate a splendid business for the coming year. We will be in a better position to attend to the wants of our customers than we have ever been, as our capacity will be increased about twofold. We have lately improved the Fernholtz Patent Clay Pulverizer very much by fastening the pins into the cage with set-screws instead of the old idea of riveting them, which enables the brickyard man to replace them on the yard when they are worn instead of having to send the cages away to have them replaced. We have also improved our Fernholtz Clay Mixer by making it entirely of iron, which condenses the space taken up, makes it more modern and more satisfactory in every way."

WILL ERECT A MODERN BRICK PLANT.

Editor Clay-Worker:

Inclosed herewith please find $2.00 in payment of my subscription to The Clay-Worker. Mr. George A. Pickett and myself have purchased sixty-five acres of clay and sand property, and will erect a modern pallet brick plant. The location is in Berlin, one and one-half miles from Berlin Station, on the Middletown branch of the N. Y., N. H. & H. R. R. We have commenced work and hope to be ready to make brick by April 15. Mr. Pickett is a New Haven man, who has been interested in and was president of the E. A. Chatfield Co., of New Haven, since it was organized until Jan. 1. He has sold his interest in that company. I have been superintendent of the Berlin Brick Co. for the past six years, and two years previous to that was superintendent of the W. L. Davis plant, at Berlin. Knowing that you are always interested in learning of new concerns, I think it proper for me to be one of the first to inform you.

Very truly yours, J. K. CONLEY.
Kensington, Conn.

CROWN AND PEORIA PLANTS COMBINE.

The Crown Potteries Co., of Evansville, Ind., has been incorporated, with a capital stock of $400,000, to engage in the manufacture of white ware.

The new company will control both the plants of the old Peoria Pottery Co. and the Crown Pottery Co., the former located at Peoria, Ill., and the latter at Evansville, Ind. The following are the incorporators of the new concern: J. M. Shaw, S. Reid, R. Reid, James Cumming, H. W. Flentke, H. J. Milligan, Arthur Davidson and G. G. Tanner, A. M. Weil, J. B. Cochrane, F. W. Hays and F. B. Wilson, out of which the following officers have been elected to serve for the ensuing year: A. M. Weil, president; J. B. Cochrane, vice president; Arthur Davidson, secretary, and M. B. Wilson, treasurer.

WANTED—Position as enameler of brick, terra cotta, art tiles, etc. Thoroughly practical proof of ability given to firms intending business; no other need apply. Can take charge of burning. Address
3 1 cm P. B., care Clay-Worker.

WANTED—Position as foreman or head burner of paving or dry press brick plant, by a man who thoroughly understands the business. Can also build kilns. Best of references. Address HENRY,
1 2 d Care Clay-Worker.

Brick Pallets.

It is the opinion of the best Manufacturers that the Pallet System is the most economical method for making bricks. White pine lumber is conceded to be the best and most economical material for pallets. We make them. A word to the wise is sufficient. Send postal card for circulars.

Mershon, Schuette, Parker & Co.,
Saginaw. East Side Mich.

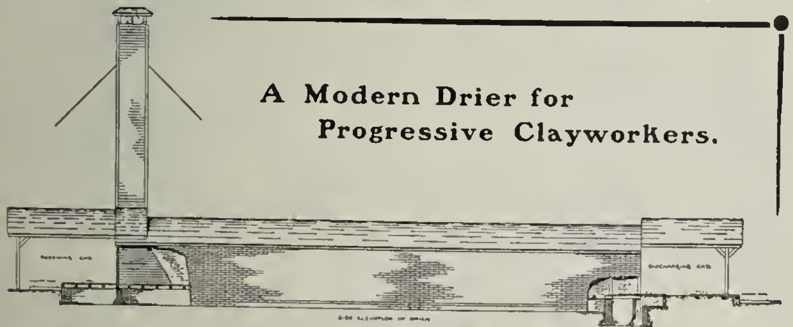
WANTS, FOR SALES, ETC.

WANTED—A thoroughly competent and reliable fire brick man to superintend the construction of a plant and to take charge of same when completed. Do not answer unless you are fully "up-to-date" in all matters relating to the manufacture of fire brick. A splendid opportunity to the right man. Address A. H. LLOYD,
Room 803, 115 Dearborn St.,
3 1 d Chicago, Ill.

EXPERIENCED MAN WANTED,
To take charge of and an interest in an established paving brick business. To insure the necessary interest in the business, the party will be required to invest some capital. Present owner and manager has an abundance of capital, but wishes to be relieved of the care of managing the business. The plant is well equipped and doing a paying business, and would not be sold but for the desire on the part of the owner to retire from active business. It is a rare opportunity for a proficient, energetic, reliable man, with some capital, to acquire a valuable plant. For further particulars, address CARNEGIE,
3 1 ? Care Clay-Worker.

FOR SALE—Books for brickmakers. Inexperienced workmen will find them a source of valuable information. Brickmakers' Manual, $3.00—a practical treatise on the everyday details of brickmaking; Clay Glazes and Enamels, $5.00, tells how to glaze and enamel brick and gives valuable recipes; Vitrified Paving Brick, $1.00, tells all about the best materials for and methods of manufacturing paving brick; Tables of Analyses of Clays, $1.00, gives the analyses of many American and European clays. Any or all of these mailed, postage prepaid, on receipt of price. Write for lists of other valuable books for clayworkers. Address T. A. RANDALL & CO.,
3 tf r Indianapolis, Ind.

The NATIONAL DRIER



A Modern Drier for
Progressive Clayworkers.

C. H, BEALE, Mangr, Southern States, MONTGOMERY, ALA.
JNO, McKAY, Representative at Large.

Is not loaded with age and complicated Features. If you want IMPROVED METHODS put in the modern up-to-date

NATIONAL DRIER

Let us send you a circular, it will interest you.

The National Dry Kiln Co.,
No. 33 West South St., INDIANAPOLIS, IND.

AMONG THE POTTERS.

THE FLOOD which struck East Liverpool, O., some days ago, practically stopped operations at several of the different potteries, but the most of them have recovered from the effects of it and are now devoting their attention to the task of cleaning up the debris left by the receding waters. Some of the works of the East Liverpool Potteries Co., namely, the East Liverpool, Globe, Wallace and Chetwynd and Murphy works suffered worst of this company's plants. The C. C. Thompson pottery also suffered considerable loss, as did the Harker plant. They have all started operations again, however, and expect to be running full in all departments in a day or so.

The United States Pottery, at Wellsville, O., are making several improvements around their kilns, one of the most important of which is the changing of their up draft kilns into down-draft ones. Needless to say, the result is anxiously awaited.

The National Furnace Brick Works, the new plant at Rogers, O., owned by John W. Hall, of the East Liverpool Potteries Co., of this city, is almost ready to start up, and Mr. Hall expects to have it in full operation by the first of April.

The Smith-Phillips China Co., of this city, are rushed with orders, and are now turning out four glost kilns every two weeks. The company are at their busiest period and are very successful, considering the comparatively short time they have been in the business.

The capacity of the Potter's Supply Co. has been sorely taxed in the seggar department for the past few months, and the relief will certainly be felt when the new seggar company gets in the field with its product, and, providing the article is a good one, they will certainly have no trouble in getting rid of their entire output.

The National China Co., this city, are contemplating the erection of additional brick buildings this coming spring, and it is probable that several new kilns will be erected, and not improbable that the capacity will be nearly doubled.

At a meeting of the West End Pottery Co., this city, the following officers were elected: Geo. W. Ashbaugh, president; H. W. Burgess, vice president; C. C. Ashbaugh, secretary and treasurer; Wm. Burgess, general manager, and W. E. Cunning, assistant general manager.

The Trentvale Pottery, in this city, has again started up. The output will be confined principally to specialties.

The Denver Pressed Brick Co., at Denver, Col., have entered into the manufacture of electrical porcelain. The order for the necessary machinery has been placed in this city.

The Dresden China Co. has been incorporated under the laws of Ohio, with a capital stock of $200,000, to engage in the manufacture of white ware at Salineville, O., eighteen miles from this city. The company propose to erect in the early spring a six-kiln pottery, which, it is said, will be confined to the manufacture of hotel ware only. W. H. Deidrick, vice president of the Sevres China Co., is the prime mover in the scheme. Others interested are H. G. Deidrick, J. H. Dobbs, W. B. Hill and H. H. Kirk, the latter from Salineville, O.

The Unionport Pottery Works, at Unionport, New York city, are making extensive improvements in the way of additional machinery in their clay shops.

The new pottery building at Barberton, O., is well under roof, and, it is said, will be ready for operation by May 1.

The Roseville Pottery Co., at Zanesville, O., have increased their capital stock from $100,000 to $300,000.

The plant of the State Island Clay Co., at Staten Island, N. Y., was recently destroyed by fire. Loss in the neighborhood of $40,000, possibly $50,000.

The Summit China Co., of Akron, O., have decided to increase their capital stock from $50,000 to $100,000.

It is reported that East Palestine, O., is to have a new six-kiln pottery. The Chamberlains, of the Chamberlain Bros. Co., of that city, are said to be interested in the venture.

At the annual meeting of the stockholders of the Mosaic Tile Co., of Zanesville, O., the following officers were elected: David Lee, president; W. M. Bateman, vice president; W. M. Shinnick, secretary. The officers of the company report having done an exceedingly large business during the past year, and have decided that a number of improvements and extensions will be necessary to keep up with the amount of business that is coming their way. There is also a great improvement in the grade of the output of the company, which is confined to tile, in both plain and ornamental designs.

The Shenango China Co., at Newcastle, Pa., drew their first kiln of ware week before last, and the results obtained were very gratifying, indeed. Everything was in good order at the start-off, and it is said that when the plant started up there was not a hitch at any point. The concern expects to have ware on the market by the 1st of April.

The entire works of the Greenford Tile Co., at Greenford, O., were destroyed by fire last week, entailing a loss of about $5,000. The plant was owned principally by Anthony Reichstadt and Charles Pettitt, and was doing a very gratifying business.

James Clark, the English potter, who died so suddenly recently and was buried at sea, was at one time manager of the American China Co., at Toronto, O. Mr. Clark was also at one time proprietor of the Bullseye Pottery, at Trenton, N. J., and was afterwards connected with the Trenton China Co. and the John Maddock & Son's Co. Mr. Clark was fifty-five years old at his death.

The Lockhaven Sewer Pipe Co. has been incorporated under the State laws of Ohio, with a capital stock of $10,000. The new concern has purchased works at Lockhaven, Pa., which it will rebuild and put in operation in the near future.

The Nichollson Bros.' brick works, at Steubenville, O., recently burned to the ground, entailing a loss of between $5,000 and $6,000. The works had been in operation less than a month's time.

The Meneke Pottery Co., a new concern, organized for the manufacture of earthenware jugs, has at last concluded to settle in Millville, N. J., where its new plant will be erected at once. A plot of ground has been selected and the plant will be started at once.

The Ohio China Co., at East Palestine, O., has been sold by the Sebring Potteries Co., which will erect another in its place in their own city, Sebring, O., this spring. The plant has been sold to East Palestine parties, a part of whom have been connected with it in responsible capacities for some time past. The company will retain the firm name, the Ohio China Co. A name has not as yet been selected for the new works to be erected in Sebring.

H. E. Bicknell, formerly of the American Queensware Co., a retail concern of East Liverpool, has purchased the controlling interest of the Arsenal Pottery Co., of Trenton, N. J., and will shortly remove to that city, where he will conduct the business of the above named concern.

The Columbia Insulator Co., of Akron, O., has been incorporated at Columbus, under the State laws of Ohio, to conduct the manufacture of insulators and electrical porcelain. The following are the incorporators: C. E. Breckinridge, L. E. and L. M. Briggs and Jacob Seiger.

The Crooksville Art Pottery Co., of Crooksville, O., has been incorporated, with a capital stock of $60,000.

East Liverpool, O. TOM POTTER.

Portrait of the Man Who Would Prefer a Short Wife and a Merry One.—Life

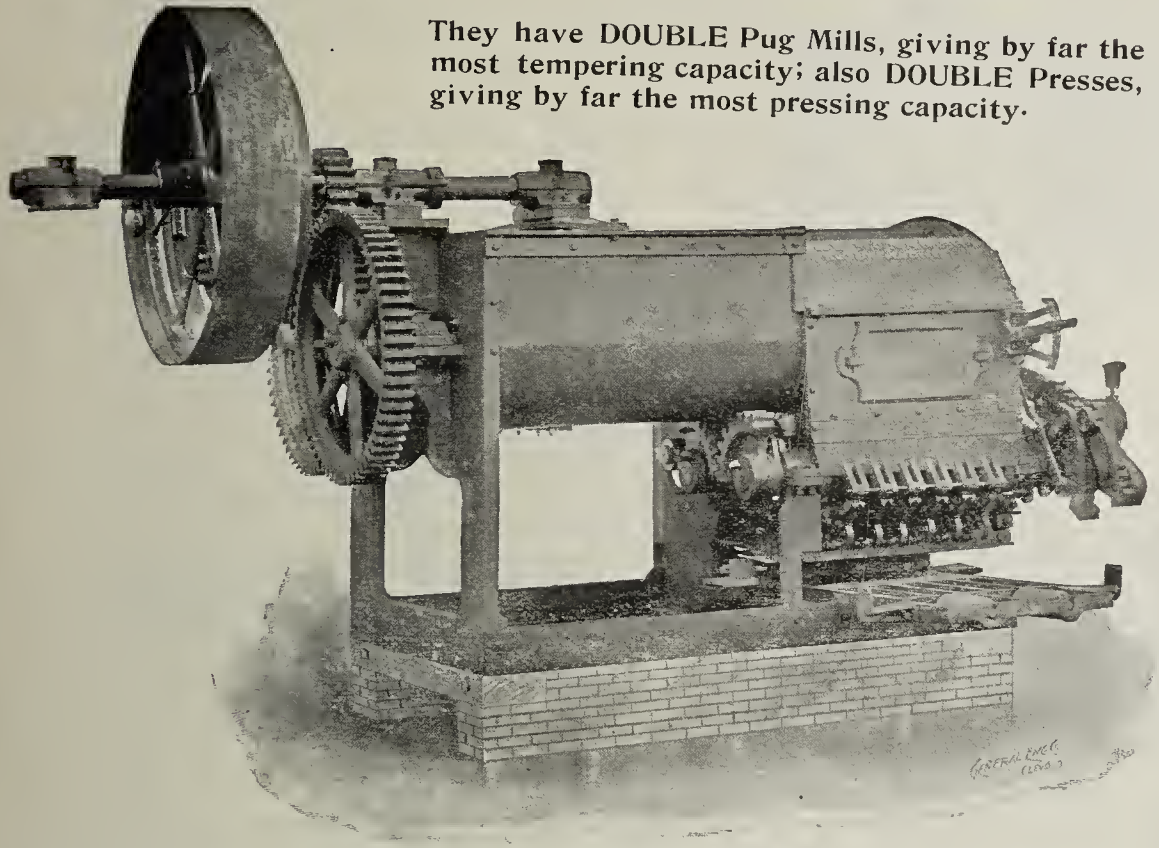
LIGHT HOUSES

Do not have to hire bands or fire cannon to call attention to their shining—**THEY JUST SHINE.**

Thus it is with the two "soft-mud" machines we manufacture (one horizontal and one upright). **Each** is at the head of its respective class, and the number of each in use, (note the figures) **tells the whole story.**

Over 100 "MONARCH" BRICK MACHINES in use.

They have DOUBLE Pug Mills, giving by far the most tempering capacity; also DOUBLE Presses, giving by far the most pressing capacity.



READ THIS.

A Fresh one Every Month.

◆ ◆ ◆

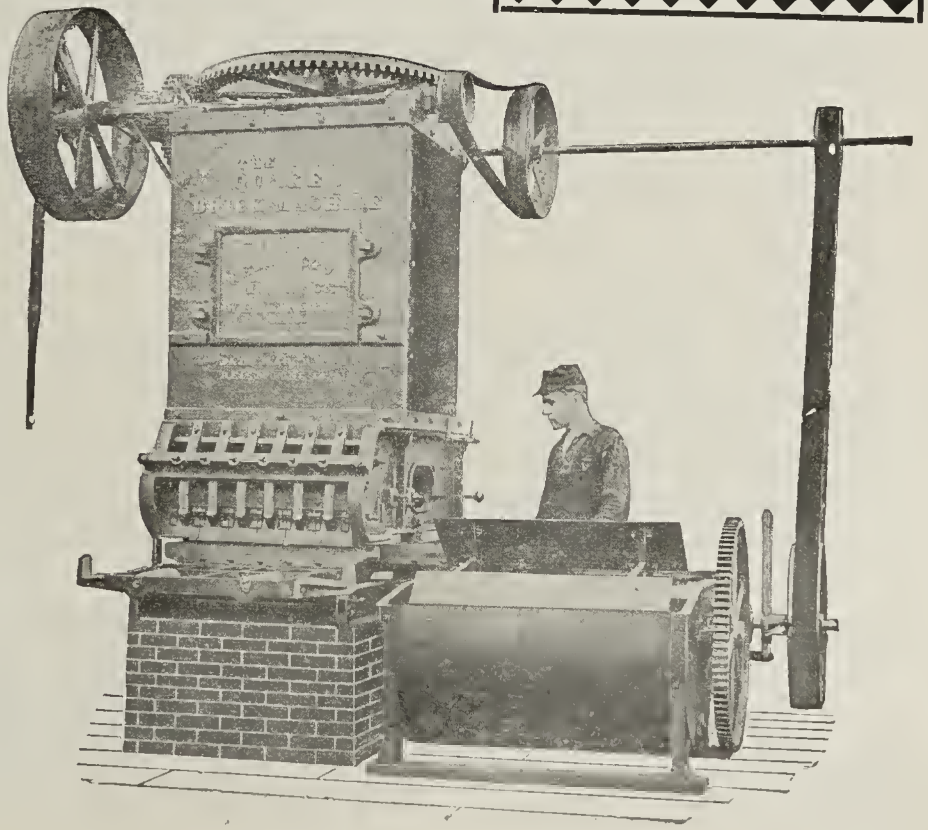
Hamburg, Pa., Oct. 8, 1901.
The Wellington Machine Co.,
Wellington, Ohio.

Gentlemen — After having used your "Monarch" Machine the past ten seasons, we do not hesitate to say that we consider it the best on market. During this time we have made 35 million brick, and our machine is good to make as many more.

We have not had one single break on the machine thus far this season, which we think is a fine record for any machine for the tenth season.

Yours very truly,
Tobias Bros. & Co.

OVER 500 "QUAKERS" in use, both Horse and Steam Power, now made entirely of Iron and Steel.

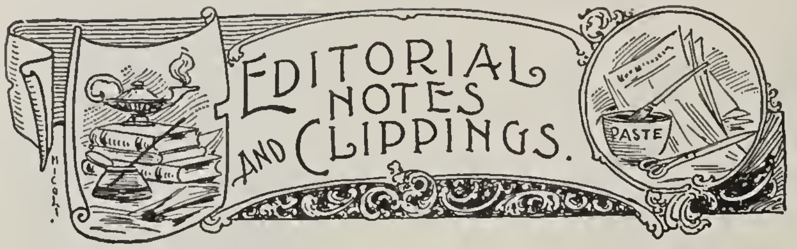


OUR MOULD-SANDER is the BEST, SIMPLEST AND CHEAPEST.

WITH our ROLLER-BEARING BRICK BARROWS you can wheel 20 per cent. more load and do it as easily. Order one subject to approval.

ALL OTHER SUPPLIES. Send for Catalogue.

The Wellington Machine Co.,
WELLINGTON, OHIO.



EDITORIAL NOTES AND CLIPPINGS.

THE ADVERTISING MAN.

From Dan on down to Beersheba,
And back again to Dan,
The forceful push of commerce
Is the advertising man.

Among all breeds of people,
The white folks, black and tan,
The one that does the business
Is the advertising man.

As fire and steam to engines,
Or to wheels the oiling can,
The same to wheels of business
Is the advertising man.

You may work yourself to frenzy,
You may hustle all you can,
But will only make a winning
Through the advertising man.

You'll catch the golden nuggets
In your little sluicing pan,
When shaken by the fingers
Of the advertising man.

—Frank E. Page, in Denver Times.

K. J. Satterhund will start a brickyard at Washburn, N. D.

Benjamin F. Earl will manufacture brick at Niles, Mich.

D. Williams will open up a brick plant at South Haven, Mich.

Cheyenne, Wyo., is to have a new brickyard. Mr. Altman is interested.

A new brickyard is to be opened up at Clinton, Ia., by Bernerd & McGovern.

G. H. Stevens and S. Alexander will in all probability erect a brickyard at Menomonie, Wis.

We are advised that M. A. Thompson, Gastonia, N. C., desires to purchase brickmaking machinery.

The Joplin (Mo.) Vitrified Brick Co. have filed articles of incorporation. They have $30,000 capital stock.

Forbes & Ware is the name of a new company recently organized to manufacture brick at Colorado Springs, Colo.

The W. Paul Brick Co., Tyrone, Pa., write that they are in the market for a dry press machine for the manufacture of fire brick.

The Hastings Brick Co. is the name of a new company that will manufacture brick at Elnora, Ind. S. A. Whisman and B. Corbin are interested.

C. W. Hughes, of Marshalltown, Ia., contemplates establishing a brick plant at some point near that town, but has not yet decided on a location.

A. Barr is making a number of improvements at his brick plant at Urbana, Ill., putting in new machinery, etc., getting ready for the spring trade.

M. Metzler, 377 South Grant street, Los Angeles, Cal., writes that he expects to establish a pressed and common building brick plant at Los Angeles early this spring.

The Fulton Brick and Drain Tile Co., Axline, O., has increased its capital stock from $10,000 to $100,000 and will be known henceforth as the Fultonham Brick Co.

W. H. Bell has purchased the interest of R. M. Watkins in the brickyard at New Castle, Ind. Mr. Bell will put in a brick machine and make a number of other improvements in the plant.

Benjamin Kissinger, a well-known brick manufacturer of York, Pa., died at his home in that city March 10. Mr. Kissinger was seventy-one years old and had been engaged in the brick business for many years.

The plant of E. S. Fox & Co., manufacturers of stove linings and terra cotta vases, was almost entirely destroyed by fire recently, causing a loss of $20,000, on which there was $11,000 insurance. The fire was caused by the high waters coming in contact with the red hot kilns, causing an explosion. The firm have been in business thirty-five years, and this is their first fire. The plant will be rebuilt at once.

The Kiowa Brick and Mfg. Co. has been incorporated at Hobart, Tex., by John K. Martin, W. R. Livermore, R. R. Roher and J. G. Harris. They have $20,000 capital.

The McFeely-Wheeler Brick Co. is the name of a new concern recently chartered at Pittsburg, Pa., with F. B. McFeely as president. They will establish a brick plant at Latrobe, Pa.

The Ohio Brick Co., of Toledo, O., has been incorporated, with $50,000 capital. Incorporators are Richard Kind, Adam R. Kuhlman, George G. Metzger, Joseph P. Degnan and Peter H. Degnan.

The death of W. A. Bingham, president of the Pacific Clay Manufacturing Co., Los Angeles, Cal., occurred at his home in that city last month. A widow, two daughters and a son survive him.

The Vandegrift Lumber Co., of which F. C. Jones is manager, will establish a brick plant at Hyde Park, Pa. They will put up fireproof buildings and have a modern plant in every respect.

J. A. Bryan, jr., will establish a brickyard of 15,000 daily capacity at Burlington, N. C., and is in the market for necessary machinery and appliances.

The Galesburg (Ill.) Paving Brick Co. has been reorganized and the factory will be started up at once. George R. Chambers is president and James Bloomfield is secretary and treasurer of the new organization.

The Arcadia (Ind.) Brick Works will double their capacity, which will enable them to turn out 75,000 brick a day. They will also put in an electric system and use electricity to convey the clay from bank to machine.

Frank J. Brown is interested in the formation of a company to manufacture brick at Topeka, Kan. Mr. Brown has discovered a very fine quality of clay within two miles of Topeka and is anxious to see same developed.

The McNeil Pressed Brick Co., St. Louis, Mo., are sending out announcements calling attention to the fact that they have recently enlarged their plant at Newbern, Ill., and are now in a position to fill promptly all orders for their brick.

At the annual meeting of the Columbus Brick and Terra Cotta Co., Columbus, O., the following officers were elected: L. J. Kilbourne, president, general manager and treasurer; F. A. Jacobs, vice-president, and Charles F. Hinds, secretary.

E. P. Stevens and Thomas C. Moulding, both of Chicago, have purchased most of the stock of the Buckeye Fire Brick Co., at Scioto Furnace, O. The plant will be improved and enlarged and operated under the management of Mr. Stevens.

The caving in of the clay bank at Dawson & Carder's brickyard at Cleveland, O., recently resulted in the death of two of the employes, one being killed instantly and the other one so badly injured that he died within a very short time after being taken out.

F. Davidson, J. H. Cooper, F. N. Beegle, B. Todd and others, of Beaver Falls, Pa., have purchased a tract of land at New Galilee, Pa., on which they will erect a building and fire brick plant. The works will be operated under the name of the Beaver Clay Mfg. Co.

Adam Bruner, an employe at the plant of the Terre Haute Brick and Pipe Co., Terre Haute, Ind., fell into the dry pan into which he was feeding clay and was so badly crushed that he died within a short time after being taken to the hospital. He leaves a wife and four children.

A. I. Hunter has purchased the brickyards of John S. Bartholomew at Grand Forks, N. Dak., paying for same $25,000. Mr. Hunter is a practical brickman, being secretary of the Red River Valley Brick Co., of East Grand Forks, and will spend several thousand dollars improving the plant in various ways.

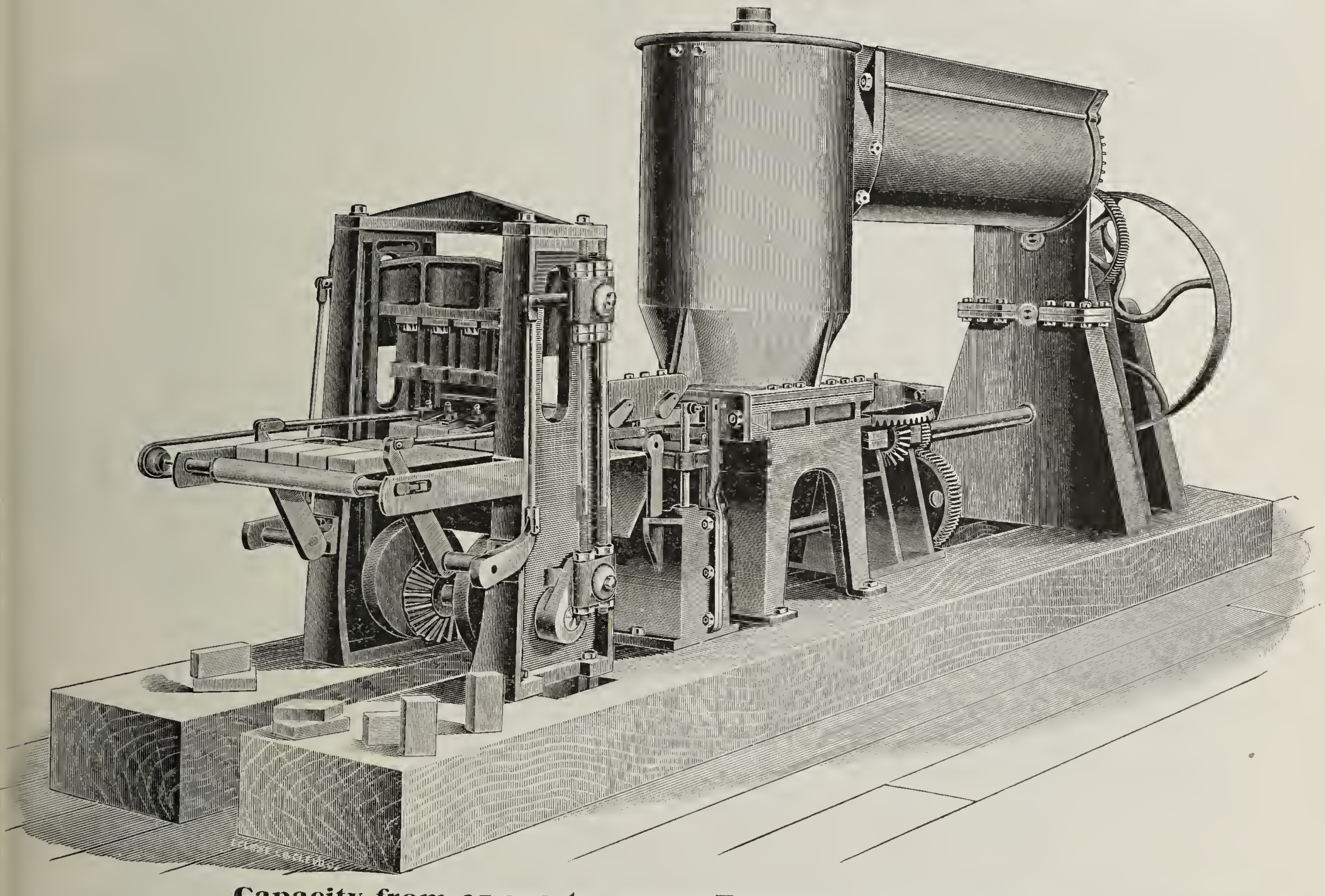
The McRoy Clay Works, in common with other Hoosier clayworking establishments, have been and still are very busy and will make a number of improvements in their plant. They will put in a new dryer, build three additional kilns and change from steam to electric power for operating their plant at Brazil, Ind.

A charter has been granted the Monongahela (Pa.) Clay Co. and they are pushing work on their new plant as rapidly as possible. The capacity of the plant is to be 500 tons of fireproofing a day, and it is the intention to double this as soon

"The Dictator"

The only Brick Machine which will Produce "Perfect Repressed Brick Without Lamination."

Strong, Powerful, Simple and Positive.



Capacity from 25,000 to 40,000 Repressed Brick per Day.

THIS MACHINE is guaranteed to automatically produce better repressed Brick both in construction and appearance, at less cost, than any other machine or combination of machinery now on the market. It is especially adapted for making Paving, Fire or Fine Front Brick.

The Battenfeld Mfg. Co.,

Write for Catalogue. *513 Williamson Bldg., CLEVELAND, OHIO.*

as possible. The plaut will be equipped with the most modern machinery for the manufacture of fire brick and other brick and tile, plain and fancy. J. McK. Speer, of Pittsburg, is president; J. R. Taylor, of Pittsburg, vice-president; J. Ramsey Speer, of Pittsburg, secretary and treasurer. A. M. McCrea, of Pittsburg, and S. M. Downer and R. H. Robinson, of Monongahela, and others are also interested in the new company.

A company will be organized to manufacture brick at Bellows Falls, Vt., by W. H. Bodine, M. F. Davis, E. L. Walker and E. C. Howard, of Bellows Falls, and Mr. Goddard, of Greenfield, Mass. The latter gentleman is an experienced brick manufacturer and will be general manager. The capital stock of the company is $10,000.

The Bonnot Co., Canton, O., report business unusually good and are operating their works overtime to fill orders. Among recent sales are double represses to the Terre Haute Brick and Pipe Co. and the Marquis Lime and Clay Co.; also an Admiral Dewey special combined machine, with automatic side-cut table, to the Hydraulic Press Brick Co., of St. Louis, Mo.

The large brickmaking plant of Dennis & Co., of New Britain, Conn., has been bought by Horace D. Payne, of Kensington, and George H. Sage, of Berlin. The purchasers have also acquired some clay fields in the vicinity of the plant. Mr. Payne is manager and treasurer of the Central New England Brick Co. and Mr. Sage was formerly officially connected with the Berlin Iron Bridge Co.

At the recent annual meeting of the Manufacturers' and Agents' Consolidated Brick Co., New York City, the following officers were elected for the coming year: Robert Main, president; William K. Hammond, first vice-president; William H. Barnes, second vice-president; John C. McNamara, third vice-president; John B. Rose, treasurer; executive committee, Robert Main, William K. Hammond, William H. Barnes, George S. Shultz, John C. McNamara, John B. Rose, C. Clayton Bourne, Homer S. Ramsdell, Denton Fowler, Jr.; board of directors, Robert Main, William K. Hammond, William H. Barnes, John C. McNamara, John B. Rose, George S. Shultz, Everett Fowler, Elijah A. Walsh, C. Clayton Bourne, Frank L. Holmes, Denton Fowler, Jr., Homer S. Ramsdell, Henry R. Brigham, Joseph H. Rose, E. S. Emmons, H. J. Jova, Alonzo Rose and John J. King. The Consolidated Brick Co. acts as selling agent for the Association of Brick Manufacturers and handles the entire product of the Hudson River yards.

J. T. Davie & Co., Spokane, Wash., will move their brick plant from its present location at Crystal Springs to Mead, Wash., and in addition to soft-mud sand brick will turn out stiff-mud wire-cut brick. They have bought 100 acres of land, on which there is an inexhaustible supply of clay. They will employ 30 or 40 men at first and afterward double that number.

The La Harpe Vitrified Brick Co. has been incorporated, with offices in La Harpe, Kan., and Oklahoma City, O. T. The capital stock is $450,000, and J. B. Adams, D. R. Nelson, C. C. Frampton, H. M. Levan, of Montgomery county, Kansas, and James M. Housel and Anna E. Housel are directors, the latter being of Oklahoma City.

H. A. Perkins, who has for a number of years been secretary and treasurer of the Brooklyn (N. Y.) Fire Brick Works, advises us that he has severed his connection with that company and is now associated with the Newton-Perkins Fire Brick Co., of Albany, N. Y., successors to the old firm of Newton & Co. The reorganized company is well organized for the manufacture of fire brick, stove linings, cupola and furnace blocks of every description and a general line of fire clay goods. The New York City office is at 39 Cortlandt street.

William Lyle, a pioneer clayworker of New Jersey, died at his home in Perth Amboy, N. J., February 20, after a lingering illness. Mr. Lyle was born in Scotland eighty years ago, but had been a resident of Perth Amboy for thirty years. He had been engaged in the clay business all his life until about four years ago, when he retired from active work ou account of his failing health. He leaves a wife and two sons, James and Robert W., both of whom are well known in the clayworking field.

The MONARCH

Is an All Iron and Steel Brick Machine with

Double——

Pug Mill.

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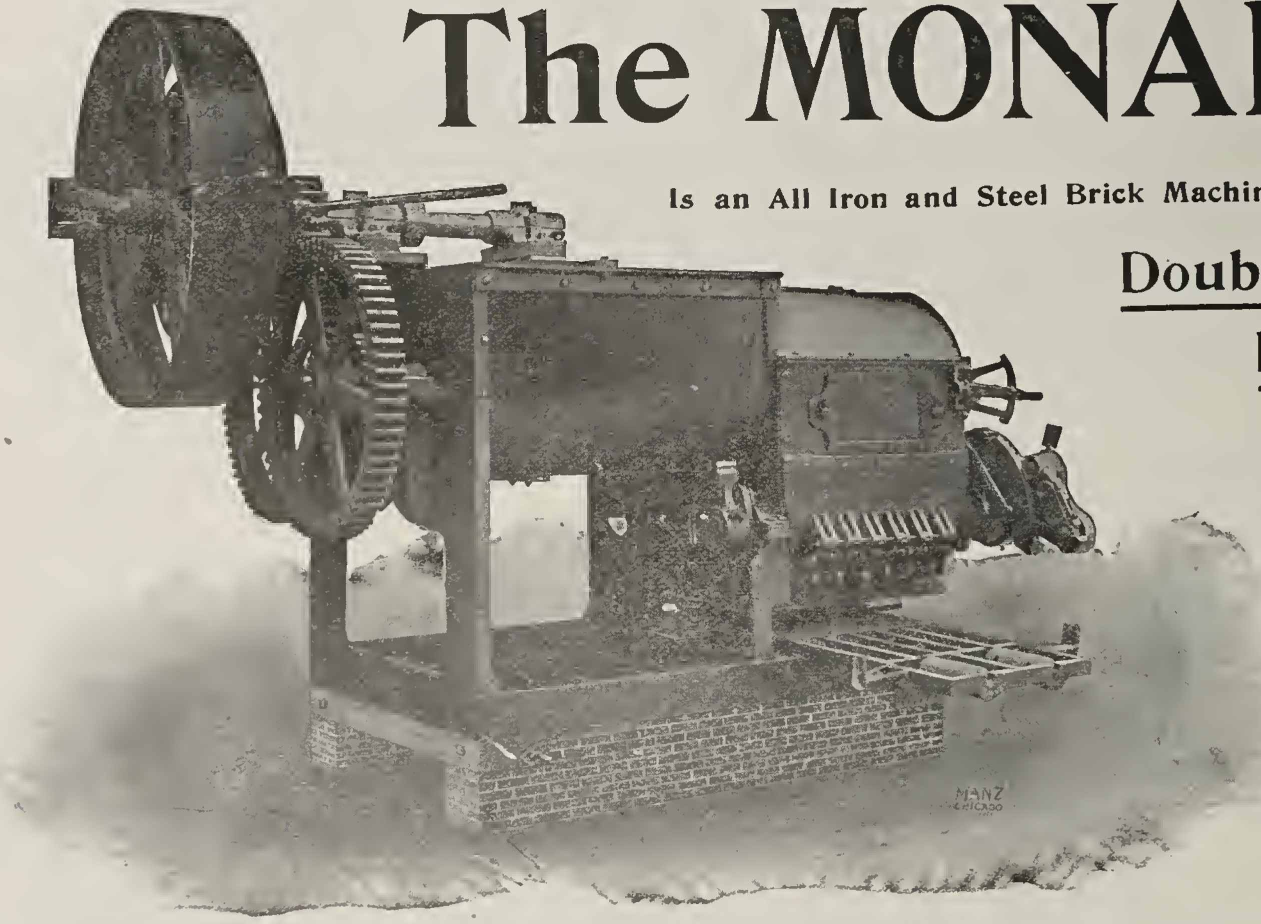
SIMPLE
IN CONSTRUCTION,
DURABLE
AND . . .
POWERFUL.

• • •

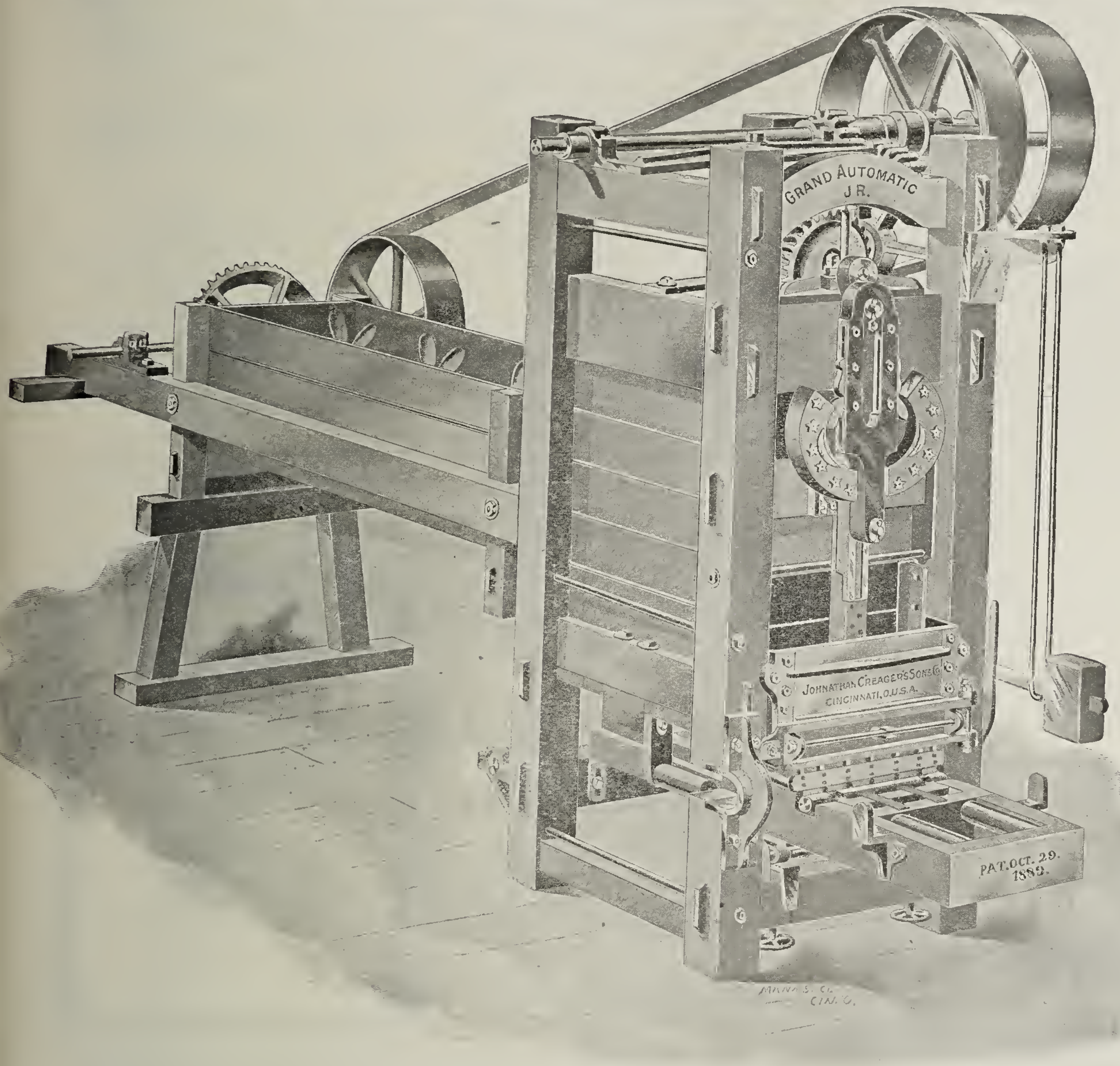
Every working part stands open to view both front and rear. It is a World Beater when it comes to quantity and quality of brick. We carry in stock a full line of first-class Brickyard supplies at a very reasonable price. Also the new **IRON QUAKER.** Engines and boilers. Send for new 1901 Catalogue.

JAMES W. HENSLEY, Successor to S. K. FLETCHER, **Indianapolis, Ind.**

W. L. KIDNEY Sales Agent, Capetown, South Africa.



Stop and Consider.


GRAND AUTOMATIC JR.
JOHNATHAN CREAGER'S SONS CO. CINCINNATI, O.U.S.A.
PAT. OCT. 29. 1889.

Six feet from ground to top of pug mill. The "Grand Automatic Jr.," with attached pug mill of 9-foot clear tempering capacity. Simplicity itself, and entirely automatic; breakage and repairs are not a consideration. It is an exclusive outfit for making stiff-tempered sand-moulded brick, of perfect outlines. It stands pre-eminent among the brick machines of the world, with a record as brilliant as the sun's rays and just as universal. It costs no more than any other high-grade machine, and much less than the majority. Write **today** for our catalogs. They will inform you of many good things for the progressive brickmaker.

Jonathan Craeger's Sons Co.,

Inquire about our "Perfection" brick moulds.

Cincinnati, Ohio, U. S. A.

Mention The Clay-Worker.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than $1.00.

WANTED—Young, active superintendent for large paving brick works.
Address F. W. B.,
3 2 d Care Clay-Worker.

FOR SALE—Two-mold dry press brick machine, new and of standard make. Price, $1,250. Address
3 1 d P. L. S., care Clay-Worker.

WANTED—One four-mold dry press; also engine, disintegrator and connections. Must be in good condition and cheap.
Address R. L. M.,
3 1 cm Care Clay-Worker.

WANTED—Position as manager or superintendent of a brick plant. Wide experience and highest references. State salary.
Address PERMANENT,
3 1 d Care Clay-Worker.

FOR SALE—One Huetteman & Cramer soft mud brick machine, in good condition; capacity, 32,000 per day. Address
J. C. McDONALD & SON,
211 Hammond Building,
3 1 cm Detroit, Mich.

WANTED—To buy for cash a good second-hand Quaker or Standard soft mud brick machine. Must be in good condition.
Address CHAS. S. FISHER,
3 1 cm Belton, Texas.

FOR SALE—One Creager six-mold power press; two sets molds, revolving dump table, pug mill and elevator. Cheap for cash. Address
BATAVIA BRICK CO.,
3 1 d Batavia, Ohio.

FOR SALE—One three-mold Boyd brick press, but little used. Address
GLOBE IRON WORKS,
2 tf d Erie, Pa.

WANTED—A manager; practical brick man; one who would purchase an interest preferred. Address
BUTLER BRICK & TILE CO., Ltd.,
2 2 c Butler, Pa.

FOR SALE—One second-hand 40-inch Stedman disintegrator; good as new; cheap for cash. Address
THE JACKSON SAND MINING CO.,
1 3 cm Jackson, Ohio.

FOR SALE—Two double Columbian Raymond represses, in first-class condition, and one Raymond hand press, never used. Price low. Address REPRESS,
2 3 c Care Clay-Worker.

FOR SALE—Large tract of valuable raritan bed clay land. Unsurpassed facilities for manufacturing chinaware, fire brick, retorts, glass pots, terra cotta, front brick. Shipping, rail and water. Address
BENJ. ELLISON,
3 1 cm Metuchen, N. J.

FOR SALE—One No. 1, style "A," C. & A. Potts & Co. disintegrator, capacity from 20,000 to 30,000 per day. Been used only a couple of months and in good repair. Capacity too small for our needs.
Address THE TIPTON CLAY CO.,
3 1 cm Tipton, Ind.

WANTED—An experienced man to take partnership in an established fire brick plant in Texas. Ready sale for all products at good prices. Only small capital necessary for right man. Address
3 2 dm BOX 6, care Clay-Worker.

RELAYING RAILS FOR SALE.

A couple of cars; 25 and 30-pound relaying rails in good condition, in quantities to suit, for immediate sale.
THE ATLAS CAR & MFG. CO.,
3 1 d Cleveland, Ohio.

WANTED—A second-hand Raymond Perfection No. 3 repress; must be in good condition. EXPERIMENTIST,
3 1 c Care of Clay-Worker.

WANTED—A position as superintendent or foreman of a first-class, up-to-date brick plant. Thoroughly understand the making of all kinds of brick, tile, sewer pipe and terra cotta. Am strictly sober and can furnish good references. Address
3 1 cm G. A. G., care Clay-Worker.

WANTED—A party to take working interest in brick plant, two miles from Oak Grove, Pa., where fifteen million brick will be used in construction of shops. Can sell all I can make. Capacity, 30,000 per day. New equipment, complete. Big building boom in spring.
Address LEWIS,
2 4 d Care Clay-Worker.

TERRA COTTA SUPERINTENDENT WANTED—Must be capable of handling a moderate sized shop and thoroughly understand his business. Applicants will please state age, salary desired, experience and give reference, which will be treated confidentially. Address
S. K. R., care Clay-Worker,
2 2 d Indianapolis, Ind.

FOR SALE CHEAP—Soft mud outfit, rigged complete, with steam power iron Quaker boiler, engine, clay elevators, Wellington sander, capacity 2,000 per hour; racks, pallets, trucks, barrows, grates and doors for twenty arches, with or without lease on yard, located at Joplin, Mo. Also one-horse power iron Quaker machine. Address
H. M. MERRILL,
2 2 c Webb City, Mo.

FOR SALE—At Choccolocco, Ala., ten miles east of Anniston, on Southern Railway, thirty acres splendid brick and terra cotta clay land, formerly owned by the Pacific Brick Works and thoroughly tested by both dry and mud process. Also two improved dry press brick machines, capacity 30,000 each daily; 140 acres excellent farm land, two brick houses and one ten-room frame dwelling, large barn and four small houses. Can be bought as a whole or in part at a great bargain. Terms to suit. Inquire of
LOCKE, MOUNTAIN & CO.,
3 1 d Anniston, Ala.

WANTED

50 second-hand or new SOFT MUD CARS with one turntable and transfer combined. Write all details to X. Y. Z., care THE CLAY-WORKER.

WANTED—Situation as superintendent by practical brickmaker of fifteen years' experience. Can take entire charge. If satisfactory, will invest some cash and accept stock for part salary. Address
C. C. S., 352 19th St.,
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SITUATION WANTED—A continuous kiln burner, with twenty years' experience with various continuous kiln systems and wares, abroad (especially Germany) and in this country; capable to cope with difficulties, etc., offers his services. Address
3 1 cm EXPERT, care Clay-Worker.

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Use a Steam Shovel
On your clay bank?
Second-hand Steam Shovels
are one of my specialties.
I can give you a bargain.
Send for a list of them.

WILLIS SHAW, Chicago.
614 N. Y. Life Building.

Wanted

Second-hand or new,
100 Double Deck Cars,
also Pallets,
2 Transfer Cars,
4 Clay Cars
and
Half mile of light track complete.
Send full particulars to
W. MANN,
Care The Clay-Worker.

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The profits of any business enterprise —no matter what its character may be—*are dependent upon its operating expense.* There are frequently various expenses which are not reduced to their minimum; but the item demanding first attention is the cost of fuel. This expense is perpetual, and deserves no little consideration.

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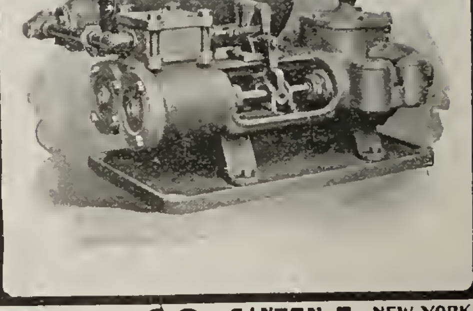
Ask for illustrated circular "D."



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FOR SALE—SWIFT'S WONDER OF THE AGE, the grateless coking table furnace kilns, lately patented. Thoroughly tested. Write for particulars. F. E. SWIFT,
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FOR SALE.

One E. M. Freese & Co. C. Machine.
One 6 B H. Brewer & Co. Machine.
One Brewer No. 1 Stone Separating Clay Crusher.

Address McHOSE BROS.,
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Brick and field tile plant with five acres clay; also 25-acre farm, modern brick house, good land, good outbuildings; $2,000 a year can easily be cleared on brick plant alone; orders waiting. Illness compels sacrifice.
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A BRICKYARD on the Western & Atlantic Railroad, seven miles from the city of Atlanta, with 130.000 inhabitants, thoroughly equipped with the latest and modern machinery and improvements. Plant entirely new. Capacity, 65,000 brick per day. Clay and shale in unlimited quantities. Wish to sell or lease on account of failing health of owner. Address

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FOR SALE—COAL AND SHALE LAND.

A track of 150 acres of shale land, located near the C. & E. I. railroad, will be sold cheap and on favorable terms to parties who will build a brick and tile plant. Will take a reasonable amount of stock with a good, strong company. The first stratum of shale runs from 15 to 20 feet in depth, then a 20-foot vein of coal, below this shale, to 80 feet or more. Running water; good building site; cheap fuel; 6½-foot vein of coal at depth of 95 feet; shale suitable for vitrified brick, tile, terra cotta, etc.

Address GOOD SIGHT,
1 3 cm Care Clay-Worker.

FOR SALE—In town of 5,000, a brickyard complete, with continuous kiln, engine, boiler, Chief machine, racks, pallets and everything to run a successful yard. Good reasons for selling. Address
3 1 dm PLATT, care Clay-Worker.

FOR SALE—$100.00 will buy second-hand No. 40 Steadman disintegrator, used very little.

$100.00 will buy two Grand automatic soft mud brick machines; have seen considerable service. Address

JAMES F. GRAHAM,
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A complete and well-equipped brick plant, including land with good bed of clay, is for sale or rent. Clay burns a beautiful red; Chambers machine; good market for brick, as yard is tributary to copper and iron districts; an excellent opportunity and a rare bargain for the right party.

Address LOCK BOX "C,"
2 2 cm L'Anse, Baraga Co., Michigan.

A SPLENDID OPENING IN TEXAS

For some competent pressed brickmaker, who can command some capital. Clay and magnificent sand in abundance and railroad facilities are first-class. Last year all the fine brickmakers in Texas were behind on their orders, and ordinary brick were bringing $12 per thousand. A tempting opportunity for the right man. Address for particulars

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FOR SALE.

One 9-foot Dry Pan, iron frame.
One 4-mold Semi-Dry Press, almost new.
One Arnold Steamer.
One Revolving Screen.
One Miller Hand Press.
One 15-H. P. Portable Engine and Boiler.
One 20-H. P. Ajax Engine.
One 25-H. P. Boiler.

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FOR SALE—Forty acres of land and a brick plant; steam power, with a capacity of 15,000 brick per day. First-class fire clay. Can sell all brick that are made for $7.00 per thousand. Will sell cheap. Reason for selling, health poor. Address
3 1 cm EUGENE, care Clay-Worker.

WANTED—Position by a strictly temperate, energetic young man as foreman or superintendent. Understand all kinds of stiff mud brick machinery; also Chambers automatic side-cut brick machine. The South preferred. Can handle negro labor. Have the best of references. Address
3 2 c WILLIAM, care Clay-Worker.

WANTED—A man who can superintend a yard making both soft and stiff mud brick, also drain tile. Must understand setting and burning and all details of brickmaking. An efficient man of good character will be given a permanent situation at a good salary. We also want a competent setter. Address
3 1 d B. & T., care Clay-Worker.

FOR SALE—One Quaker horse power soft mud brick machine, capacity 10 to 20 thousand per day. One Anderson 12-foot pug mill, soft mud. One Anderson upright brick machine, soft mud, capacity 20 to 30 thousand per day. One 35-horse power boiler. All machinery in first-class repair. Will sell cheap for cash. Address
1 3 cm J. D. W. H., care Clay-Worker.

WANTED—Position as manager on a brickyard by a strictly sober and reliable man. Capable of managing the entire business from clay bank to buildings. Have had considerable experience as a builder. Anyone contemplating starting a brick plant, it will be of interest to them to write to me. If satisfactory will invest some money and accept stock for part of salary. The best of references.

Address C. A. H.,
3 3 d Care Clay-Worker.

BRICK MACHINERY FOR SALE CHEAP

One E. M. Freeze & Co. Stiff Mud Machine, capacity 40,000.
One Bonnot Co. Pug Mill, 10 feet long.
One American Clay-Working Machinery Co. Hand Cutting Table.
One Eagle Repress, double die.
One 150-h. p. Slide Valve Engine.
Two 60 and 80-h. p. Boilers.
Two Means 9-ft. Dry Pans, wood frames.
Shafting, belting, cars, transfer, etc.

Ready to equip a first-class yard.

Address W. M. LEGNARD,
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FOR SALE AT A BARGAIN.

The following brick machinery, which is practically new, having been used only a few months:

One "Hercules" extra heavy Soft Mud Brick Machine.
One Horton Mfg. Co. Mold Sander.
One 5-leaf Dumping Table.
One Double Transfer Car.
One Combination Transfer Car and Turntable.
One Raymond Victor Repress.

Address
THE CLINTON COUNTY FIRE BRICK COMPANY,
2 3 cm Mill Hall, Pa.

A RARE OPPORTUNITY TO OBTAIN INTEREST IN AN ESTABLISHED BUSINESS.

FOR SALE—All or three-fourths interest in a brick plant; capacity, 6.000.000 a season; 5.000.000 made last season and all sold; good market and finest clay; 125-horse power Corliss engine; two boilers, 125-horse power; brick machines and all necessary buildings and tools of all kinds; racks, pallets and also steam dryer with engine, boiler, pumps, etc., etc. There is a saw mill in connection with the plant to run in winter time, when too cold for brickmaking. Principal owner, whose interest may be purchased, will retire, and the owner of the remaining interest, who is thoroughly conversant with the business and will oversee plant and educate the purchaser to manage the business, if he is not an experienced brickmaker. This is an exceptional opportunity for a young man to become established in a sound, legitimate business in a healthy and delightful climate. For further details, address
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Drying Economy.

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Our Dryer is superior to others by reason of improved methods, low cost of construction and economy of operation. If you're interested in dryers write for particulars. Ours will prove a good investment.

We also manufacture Conveyors, Exhausters, Heaters, Fans, Engines and Mechanical Draft Apparatus.

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FOR SALE.

—Paving or Building Brick Plant, at Bucyrus, Ohio.—

Consisting of twelve acres of land, with buildings and good railroad facilities, 1 100-h. p. engine, 2 80-h. p. boilers, 9-ft. dry pan, elevators, winding drum, 8-ft. pug mill, No. 2 Bucyrus Giant brick machine, 16-track Bucyrus steam tunnel dryer, with 170 single deck cars, 25,000 feet 1-in. and 1½-in. pipe, 15 tons T rails, transfer cars and turn-tables, 11 round down-draft kilns, with good bands, fire brick, floor brick, etc., etc.

Will be sold as a whole or in part. Inquire of
L. P. BATTEFELD,
Room No. 7. Fair Bldg.,
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FOR SALE.

At your own price, complete outfit for plastic clay, including granulator, rolls, clay elevator, pug-mill, stiff mud machine and cutting table. Also five bottom dump cars, shafting, pulleys and two boilers. Reason for selling, clay is exhausted, farm sold and must clear the land. Machinery is all in good repair and will be sold cheap if taken soon. Address
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MINERS AND SHIPPERS OF

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HIGH GRADE FIRE BRICK,

For Lining Kilns, Etc., a Specialty.

Also Hollow Blocks, Flue Linings, Wall Copings, Etc.

When writing for prices, state for what purpose brick are to be used.
Catalog Free.

Too Many Brickmakers

Use Cheap Brick in Kiln Construction. The Best is the Cheapest no matter what it costs. We can supply your wants in strictly

High Grade Fire Brick,

At MODERATE PRICES.

SEVEN WORKS in two States on THREE COMPETING TRUNK LINES.

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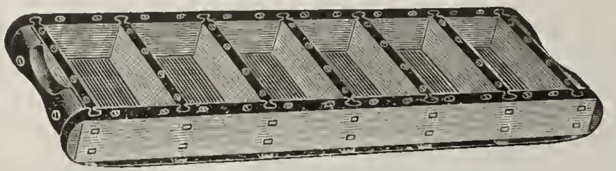

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Six-Brick Machine Moulds	$1 50
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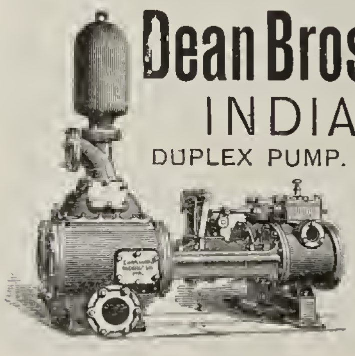

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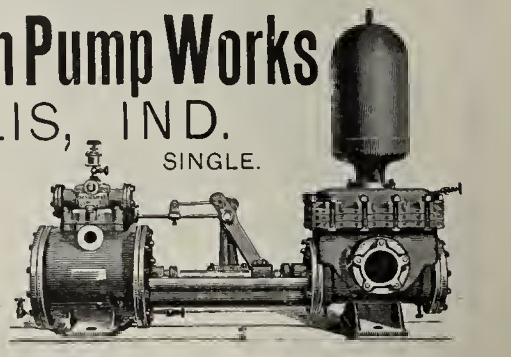

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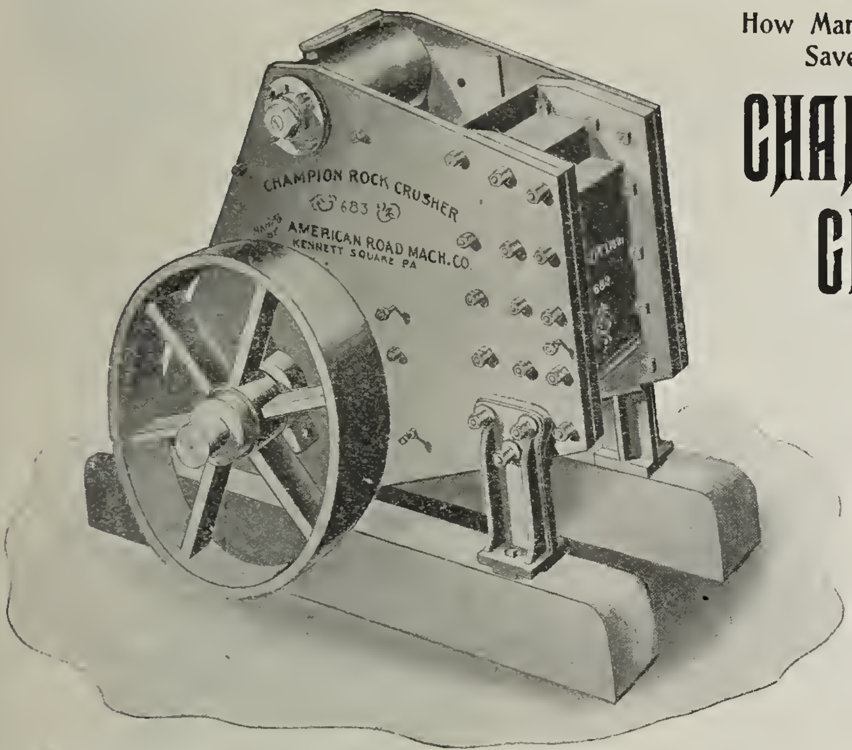
Southeastern Sales and Engineering Office, 411 Prudential Bldg., Atlanta, Ga.
Southwestern Sales and Engineering Office, 202 Trust Bldg., Dallas, Texas.



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CHAMPION CRUSHER?

You can save the cost of sledging.

You can save power.

You can save the wear and tear on the pan.

You can save the cost of the machine in a few months.

The Champion is unequalled in crushing rock, shale, fire clay and other material.

Suppose we figure with you.

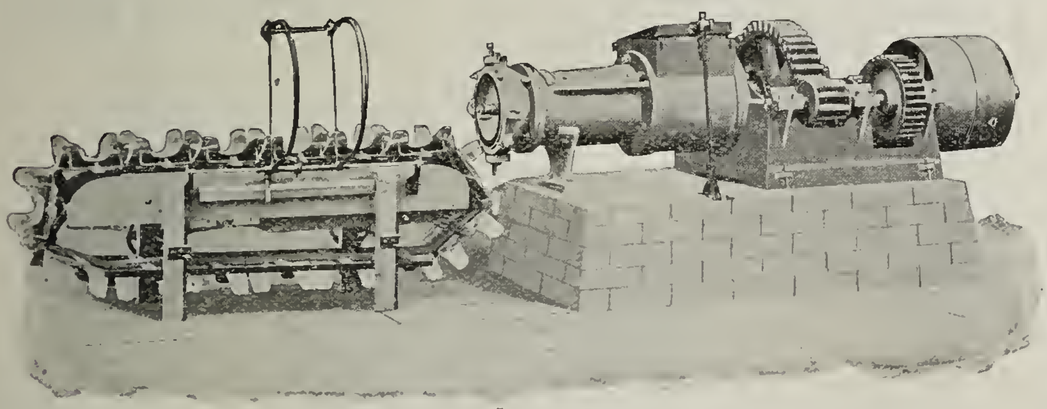
Catalogue is free.

AMERICAN ROAD MACHINE CO., Kennett Square, Pa.

MADDEN & CO.,

Successors to NOLAN, MADDEN & CO.,

Manufacturers ... of **Tile and Brick Machines.**



No. 5 Auger Tile and Brick Machine with our New Endless Belt Cut-off Table, which has no equal for handling tile of all sizes from 3 to 12-inch. This table has carriers which move with the tile, and can be readily and perfectly adjusted to any size tile.

Our Upright Tile Machines are unequaled for large tile, 10 to 24-inch. These Machines are all sold on their merits and warranted to do first-class work. We also manufacture Soft and Stiff Mud Brick Machines.

Full line of Tile and Brickyard supplies kept constantly on hand. Get our prices.

MADDEN & CO., Rushville, Ind.

NO DRY PRESS BRICK PLANT complete without the Carmichael Clay Steamer.

T. W. CARMICHAEL,
Inventor and Manufacturer,
6 tf d Wellsburg, W. Va.

FOR SALE—SECOND-HAND MACHINERY.

One rotary boiler iron dryer 48 inches diameter, 27 feet long, shaft, boxes and gearing complete, price $250.

LUDOWICI ROOFING TILE CO.
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INDIANAPOLIS ENGRAVING AND ELECTROTYPING CO.
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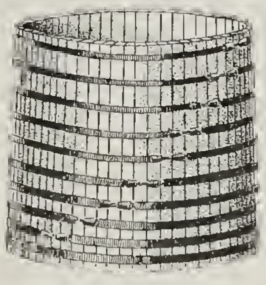

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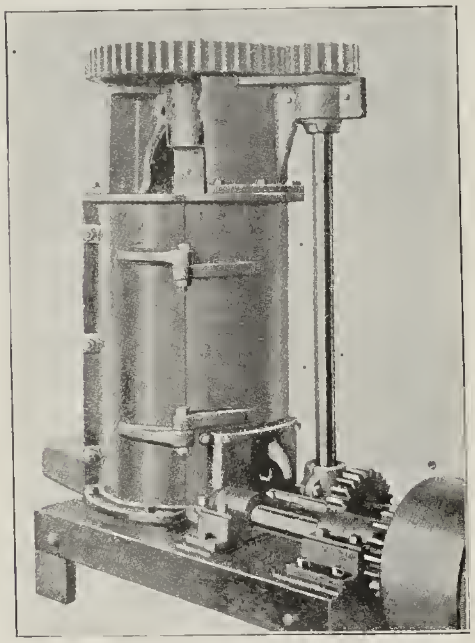

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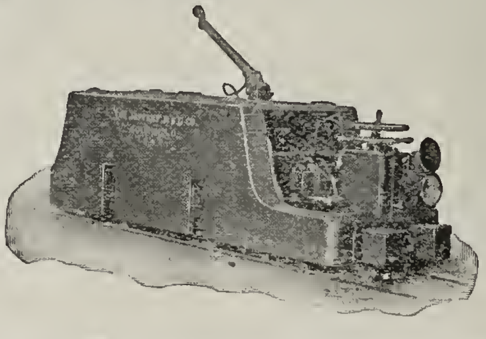

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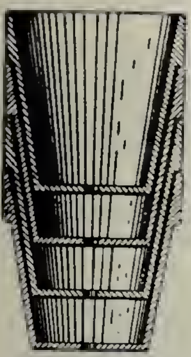

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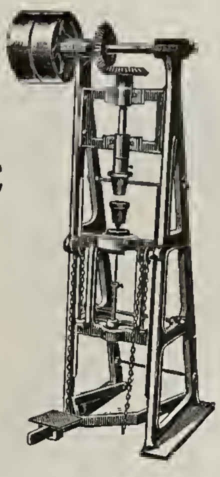

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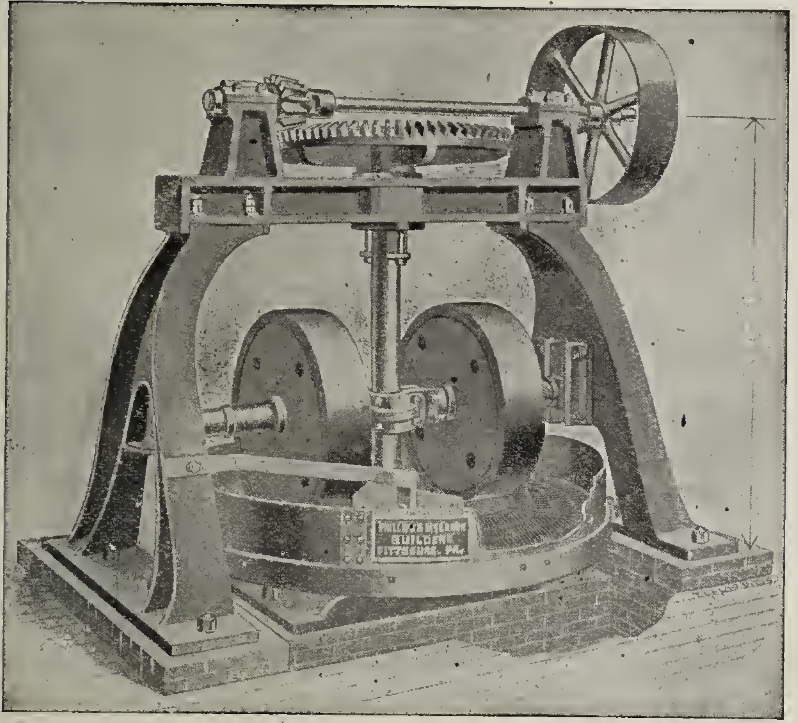

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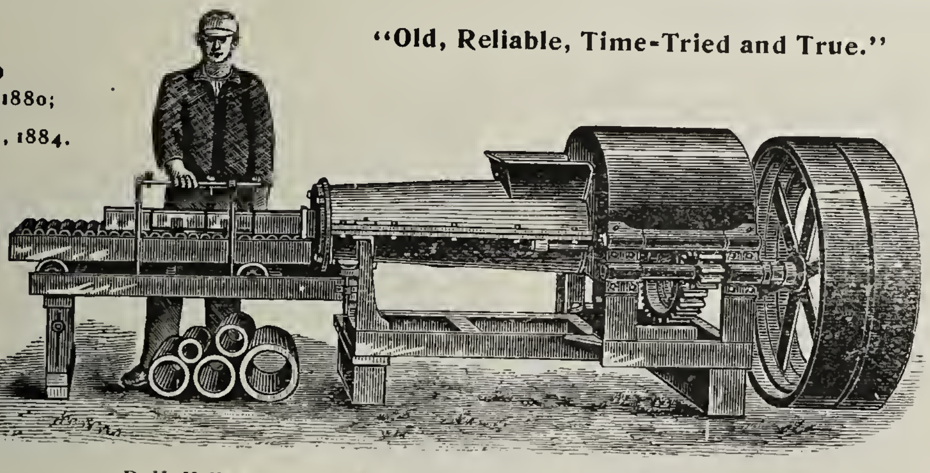

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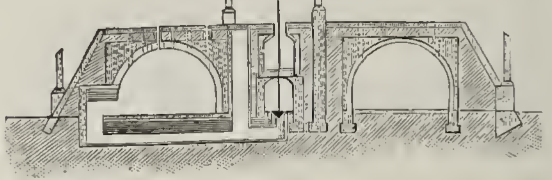

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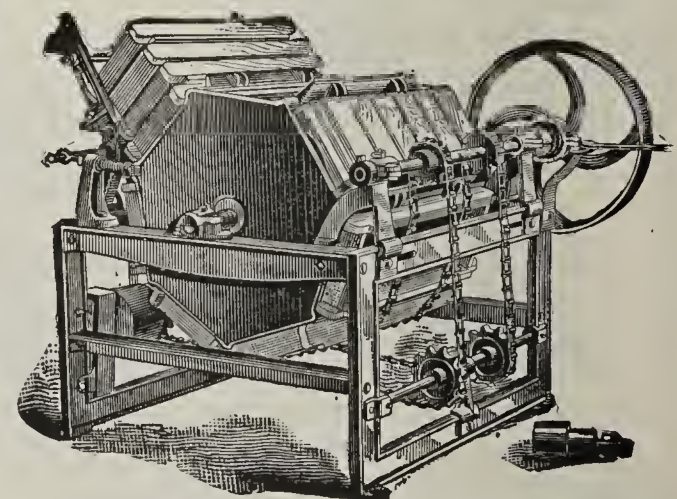

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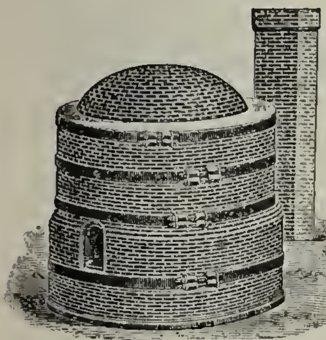

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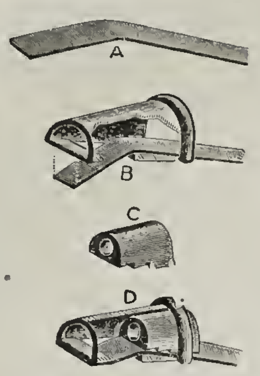

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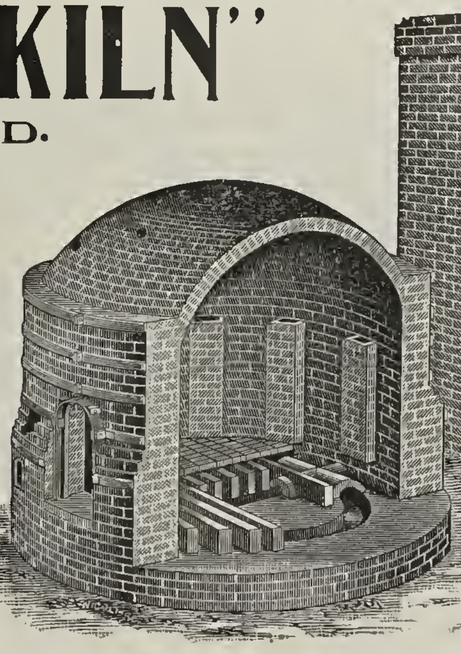

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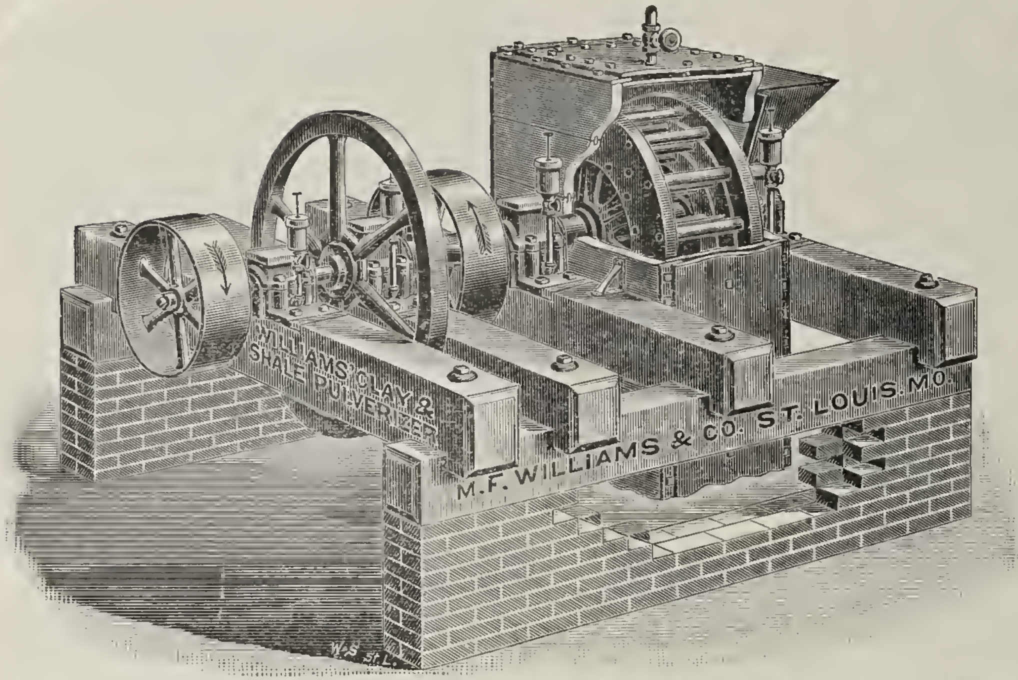
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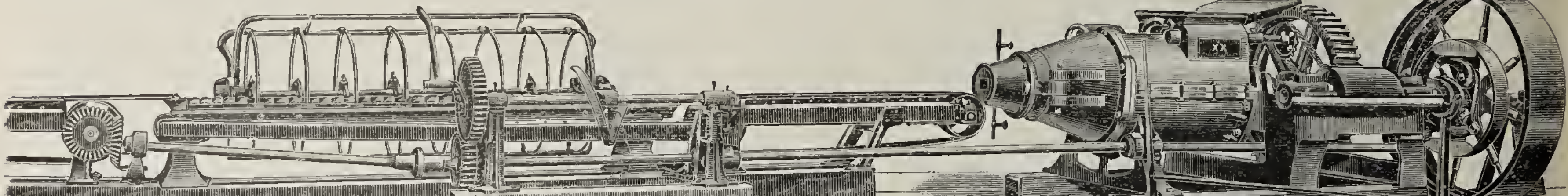

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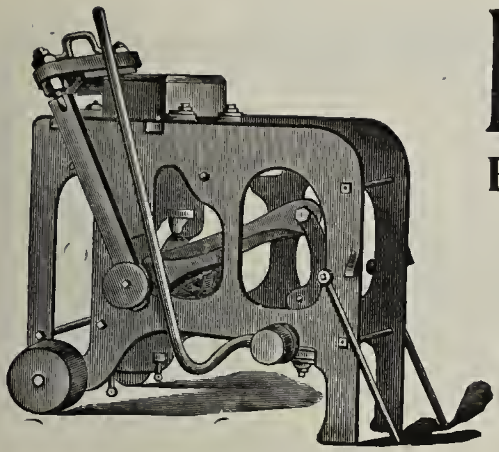

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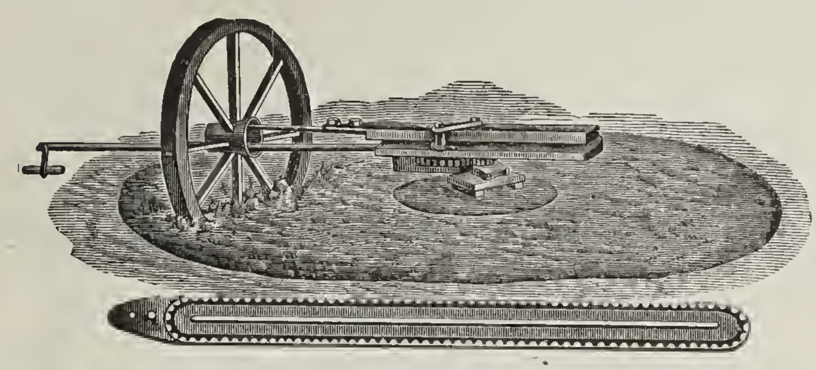

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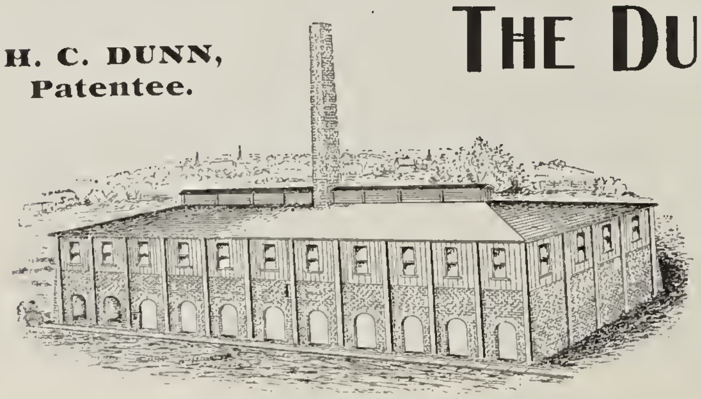

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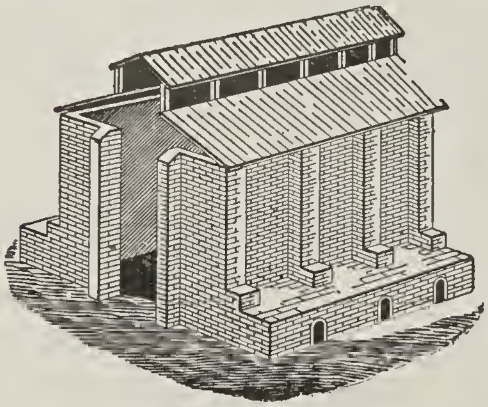
Write for Description and full Information.

I. M. JUSTICE, Sole Agent, **Erie, Pa.**

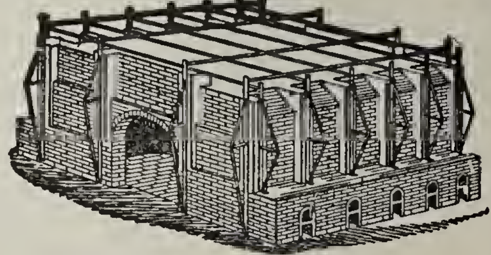


Up-Draft Kiln.

LOUIS H. REPPELL'S

IMPROVED-KILNS

For Burning all Kinds of Wares.



Down-Draft Kiln.

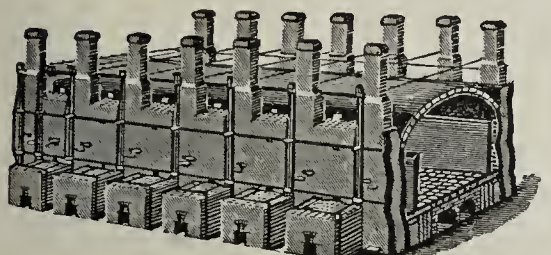
Having had years of practical experience in the management and actual burning of all kinds of kilns, claim it to be THE BEST Up-Draft KILN IN THE MARKET.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns.

For further particulars and full explanation, address

LOUIS H. REPPELL, 2,422 Chestnut St., *Kansas City, Mo.*

The Bushong Down Draft Kiln.



PATENTED JUNE 1896.

BURNS any kind of fuel.
USES less fuel than any other Kiln.
RESULTS are uniform.
NO damaged wares.
SAVES time and labor.

USED by some of the largest plants.
NO experiment.
IT'S success has been proven.
FULL control of drafts.
ONLY Kiln built that has Double Draft.
REDUCES burning time 24 to 48 hours.
MOST economical in construction.

Streator, Ill., October 3, 1900.
M. M. BUSHONG, Esq.,
Phoenixville, Pa.

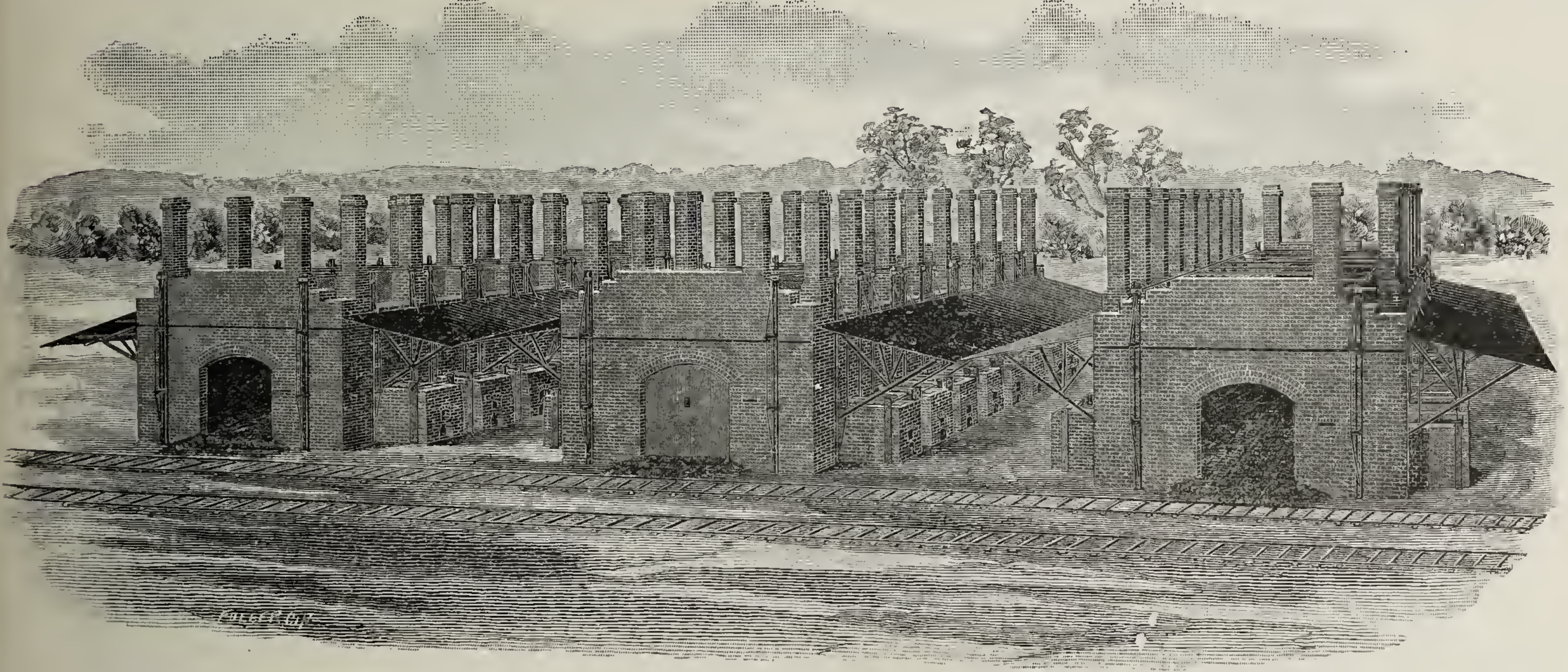
Dear Sir:—Answering yours of September the 27th, we have been using one of the Bushong Down Draft Kilns the past fifteen months and are well pleased with it. We get a larger percentage of No. 1 pavers with a little less fuel than any other kiln on the yard.

Yours truly,
THE BARR CLAY CO.,
Per C. C. Barr, Treas.

M. M. BUSHONG, - Phoenixville, Pa.

The EUDALY DOWN DRAFT KILNS.

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM.



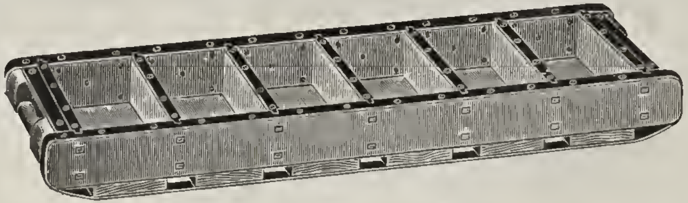
These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal or wood and coal combined.

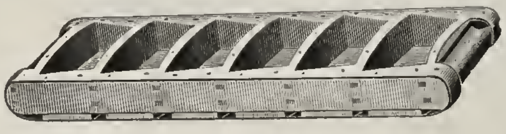
The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

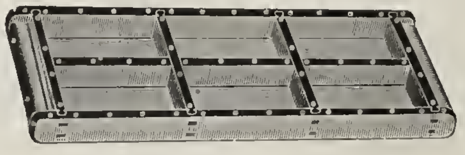
W. A. EUDALY, 509 Johnston Bldg. Cincinnati, Ohio.



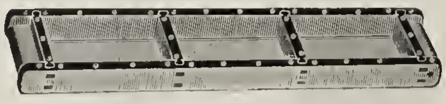
SIX BRICK MACHINE MOULD.



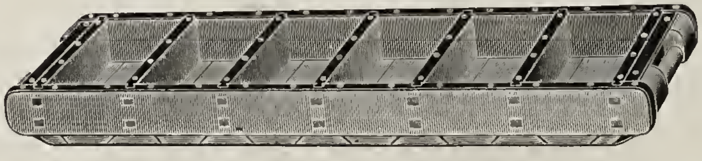
CIRCLE MOULD.



HAND MOULD, SIX BRICK.



HAND MOULD, THREE BRICK.



ROOTS PATENT BOTTOMS.

DO IT NOW.

PLACE YOUR ORDER for 1902 brick moulds with Arnold. You can have them made and shipped any time between now and May 1st, 1902, and if you have the order placed *there* you know you will get the best there is made, and will get them promptly and when you want them. We make moulds to fit "any old machine" that uses moulds and guarantee satisfaction if you will give us the following particulars:

1st. Size of the brick.
2nd. Number of brick in a mould.
3rd. Thickness of partition or distance from center to center of bars in die.
4th. Length of mould over all allowing 1½ inches at each end for handles if possible.
5th. Style of handle by number, (see our catalog).

We also make hand moulds any number of brick and any size desired.

Machine moulds with ROOTS PATENT BOTTOM. We have made quite a number of these moulds in 1901, they are designed for making a better quality of brick than ordinary molds, and cost but little more. In addition to moulds we make a full line of Trucks and Wheel Barrows, also make special Trucks and Wheel Barrows to order, and a full line of Furnace Fronts, Kiln Doors, Grate Bars Ventilators, etc.

Let us know what you will need and get our price before you place your order elsewhere. Get our catalog. Address

D. J. C. ARNOLD, NEW LONDON, OHIO.

See Ad. on Page 286.

Steam Shovels for Brickyards.

Model "80," 3 1-2 Yard Machine.

During the month of December, 1901, we sold 26 shovels to Brickmakers, Railroad Companies and Contractors.

We have all sizes from the Model "98," a 6½ yard machine, down to the Model "20" and the Style "C," a ¾ yard machine. The Model "90," 4½ yard machine, and the Model "80," a 3½ yard machine, are sizes well adapted where large capacities are required and also for excavating hard material. Very many of the prominent brickmakers of the country are using these machines to their advantage and profit.

Ask the users what they think of them.

THE MARION STEAM SHOVEL CO., Marion, O.

WHEN BUYING NEW MACHINERY

why not get it strictly UP-TO-DATE? All machines go out of date soon enough without putting in a back number to start with. ❧ ❧ ❧ ❧ ❧ ❧

Dry Press

Soft Clay

Send for our UP-TO-DATE CATALOGUE.

UP TO DATE MACHINERY

GET OUR PRICES.

Stiff Clay

Supplies

Chicago Brick Machinery Company,

225 DEARBORN STREET, :: :: :: CHICAGO, U. S. A.

Handle Your Clay With One Man and The Thew Steam Shovel.

Type No. 1 Shovel in Yard of C. G. Barkwill, Cleveland, Ohio.

• • • • • • • •

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

• • • • • • • •

Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

• • • • • • • •

Made in all sizes.
Mounted on Car Wheels or Traction Wheels.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 150,000 brick per day.

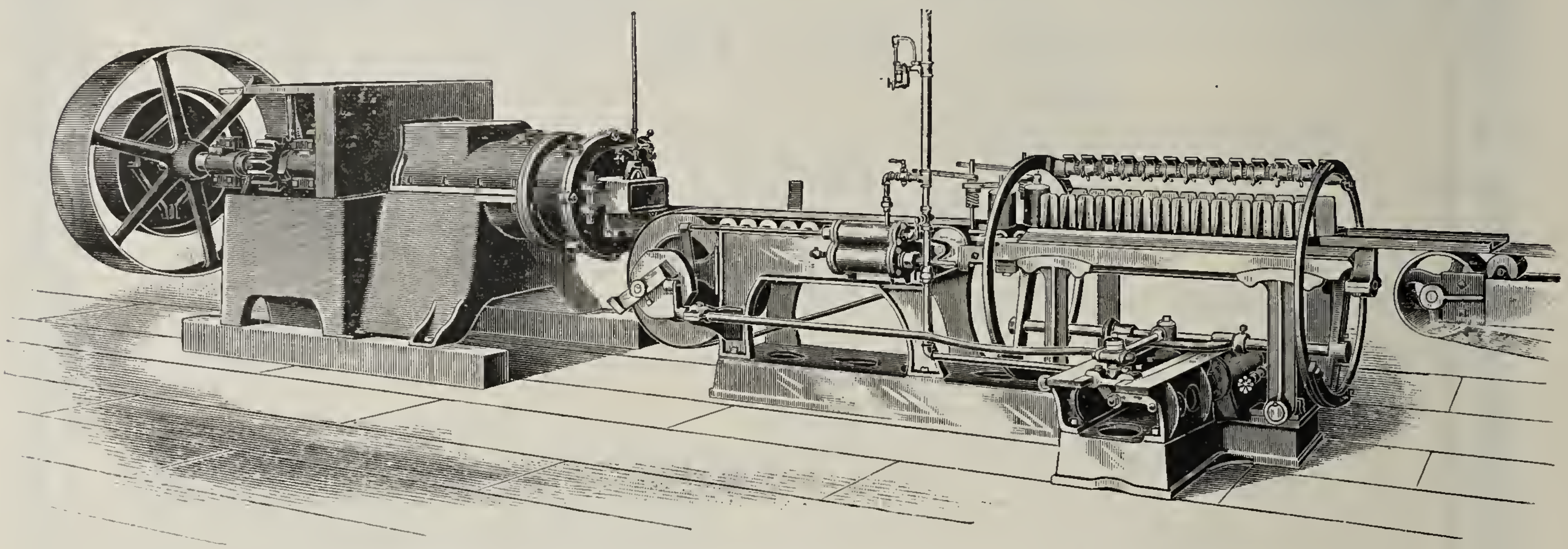
WRITE US FOR CATALOGUES OR INFORMATION.

The THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.

NOT BETTER THAN THE BEST!

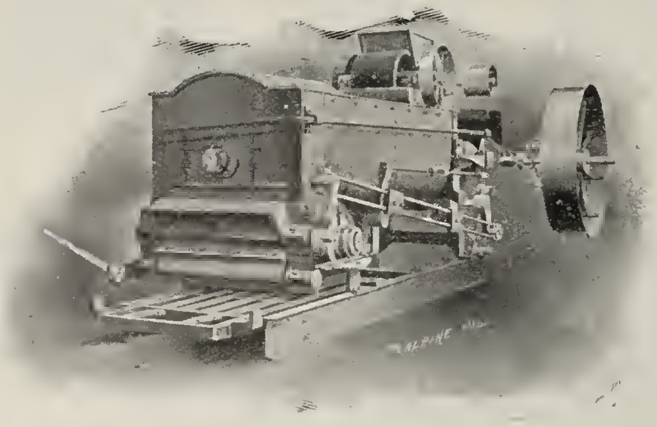
But Better Than the Rest!

AND THE PRICE IS RIGHT!



LEADER No. 25, With Side Cut Die and Automatic Cutter.

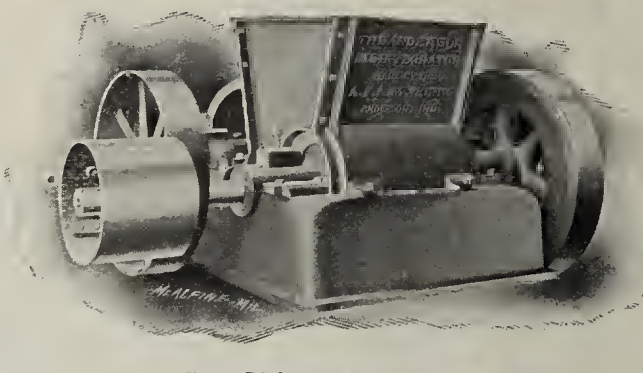
LEADER MANUFACTURING COMPANY, = Decatur, Ill.



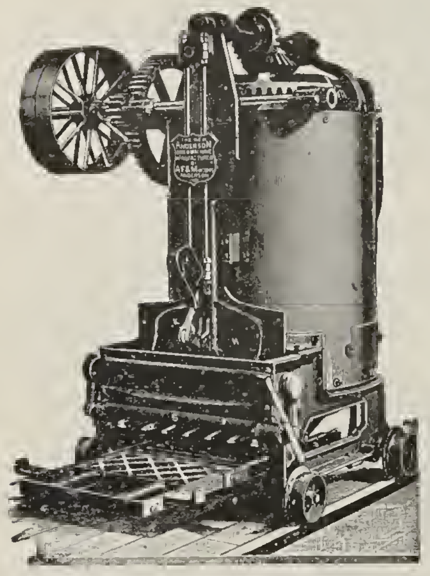
Horizontal Anderson Brick Machine.

DON'T PURCHASE UNTIL YOU WRITE US.

We can save you money.



Best Disintegrator on the Market.



Steel and Iron Upright Stock Brick Machine.

MANUFACTURERS OF . . .

New Departure Tile Machine,

The only machine for making Tile from 3 to 24-inch Diameter.

Pug Mills, Molds, Trucks and Barrows,
And all Brickyard Supplies.

1899 Horse Power Machine.

The Anderson Foundry and Machine Works,
Anderson, Ind.

The PERFECT CLAY SCREEN.

◆ ◆ ◆

This Screen positively Saves one man.

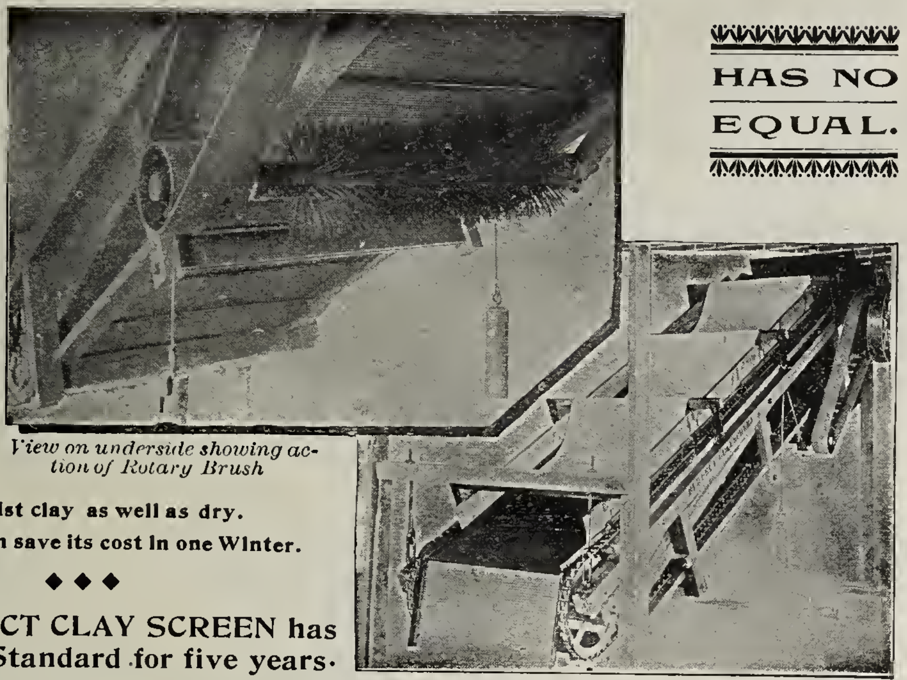
Increases grinding capacity.

Gives a finer grade of clay

Does the work as well in cold weather as in warm.

Screens cold moist clay as well as dry.

It will more than save its cost in one Winter.



View on underside showing action of Rotary Brush

HAS NO EQUAL.

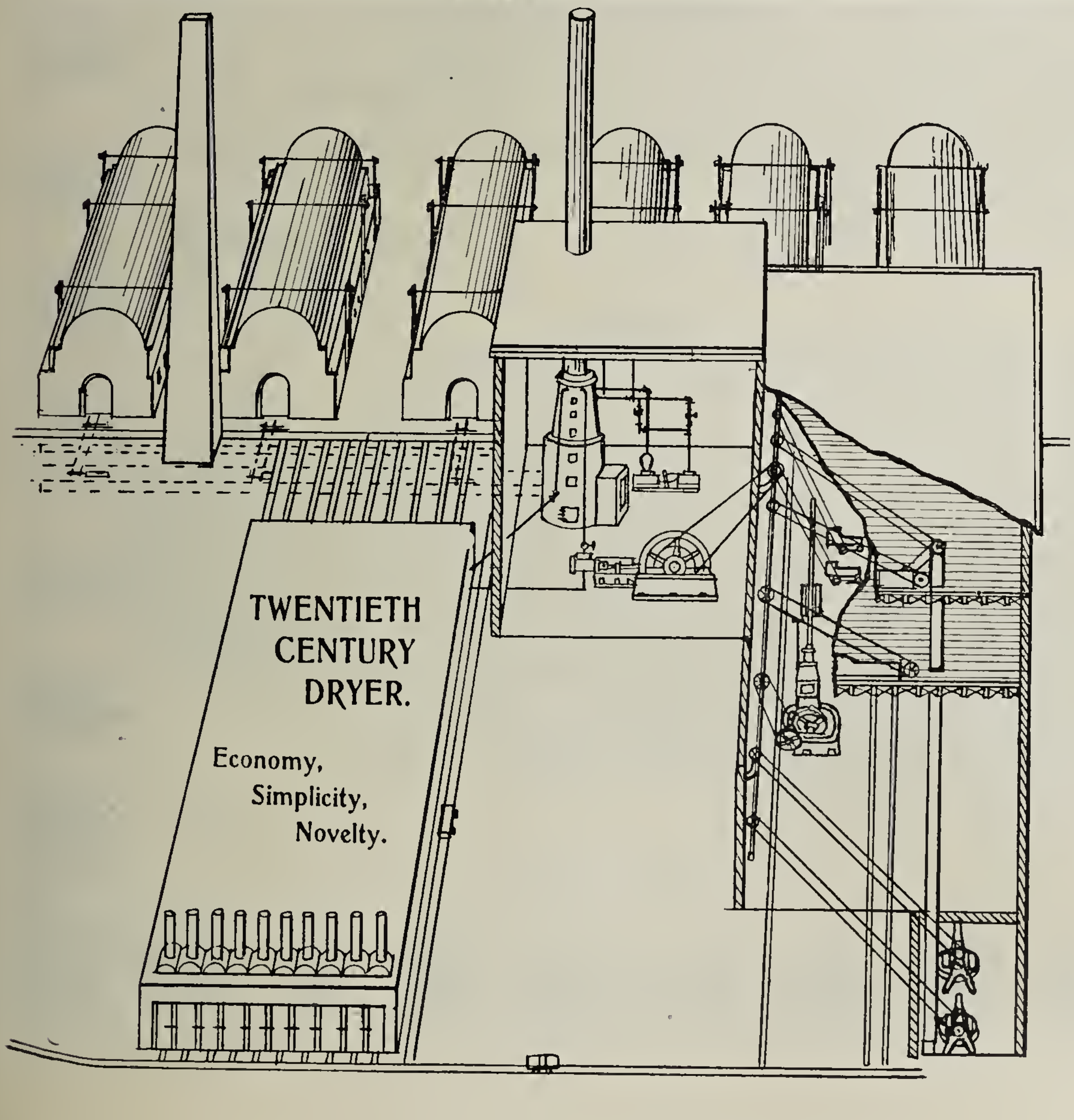
◆ ◆ ◆

The PERFECT CLAY SCREEN has been the Standard for five years.

WERE YOU AT the Convention, did you hear it said every Paving Brick used in Cleveland was screened on The Perfect Clay Screen. We think fully 90 per cent. of the paving brick made in the Cleveland district are made over our screen They all make good brick. We can do as much for you no matter what your product, so it is made from clay. WE GUARANTEE to do it, why not give us an opportunity. Let us tell you about it.

The Dunlap Mfg. Co.,

Bloomington,
Illinois.



Read This for Time is Money.

Frey's System For Using Waste Heat

Will save you both, when you can run your machinery and dry your brick free of Cost.

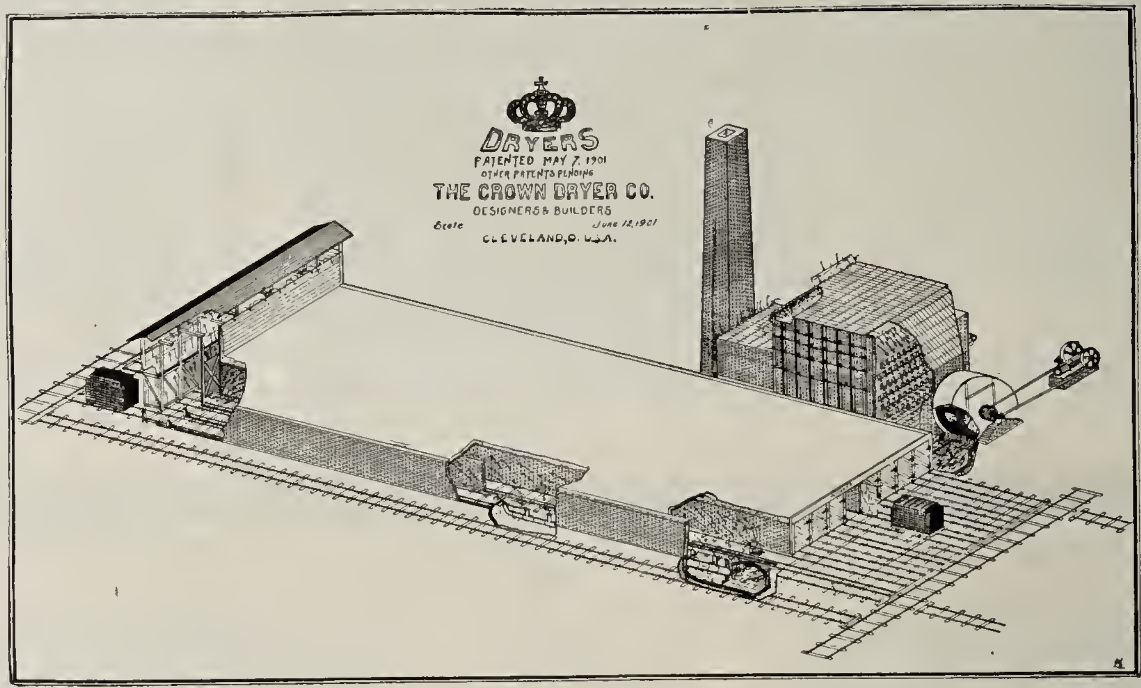
Why not write to

Frey Engineering Co.

415 Chamber of Commerce,
CLEVELAND, OHIO.

We make full Plans for Factories.

How Do You Dry Your Brick?



This illustrates the CROWN SYSTEM of Drying.

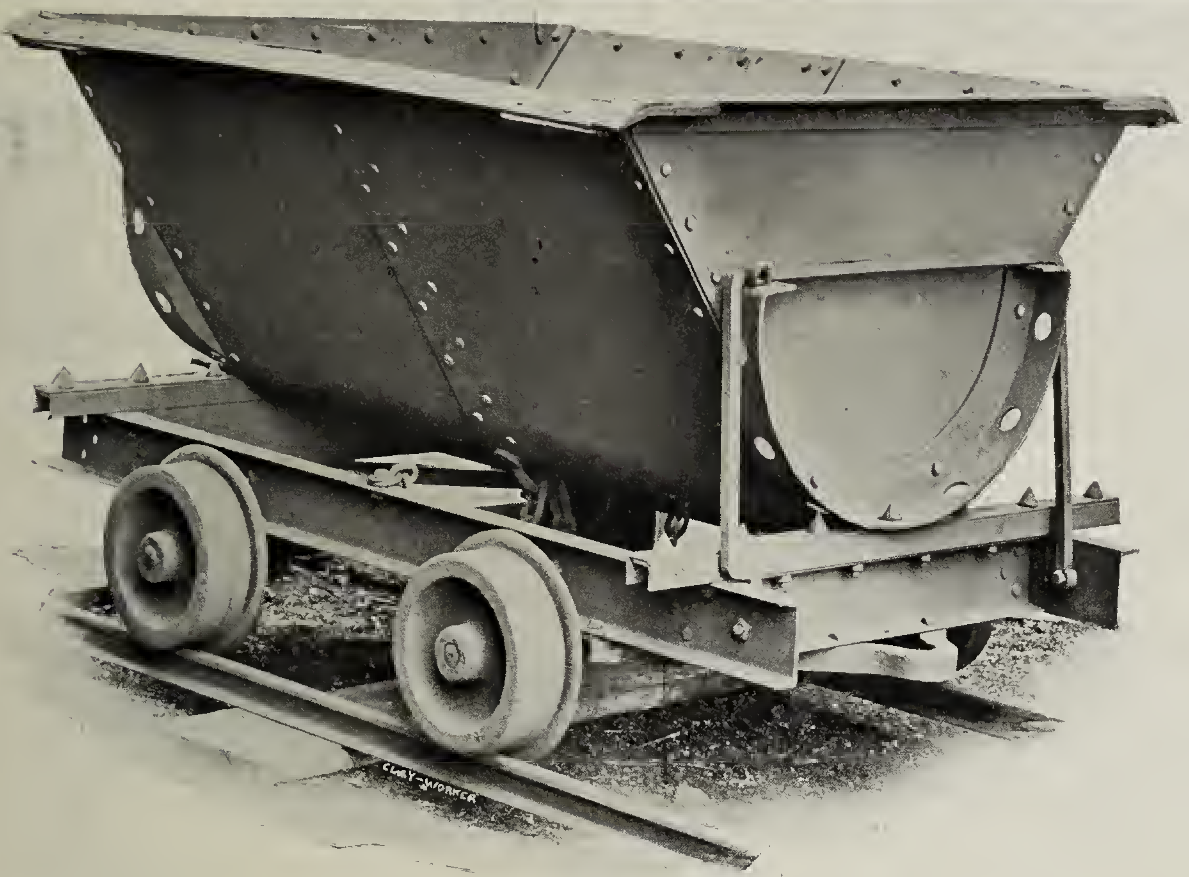
Don't You Need a Dryer?

If so, study the above Cut and let us figure with You. You want to cut down expenses. We can help You. The fuel consumption of The CROWN DRYER is one-third that of others. Write us.

The Crown Dryer Co.,

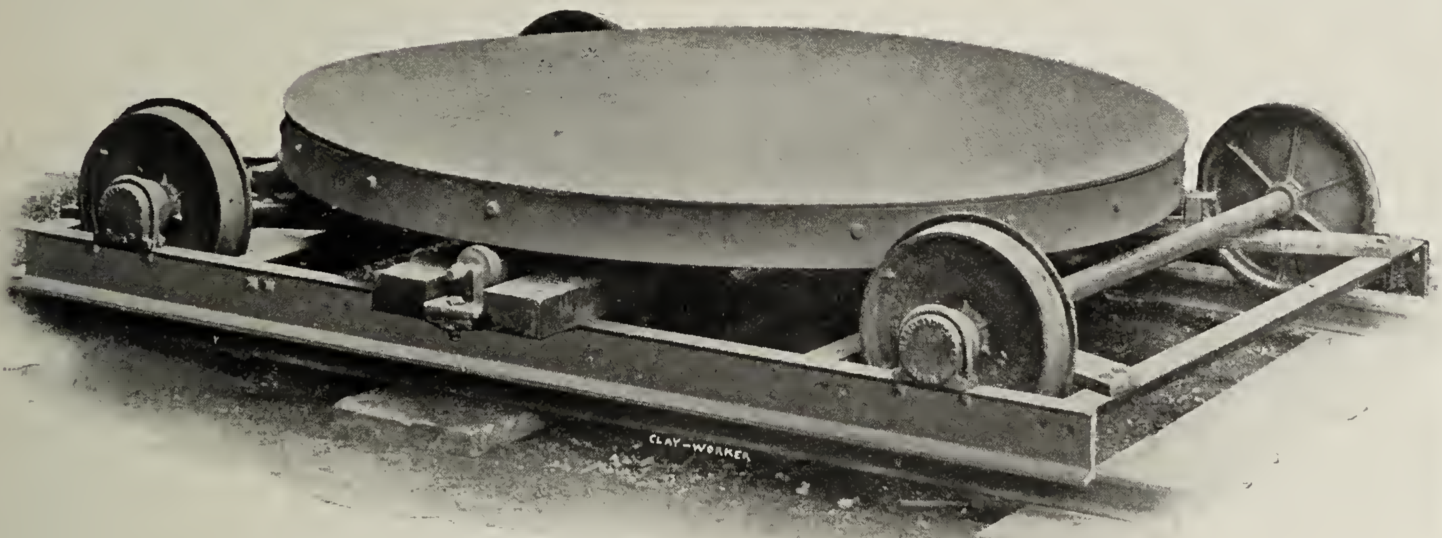
914 and 915 New England Building, CLEVELAND, OHIO.

Mention THE CLAY-WORKER.



No. 301,
STEEL SIDE
DUMP CAR.

No. 222,
STIFF MUD
FLAT CAR.
Steel Deck,
Angle Frame.

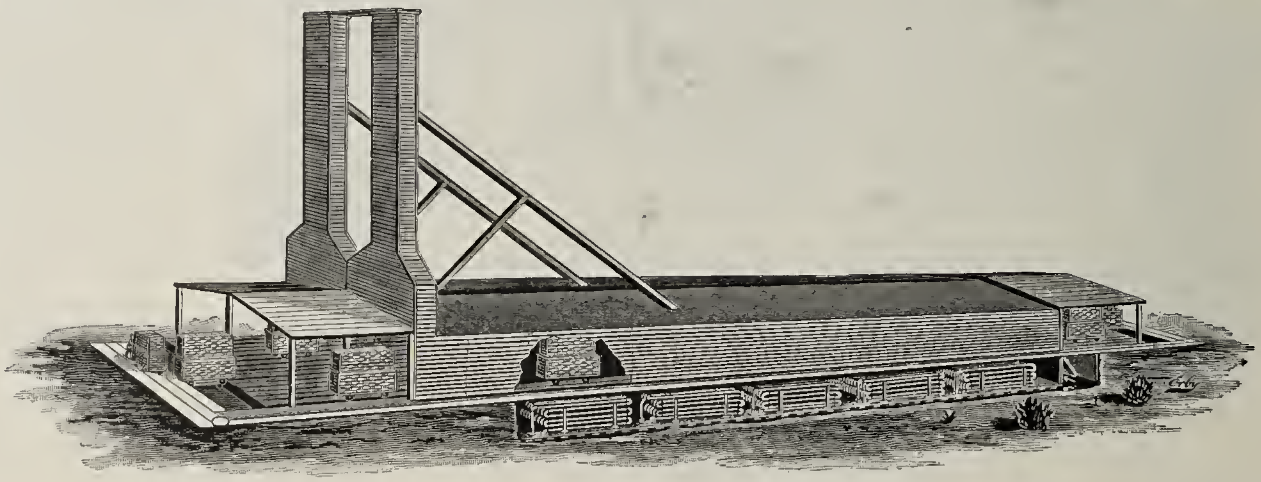


No. 278, Combination TRANSFER and TURNTABLE. Steel Plate Top.

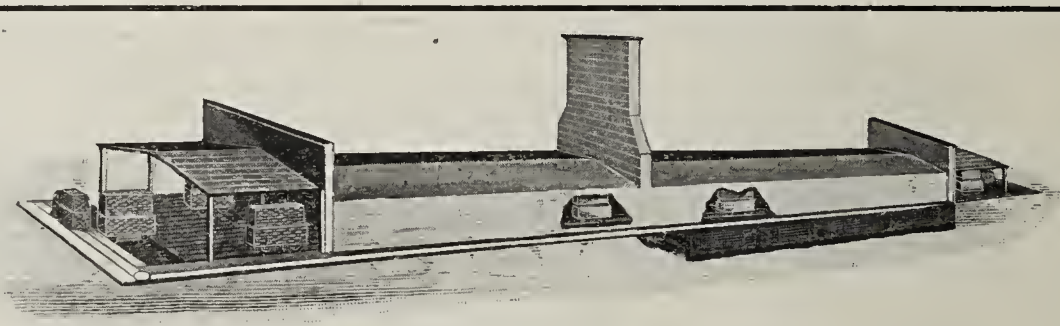
The Cleveland Car Company, 148-152 Scranton Ave.,
CLEVELAND, OHIO.

The Chicago Iron Clad and Barron's Tender Clay Dryers.

The most perfect and economical system of drying brick in the world.
It performs wonderful feats in the largest plants, and equally as well in small plants.



The Up-to-Date Iron Clad Dryer Adapted to Rapid Drying.



The Barron Tender Clay Dryer, Adapted to Drying Tender Clay Products.

Read The Following Expression from a Successful Concern:

THOS. CAREY, Pres. and Treas. JOHN SHELHAMER, Vice-Pres. WM. A. SULLIVAN, Sec'y.

AMERICAN BRICK COMPANY,
Manufacturers of
COMMON AND SEWER BRICK.
Office and Yards 45th and Robey Sts.
Telephone, Yards 128.

MR A. F. BARRON, CITY. CHICAGO, ILL., January 8, 1902.

Dear Sir: The Four-tunnel Dryer which you installed at our plant last summer, guaranteed to dry one hundred and sixty-seven thousand (167,000) brick every twenty four hours, is proving a wonderful success. While Jack Frost has been making ice thirteen iches thick in the pond opposite, our Dry House has averaged one million brick every six days with apparent ease and is capable of doing much better providing our machinery was capable of turning out a greater capacity. We have proven this by running two hundred thousand through the dryer in one day.

Last summer we dried our brick outside, a comparison of the two systems prove that the expense for labor in handling the brick outside amounts to about the same as the cost for fuel required to supply steam for the dry house. Taking the loss of brick caused by rain and storms in outside drying, leaves a large margin in favor of your system of drying, besides this we are making a saving of 20 per cent. on fuel for burning the brick, and turning out a better brick in every respect. Our brick now all burn hard from bottom to top. Your improved dry house is certainly a perfect and economical system of drying brick.

AMERICAN BRICK COMPANY,
JOHN D. SHELHAMER, Vice-President.

Send for Information, Estimates, Etc., Address

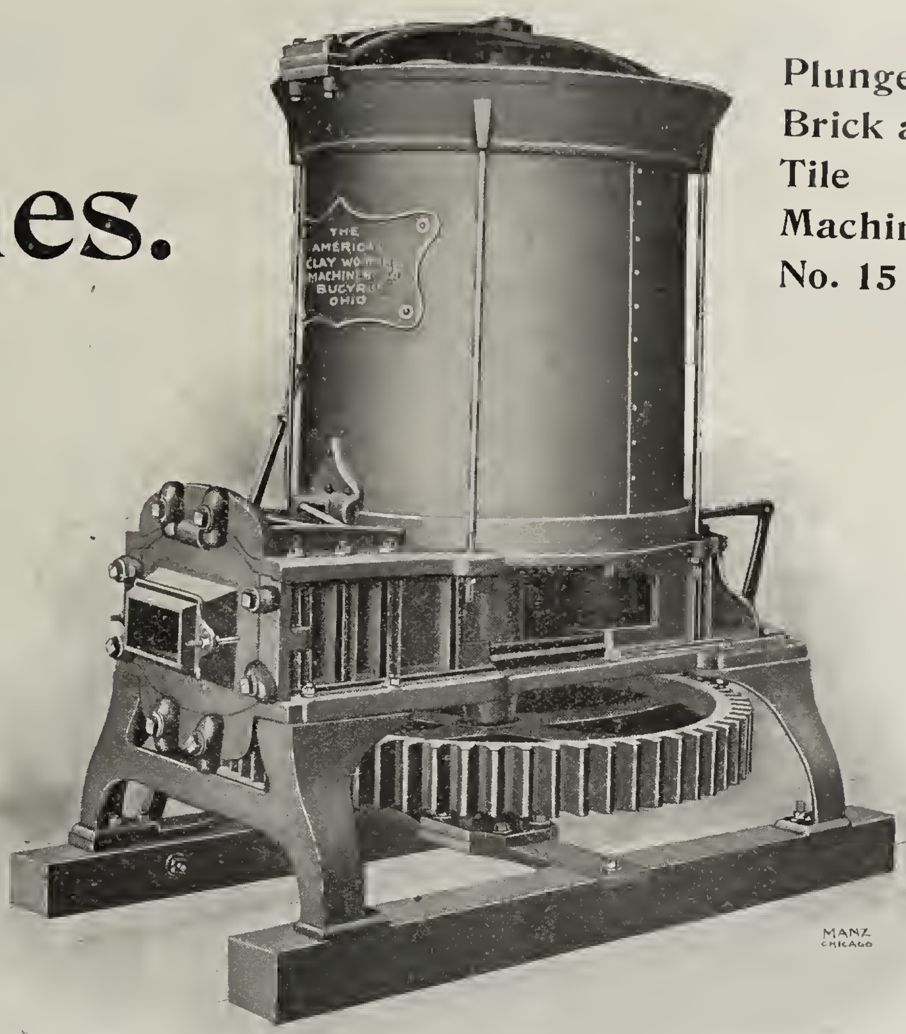
A. F. & A. E. BARRON,
Room 630, 225 Dearborn Street, CHICAGO, ILL.

Soft Mud Machines.

In Soft Mud Machines we make various sizes and styles, all of the well known American standard of quality and performance.

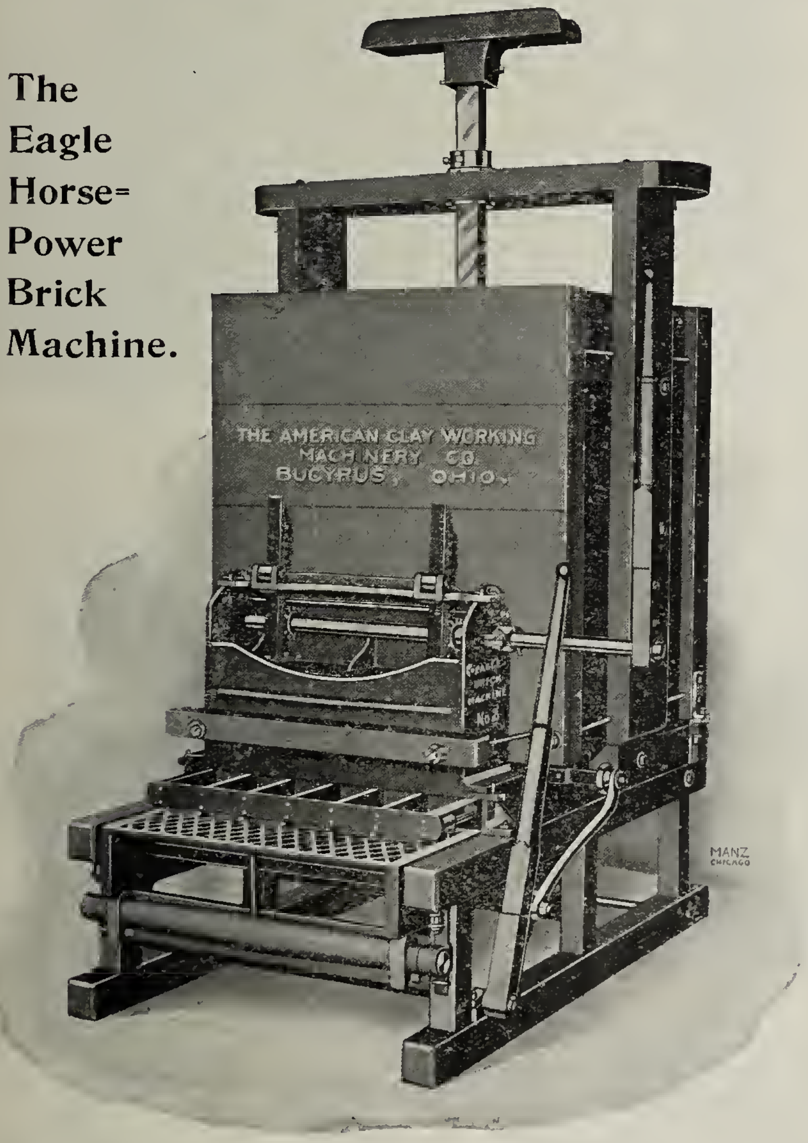
Every machine is of the highest efficiency. Write for prices and description of Plunger Machines.

Our new Catalogue is ready for delivery; if you want one send for it. It's a beauty.



**Plunger
Brick and
Tile
Machine
No. 15 "S"**

**The
Eagle
Horse=
Power
Brick
Machine.**



Eagle Soft Mud Brick Machine.

For small capacity yards these machines are most excellent. We make them in both Horse and Steam power. Easily moved, easily operated, but hard to beat.

Send for booklet on our Soft Mud Machinery.

**The American Clay=
Working Machinery Co.,**
BUCYRUS, OHIO, U. S. A.

NEW YORK OFFICE—Rooms 101 to 107, 39 and 41 Cortlandt St.

A PERFECT CAR SYSTEM

For Either Soft or Stiff Mud.

With only TWO CARS
One man will handle 40 M brick per day.

No Fan to Run. No Boiler to Steam.
No Pipes to Burst. No Fireman to Pay.
No Dryer. No Fuel.

We Guarantee This to be the cheapest, best and only out-door car system ever offered the brick manufacturer. We guarantee to handle from the machine and put on the yard in good condition, from thirty to forty thousand green brick per day, with one man, and same amount to kiln. We guarantee our patent car and system to perform the work for which they are built, and all the workmanship and quality of material to be first class. Our Covers and Storm Curtains give absolute protection from rain and storms and also protects tender clays.

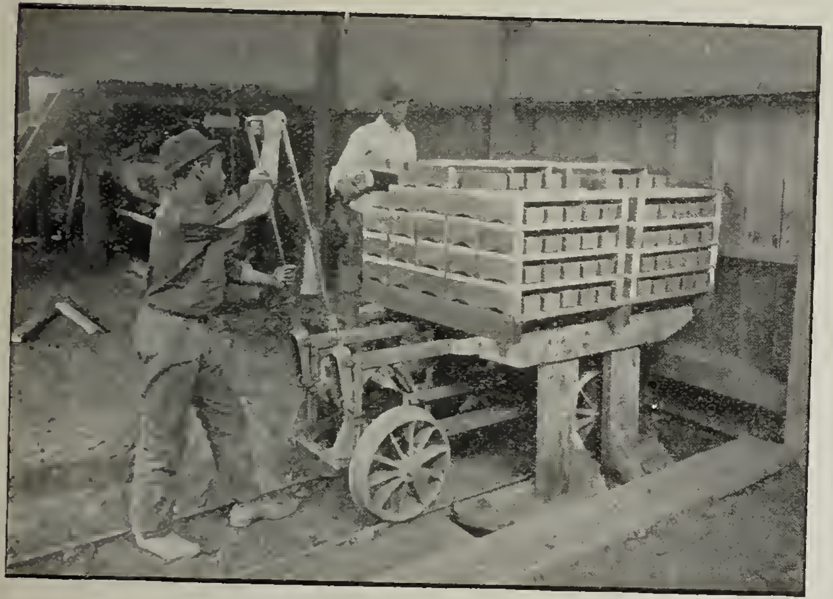
THIS SYSTEM consists of two elevating and lowering brick cars for a thirty to forty thousand capacity brick plant; these take the place of several hundred common cars. The car is made of channel steel, with movable deck, which is raised and lowered by a compound lever. From two to five hundred brick are taken from the machine and placed on a pallet, the lever lowered, raising pallet off the rests. The load is then on car, which is run on the yard to the rests along each track; the lever is again raised, thus lowering deck of car which places load on the rests.

Scotts Patent Brick Car Co.,

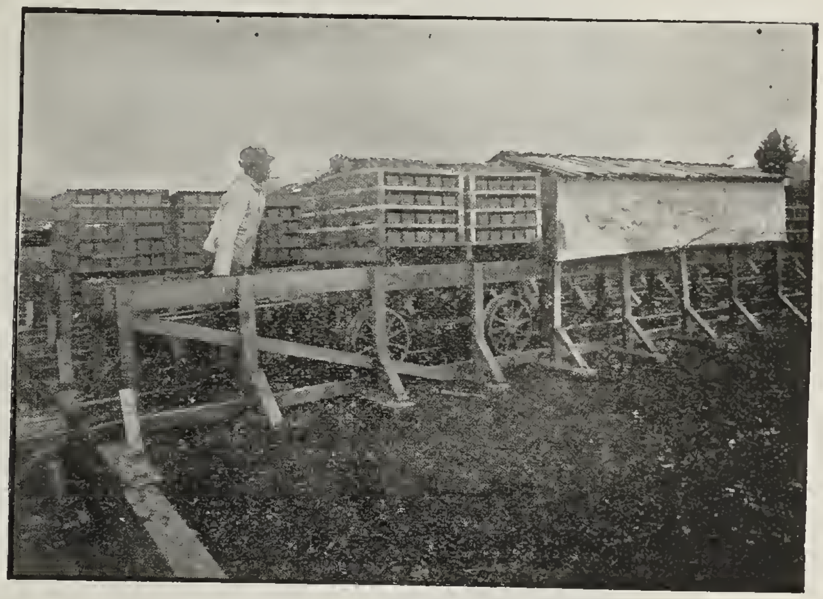
Write for Catalogue. Knoxville, Tenn.

Soft Mud Process.

THESE CUTS show our Leg Pallet System, in which we use one large pallet and a number of small pallets, such as used by soft mud machines. These small pallets have a block nailed on each end which acts to separate each pallet of brick. This system is the favorite among the soft mud brick men, and will be found lacking in nothing. Any size pallets can be used by nailing a block on each end of pallet. The Leg Pallet system has been used in connection with artificial dryers for years, and works equally as well with our system

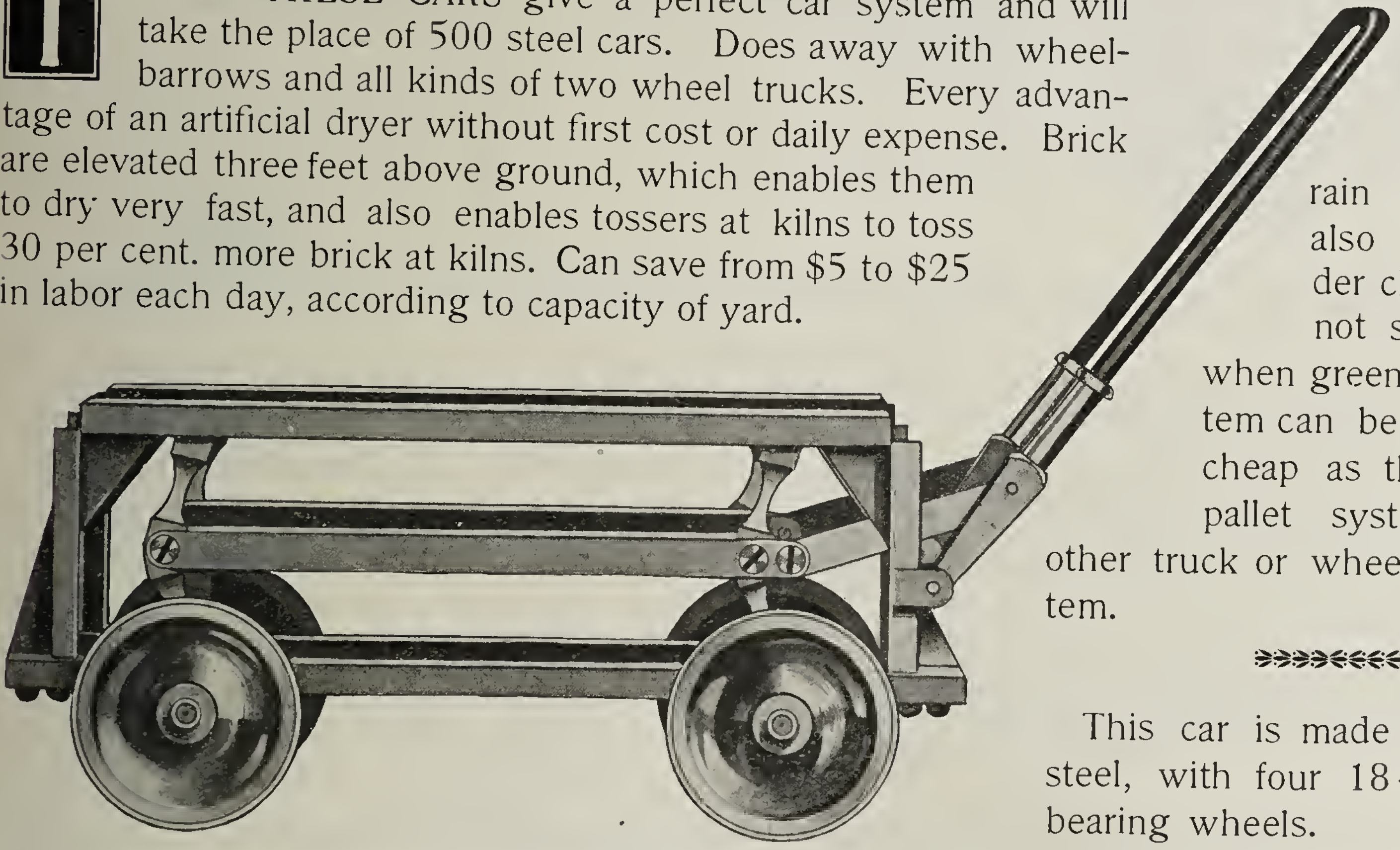


Showing Manner of Handling Brick at Machine.



Showing Brick on Drying Racks.

TWO OF THESE CARS give a perfect car system and will take the place of 500 steel cars. Does away with wheelbarrows and all kinds of two wheel trucks. Every advantage of an artificial dryer without first cost or daily expense. Brick are elevated three feet above ground, which enables them to dry very fast, and also enables tossers at kilns to toss 30 per cent. more brick at kilns. Can save from $5 to $25 in labor each day, according to capacity of yard.



Our covers give absolute protection from rain and storms; also protects tender clays that will not stand the air when green. This system can be installed as cheap as the rack and pallet system or any other truck or wheelbarrow system.

⁂

This car is made of iron and steel, with four 18-inch roller bearing wheels.

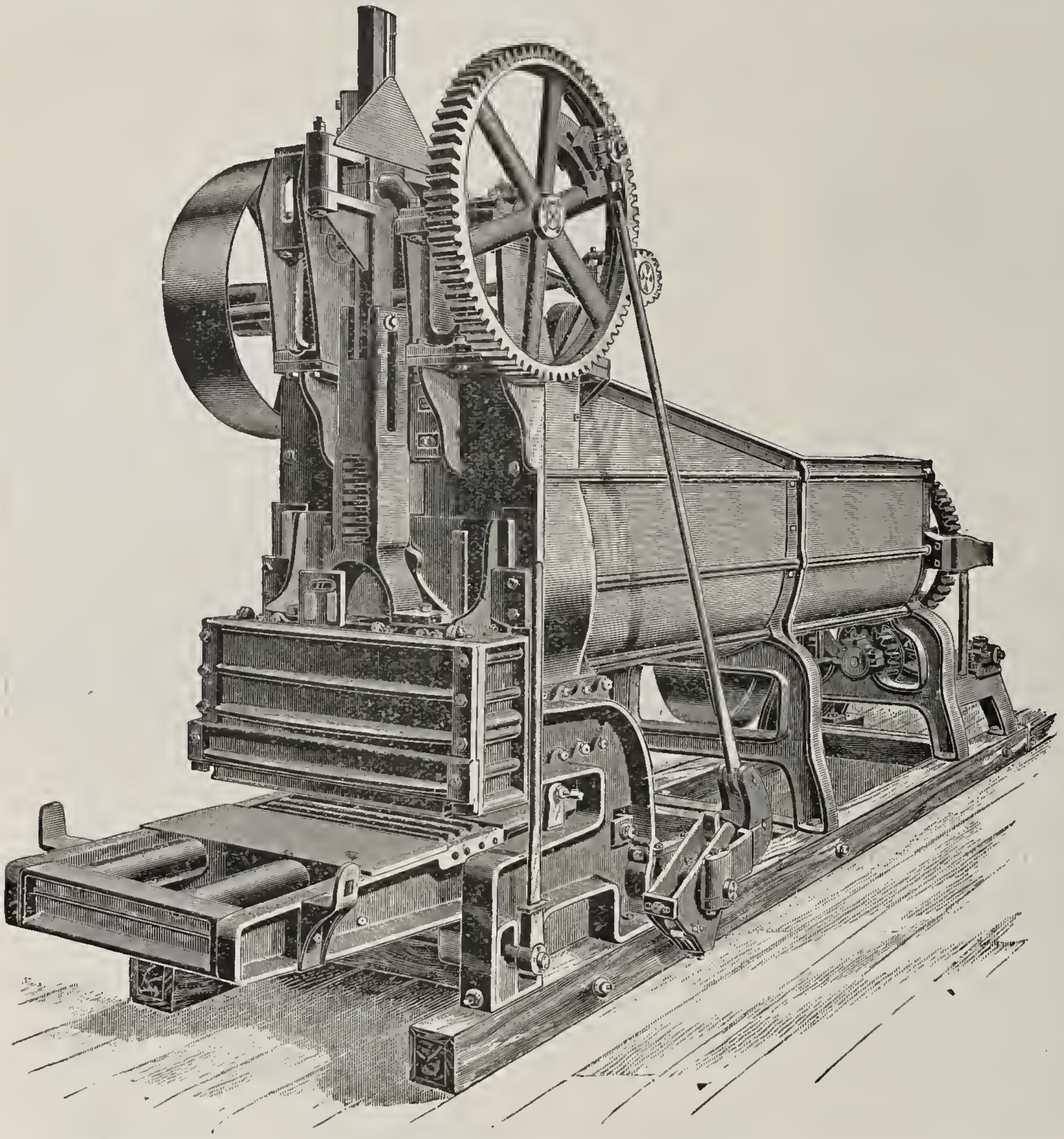
SCOTTS PATENT BRICK CAR CO.,

Write for Catalogue.

Knoxville, Tenn.

THE POTTS Horizontal Stock Brick Machine.

THE LEADING MACHINE OF AMERICA.



**More
Machines
Sold
This
Past
Season,
Than
In
Any
Two
Former
Years.**

What We Claim: It is the Largest, Heaviest and Best Constructed. It has Double the Tempering Capacity of any Machine made, It will work the clays as stiff as it is possible to slip it from the moulds or strike the moulds, at the same time fill a six-brick mould perfectly with brick which will have CLEAN, SHARP CORNERS, SMOOTH SURFACES, and are STRAIGHT and SQUARE when burned.

All Shafts are made of the best grade of STEEL. STEEL GEAR—All surface joints planed, insuring good solid bearings.

There is no one to dispute, and prove his claim, that this is not the best Machine on the market today.

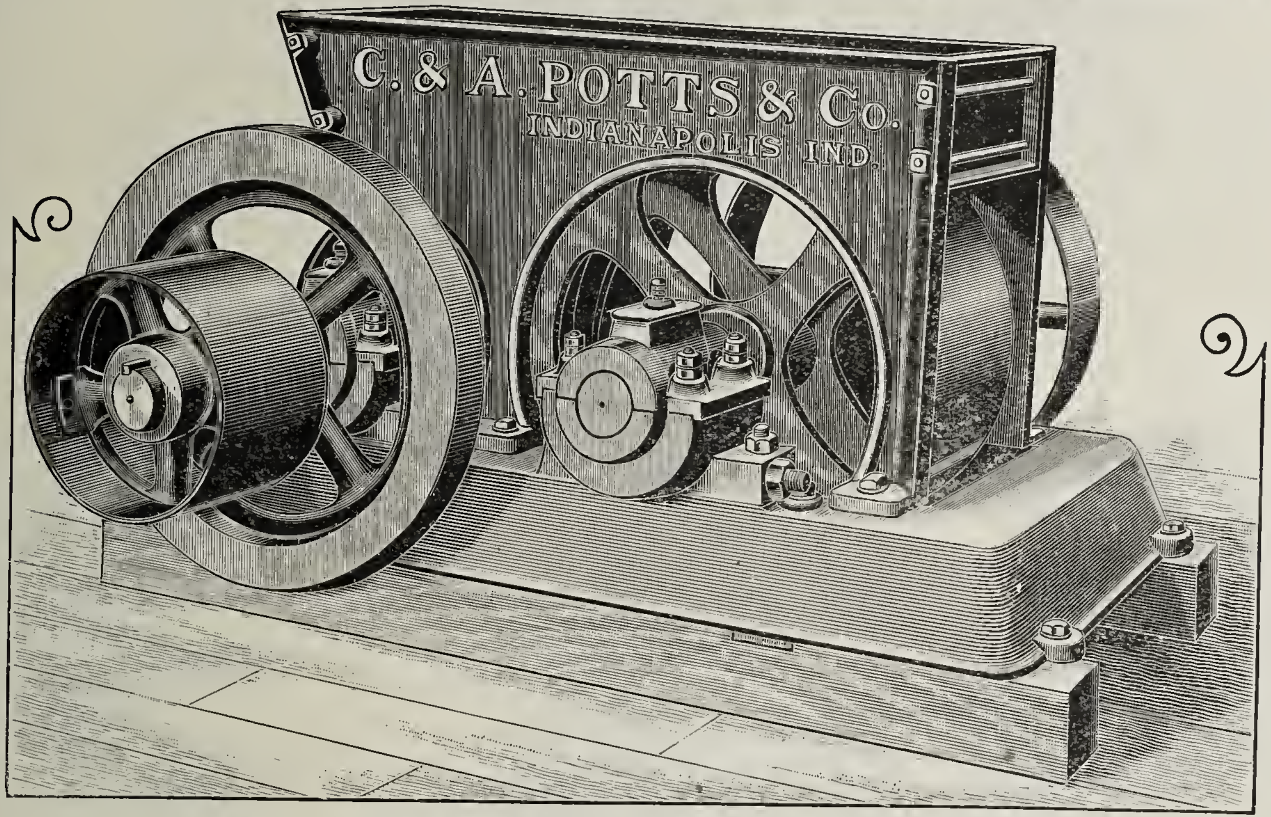
We guarantee all we claim with a guarantee which is good, no verbal promises.

Write for Prices and Terms.

C. & A. POTTS & CO., - Indianapolis, Ind.

Potts Disintegrators

Are used in all parts of the United States and Europe. They are acknowledged by the trade in general to be the only Reliable Machine ever made for the work.


C. & A. POTTS & Co.
INDIANAPOLIS IND.

(Patented.), **Style "P"** Four Sizes, Capacity 20 to 150 M Brick per day.

It grinds any kind of clay. Does not Choke or Clog from wet, sticky or hard, dry clays. Grinds the clay, leaving it in a loose, open condition so it will take water readily, and can be thoroughly tempered.

These Disintegrators grind the small stone, and separate the large ones.

There is no piece of machinery made which will make a greater improvement in the quality of your Brick or Tile.

Remember that a good thing, and one in general demand, soon has competitors, so with the Potts Disintegrator, which is the only machine made having **ADJUSTABLE SECURED STEEL CUTTING BARS**, all other Disintegrators have the lugs, or bars cast to the cutting roll (an underhand way competitors have taken to avoid our patents) these cast bars wear off in a week or two, with no way to replace them, only by purchasing a new roll. When some agent is trying to sell you one of these inferior machines, his only recommendation is that it is cheaper than the Potts.

Stop, Then, and figure what three new rolls for one of these machines will cost per year. You will purchase a Potts Disintegrator we know. **THEY ARE THE BEST.**

C. & A. POTTS & CO.,

Mention the CLAY-WORKER

Indianapolis, Ind.

Brick Machinery and Brickyard Supplies

Soft Mud, Wire Cut, Dry Press Processes.

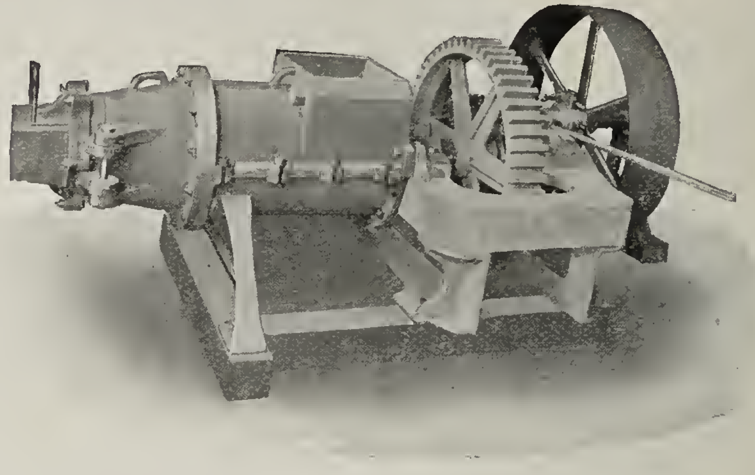
WE EQUIP BRICK PLANTS COMPLETE AND GUARANTEE THEM TO GIVE SATISFACTION.

◆ ◆ ◆

Advise us the capacity you desire and get our prices.

THEY WILL INTEREST YOU.

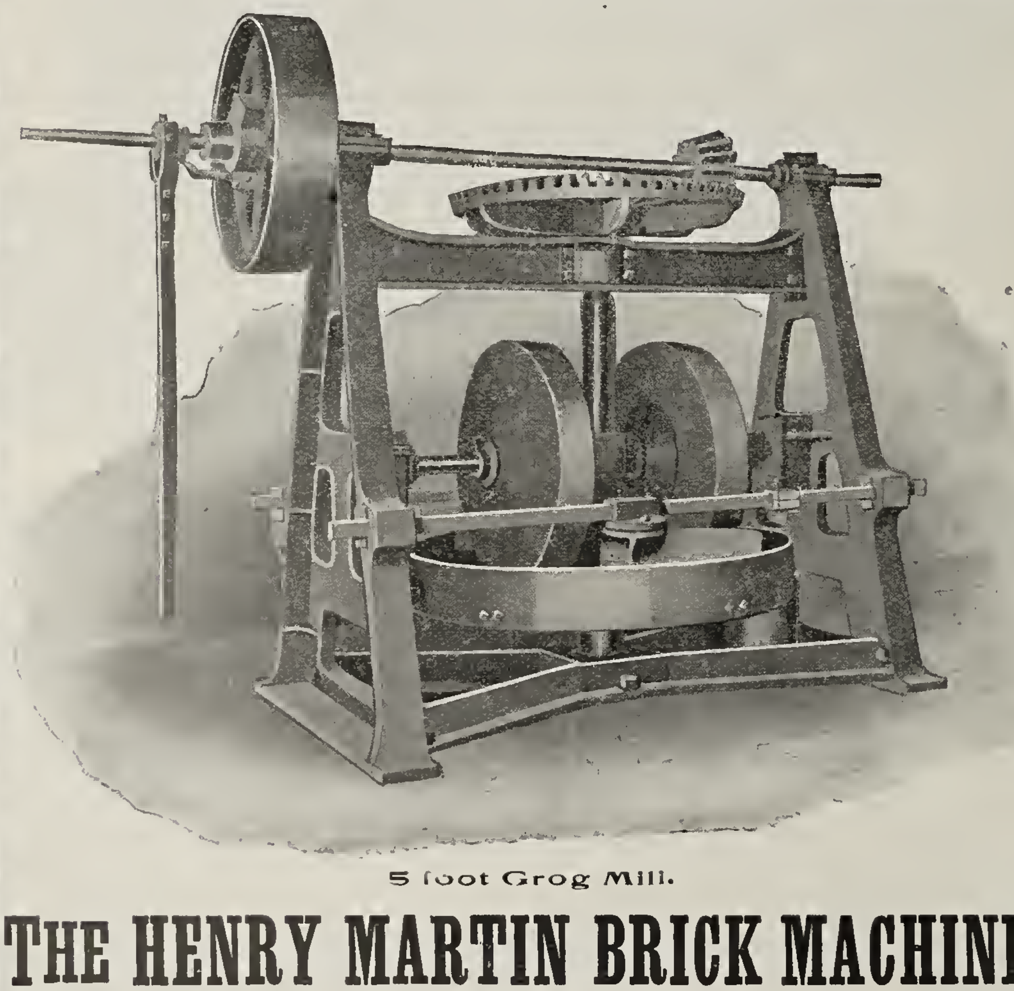
Send us a Sample of your clay and get our opinion of it.



Our No. 2 Auger Machine—Capacity 20 M.

We Furnish Everything a Brickmaker Needs.

- *Pug Mills.*
- *Granulators.*
- *Crushers.*
- *Dry and Wet Pans.*
- *Elevators.*
- *Conveyors.*
- *Hoisting Drums.*
- *Dump Cars.*
- *Brick Barrows.*
- *Brick and Tile Trucks.*
- *Dump Carts.*
- *Dryer Cars.*
- *Brick Moulds.*
- *Engines.*
- *Boilers.*
- *Etc., etc.*



5 foot Grog Mill.

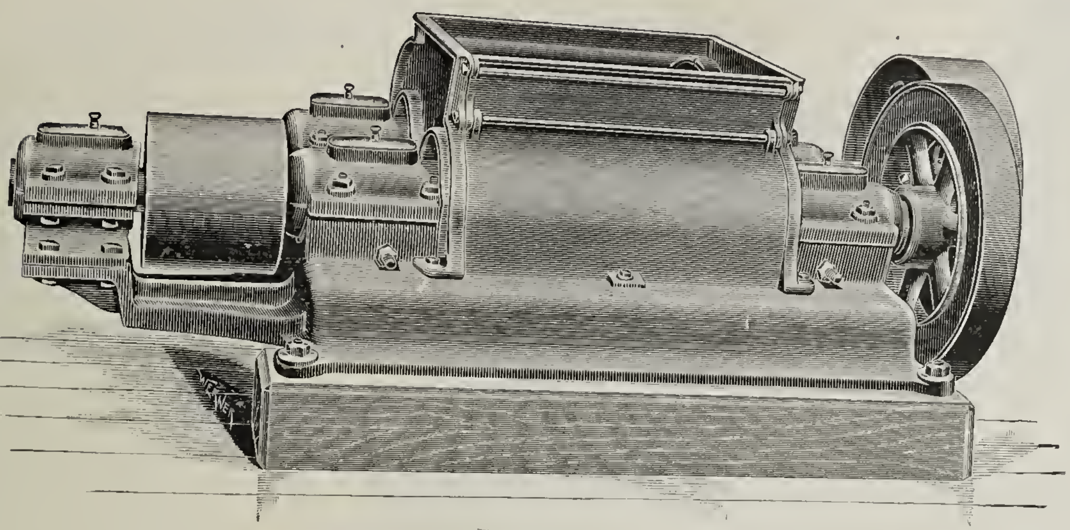
THE HENRY MARTIN BRICK MACHINE MFG. CO.,

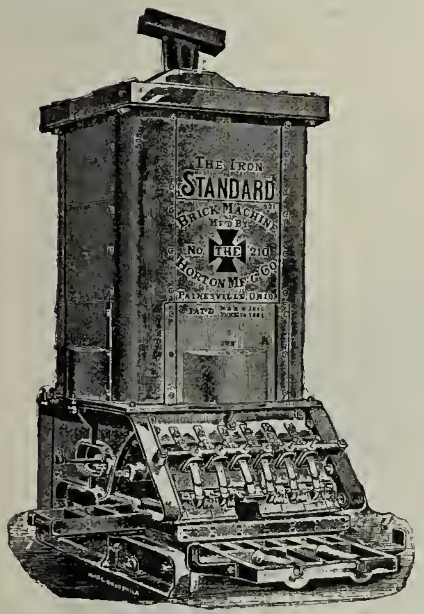
Incorporated.

Send for our new Catalogue No. 60.

LANCASTER, PA.

The HERCULES Works the Clay Stiff.

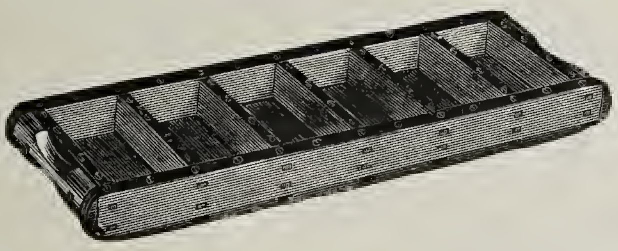


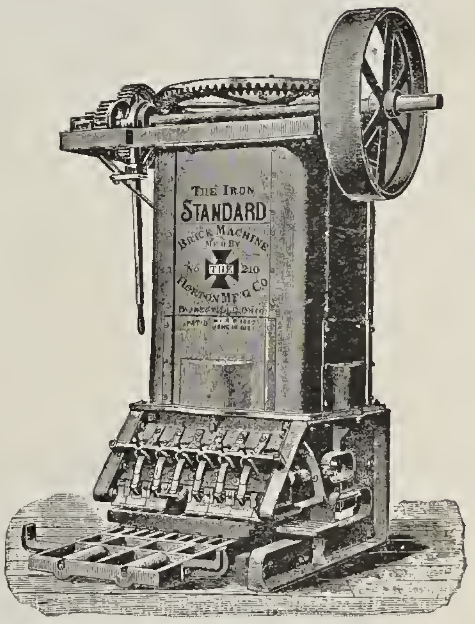


Iron Standard Horse Power Brick Machine—The Leader of all Horse Power.

MOLDS.

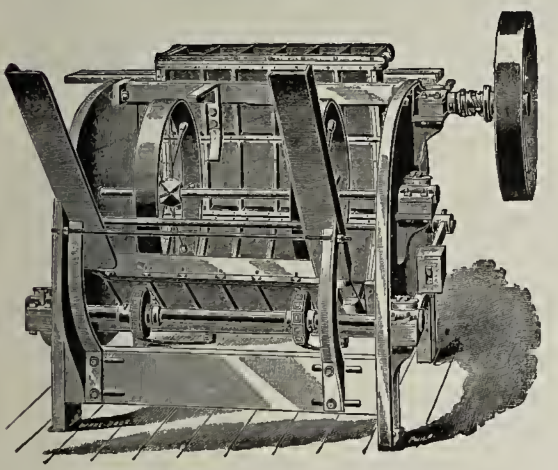
Is one of our Specialties. Either Hand, Machine or Shapes. We have a shop full of Special Machinery for the Manufacture of these as well as Trucks of all kinds, Wheelbarrows. Dump Cars, and Carts. In fact everything used on a Brickyard.





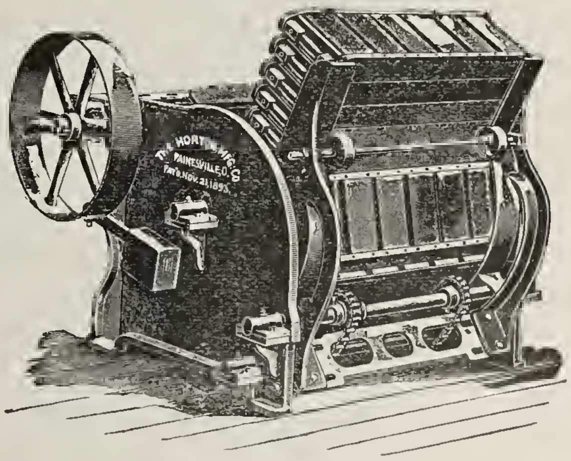
Standard Steam Power Brick Machine—Just the Machine for Medium Sized Yards.

The Mold Sanders That "Sand"



No. 1 Sander for Pallet System.

TWO STYLES.


The Horton Mfg Co.
Painesville O.
Pat'd Nov. 21, 1893

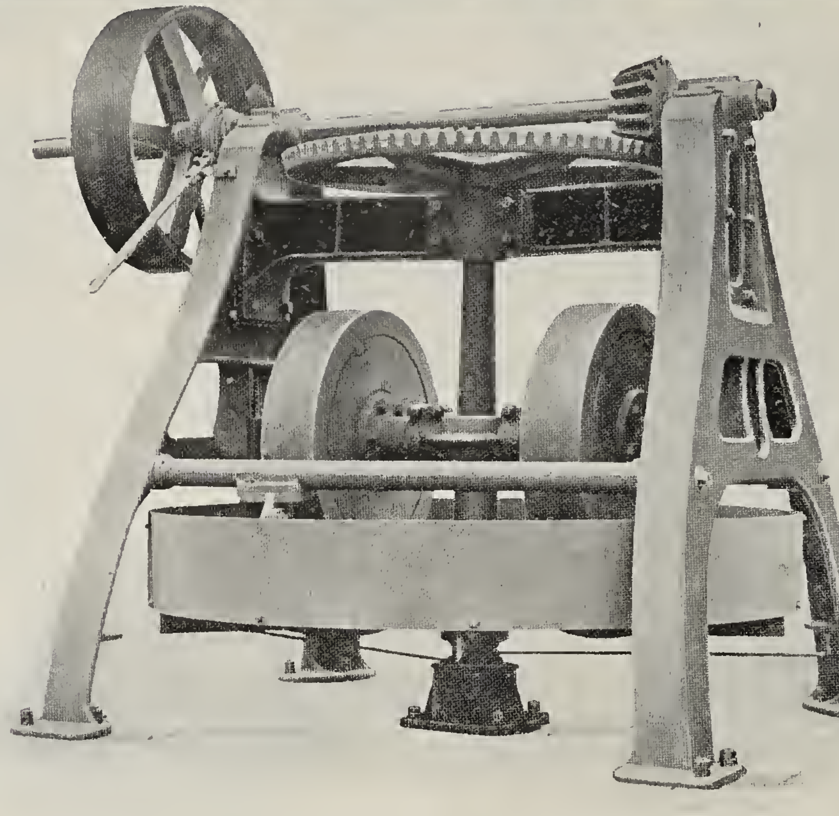
No. 2 For Open Yards.

THE HORTON MANUFACTURING CO.,

Painesville, Ohio, U. S. A.

Mention The Clay-Worker.

Modern Brick Machinery.



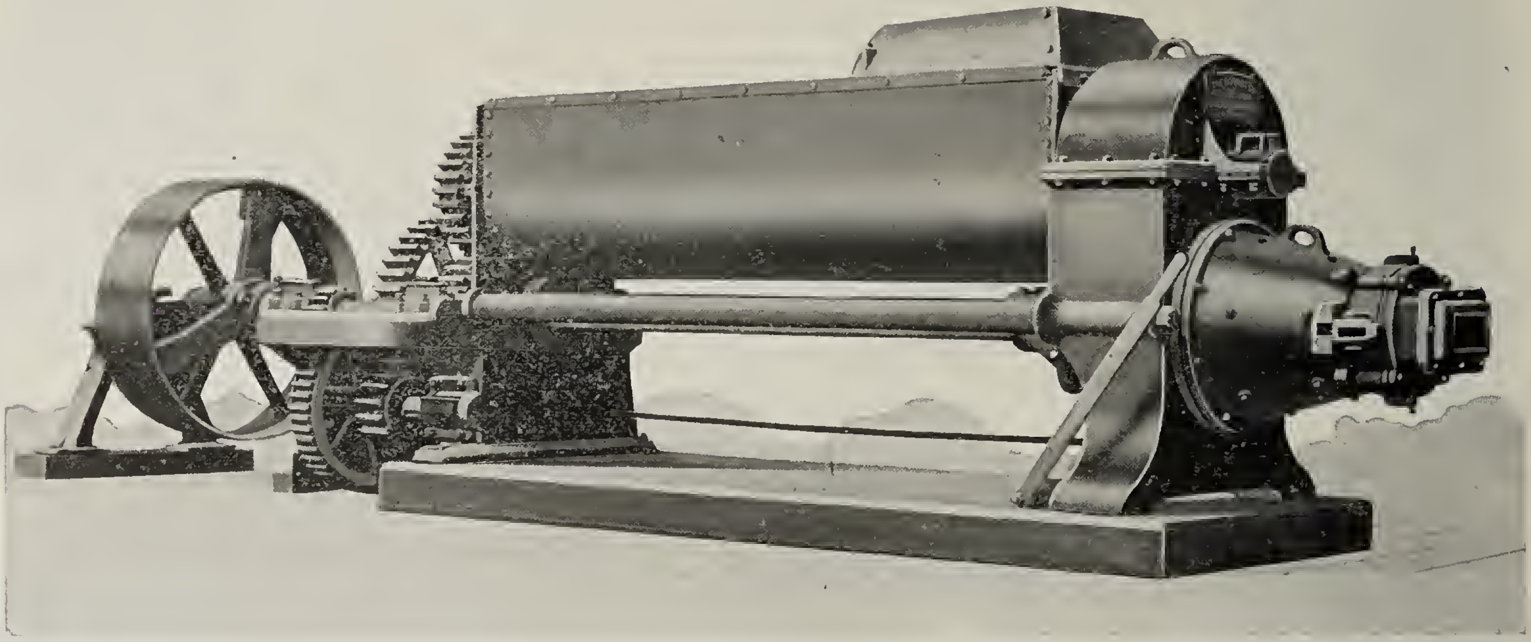
9-Foot Iron Frame Dry Pan.

Office of
THE CANTON AND CLEVELAND BRICK CO.
MANUFACTURERS OF
Street Paving Brick and Block, Sewer,
Sidewalk and Building Brick.

THE BONNOT COMPANY, CANTON, OHIO.
CANTON, OHIO, March 12, 1901.

Gentlemen—Replying to your inquiry as to how we are pleased with your brick machinery would say that it has given us entire satisfaction. Your No. 1 Brick Machine is certainly equal to any machine of its class on the market, and the Automatic Cutting Table we consider the best machine of its kind. We also use your repress and iron frame dry pan, and they are entirely sutisfactory in every respect. You are at liberty to refer parties to us, and we will be glad to show them the machinery in operation.

Yours respectfully,
THE CANTON AND CLEVELAND BRICK CO.
J. G. BARBOUR, Secretary.



NO. 4 COMBINED BRICK MACHINE. CAPACITY, 50,000 TO 70,000 PER DAY.

THE BONNOT COMPANY, Canton, Ohio: Jamestown, N. Y., December 16, 1901.

Gentlemen—In reply to your inquiry as to how we like your No. 4 Combination Stiff Mud Machine which we have had in almost constant use for the past FIVE YEARS will say we find the machine all that we can expect. We have had no breaks to speak of, and the machine works all the shale that our pulverizing machinery will grind. As you know, our shale here is very hard, stony, gritty clay, quite different from your soft, plastic shale.

Yours very truly, JAMESTOWN SHALE PAVING BRICK CO., per George C. Little, Superintendent.

Brick Machines of any capacity from 10,000 to 100,000 daily.
Automatic Side-Cut Table—Simple, Accurate and Durable.
Dry Pans, Represses, Screens, Pug Mills, Elevators, Cars, etc.

A COMPLETE LINE OF
BRICK, POTTERY and CEMENT
MACHINERY.

The BONNOT CO.,

Write for our New
Descriptive Catalogue.

CANTON, OHIO, U. S. A.

The STEVENSON CO.,

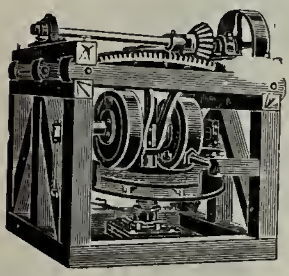
WELLSVILLE,
OHIO, U. S. A.

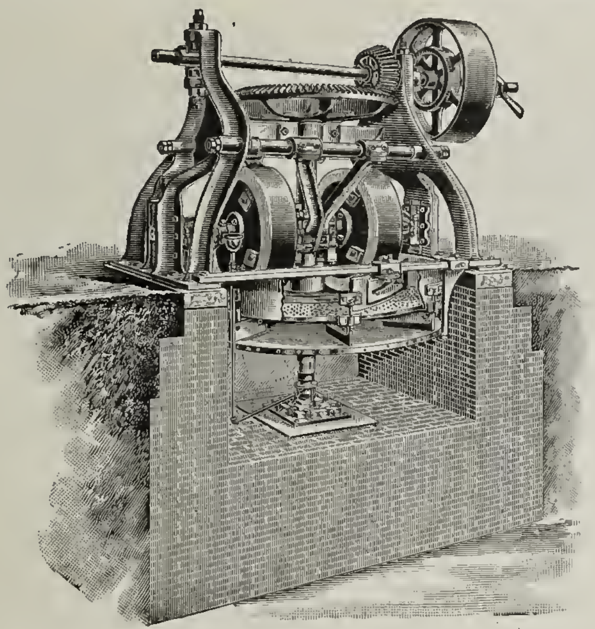
(Successors to Stevenson & Co.,)
MANUFACTURERS OF

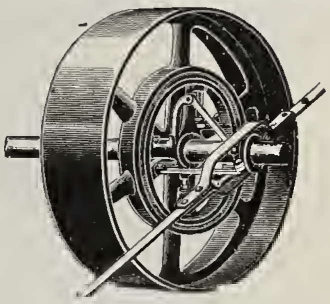
Brick Machinery.

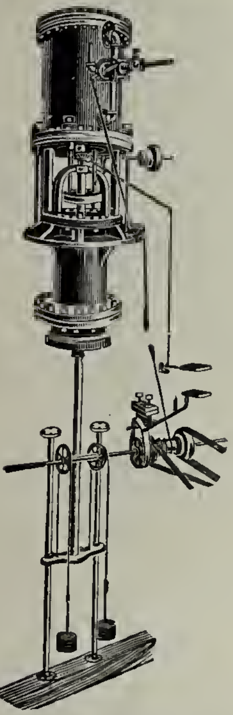
COMPLETE EQUIPMENTS.

Tile Machinery.

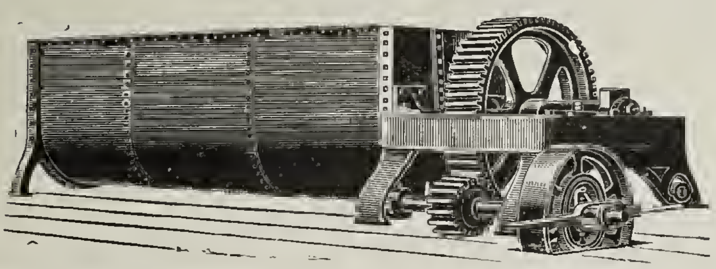


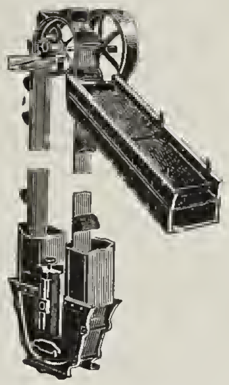






Best Dry Pan on the Market,
See our Customers.





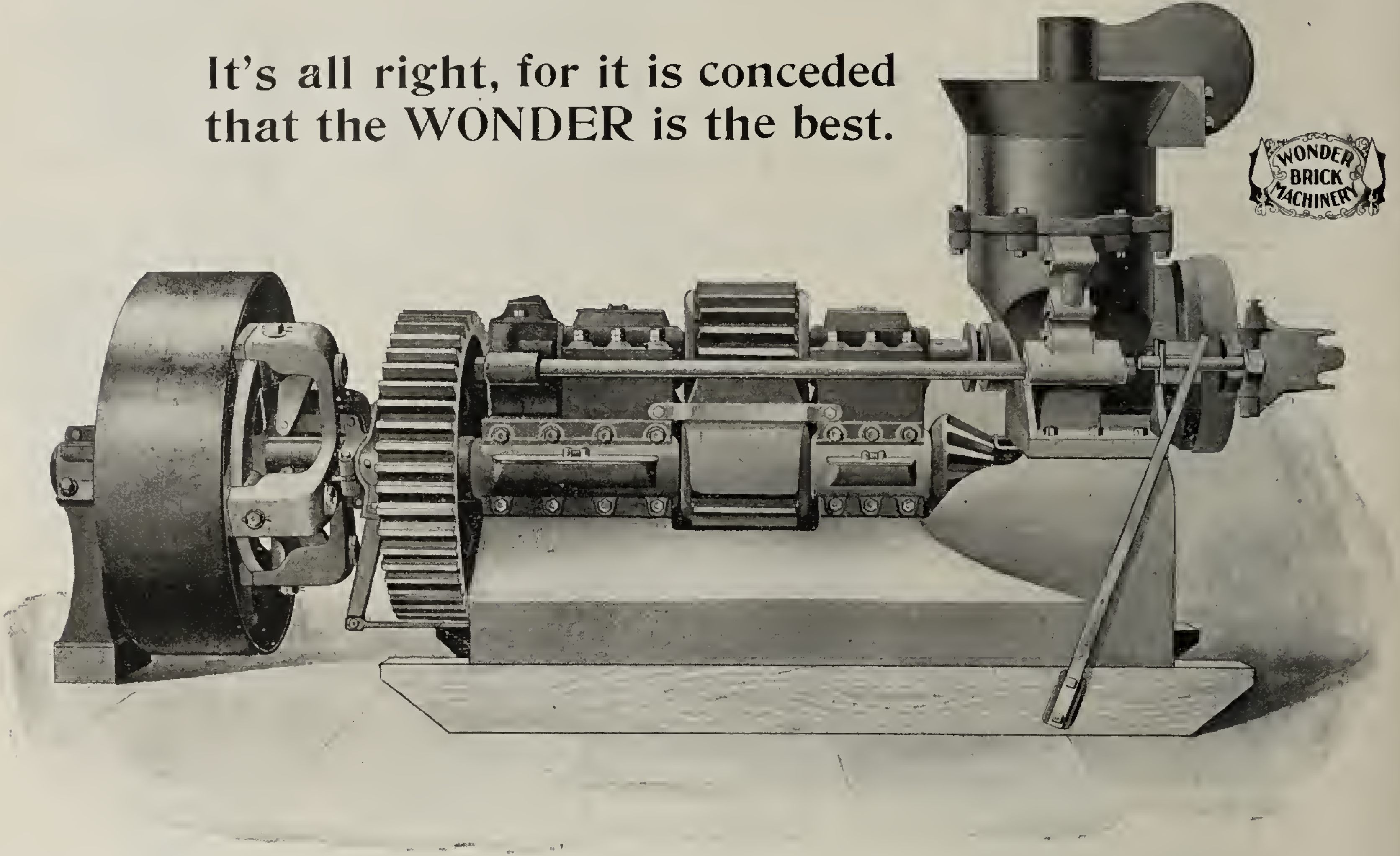
Equipment for Sewer Pipe, Terra Cotta, Brick and Tile Factories, Steam Sewer Pipe Presses, Terra Cotta and Sewer Pipe Dies, Dry Grinding Pans, Tempering Pans, Pug Mills, Elevators for Brick, Pipes, Clay and Trucks, Engines, Boilers, Heaters, Pumps and all Pipe Fittings and Fixtures for Steam Equipments. Shafting, Bearings, Plain Iron Friction Clutch and Wood Split Pulleys . . . .

NEW CATALOGUE NOW READY.

The STEVENSON CO., Wellsville, Ohio.

IF IT'S A WONDER,

It's all right, for it is conceded
that the WONDER is the best.



We are not only in the front ranks, but in the lead. The WONDER stands today without an equal for STRENGTH, DURABILITY and GENERAL EXCELLENCE and with our new and strictly MODERN FACTORY and EQUIPMENTS we propose not only to maintain the high standard to which the WONDER brick machinery has been brought, but to bring it still higher.

It is not simply our desire to equal, but to excel. There are a great many features in the WONDER machine which are decidedly advantageous and which are not contained in other Stiff Mud machines.

With the WONDER, lamination is entirely destroyed and the brick are solid throughout.

We sold more machines last year than in any two previous years—more people are investigating, and where the WONDER machine is investigated it is always adopted.

Catalogue for the asking. Information cheerfully given.

The Wallace Mfg. Co.,

FRANKFORT, IND., U. S. A.

SOUTHERN AGENTS:
Atlanta Brick Machinery Co.,
403 Prudential Building, ATLANTA, GA.

WESTERN AGENTS:
Chicago Brick Machinery Co.,
225 Dearborn Street, CHICAGO, ILL.

The
Eagle Repress.

◆ ◆ ◆

The Peer of Presses.

◆ ◆ ◆

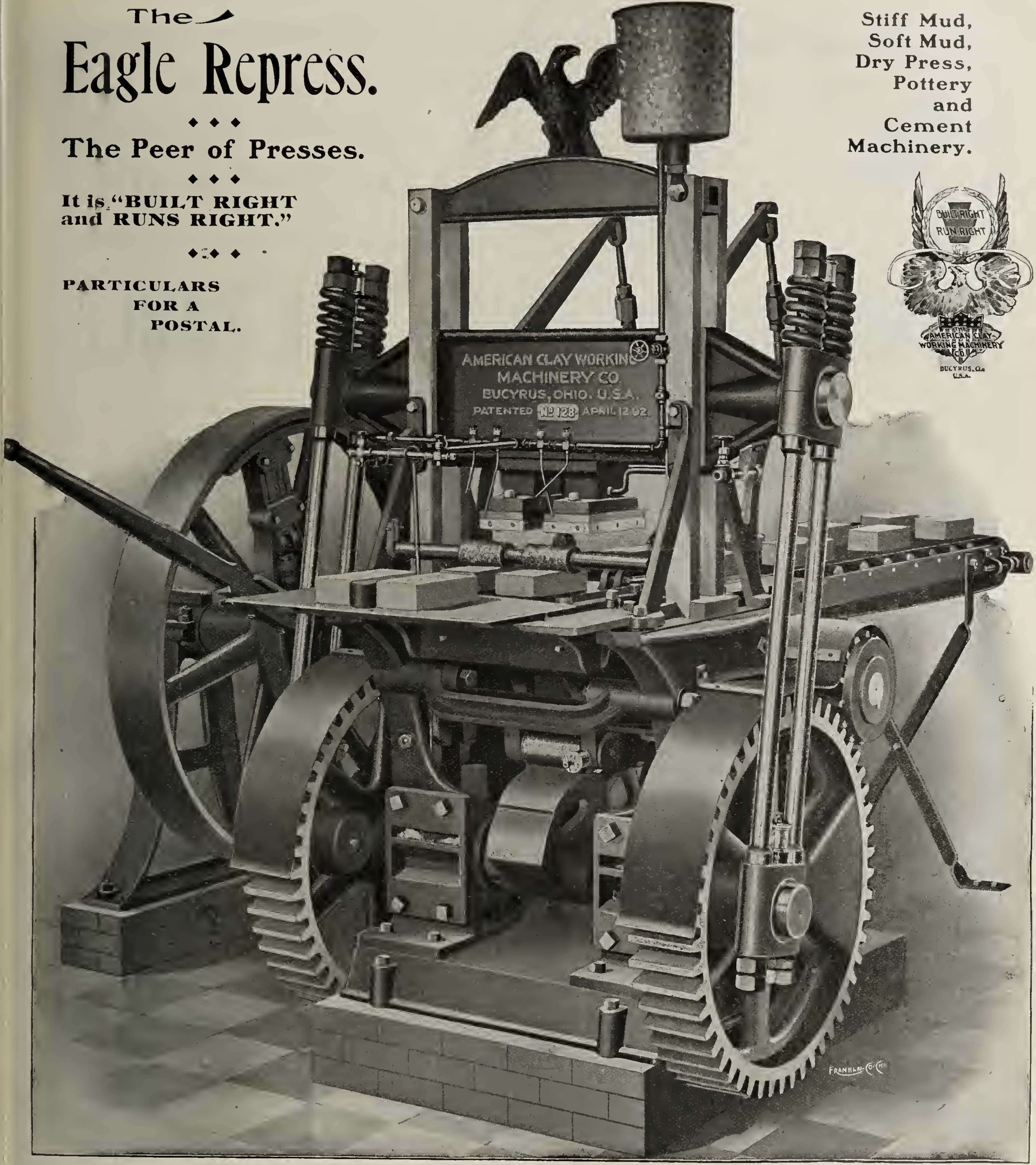
It is "BUILT RIGHT and RUNS RIGHT."

◆ ◆ ◆

**PARTICULARS
FOR A
POSTAL.**

**Stiff Mud,
Soft Mud,
Dry Press,
Pottery
and
Cement
Machinery.**

BUILT RIGHT
RUN RIGHT
AMERICAN CLAY WORKING MACHINERY CO.
BUCYRUS, O.
U.S.A.


AMERICAN CLAY WORKING MACHINERY CO.
BUCYRUS, OHIO. U.S.A.
PATENTED No 128 APRIL 12 02.
FRANKLIN-CO-CHI

The American-Clay-Working Machinery Company,

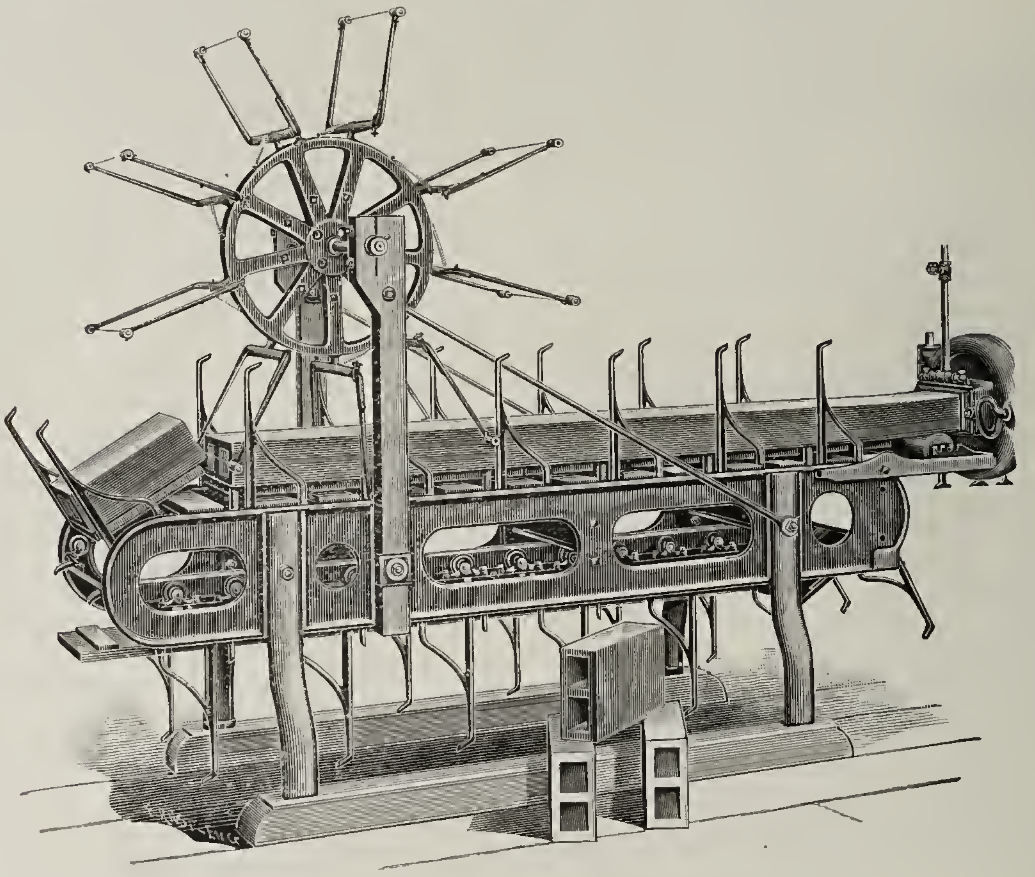
**NEW YORK OFFICE:
39 and 41 Cortlandt St.,
Rooms 101 to 106.**

BUCYRUS, OHIO, U. S. A.

See Ad. on Page 395.

Do You Make Hollow Block?
What do You Cut Them With?
Are They Cut Perfectly Square?
And All of One Length?

BENSING'S AUTOMATIC TILE TABLE



Arranged to cut Hollow Blocks, is the finest thing made to do this work. Every block is exactly of the same length and cut perfectly square, and it cuts the Drain Tile in the same manner.

We would like an opportunity to more fully explain this Table to you and also some of the rest of our machinery.

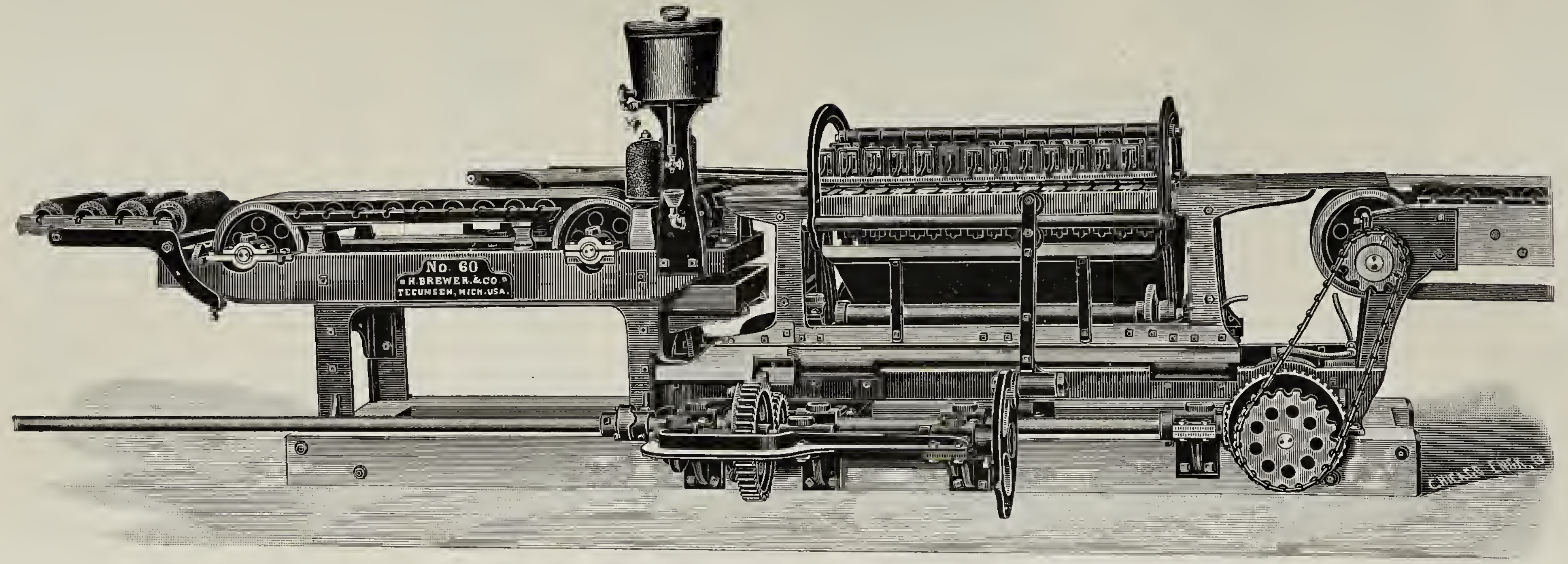
A Postal Card will bring our Catalog.

J. D. FATE & COMPANY,
PLYMOUTH, Richland Co., OHIO.
B. E. LaDOW, 1210 Chamber of Commerce, Chicago, Ill.

It isn't the **SIZE, WEIGHT OR PRICE** that determines the efficiency of a machine, but **IT IS WHAT THE MACHINE WILL DO** and keep on doing without breaking down. Efficiency as the result of complicated mechanism is good, but that gained without it is better, and that's why

The Brewer No. 60 Automatic Brick Cutter

is superior to all others. Its simplicitv is so striking that it appears **WONDERFUL** how so much work can be done with **SO LITTLE MACHINERY** without calling upon the column of clav to furnish some of the power. It is not only wonderful, but **IT IS A FACT** and a long list of **USERS HAVE TESTIFIED** to that effect.



ITS SUCCESS HAS BEEN DEMONSTRATED

and all doubt as to efficiency, practicability, etc., is the more thoroughly dispelled by the fact that it is offered to the market under guarantee of **satisfaction or no sale.** We mean just what we say, and are making a plain, straightforward proposition without technical reserve or attempt to mislead. We don't want anvone to have this cutter unless he is perfectly satisfied with it, and should your experience differ from **the unbroken record of satisfactory service** you may return the machine at our expense and there'll be no quibbling about it.

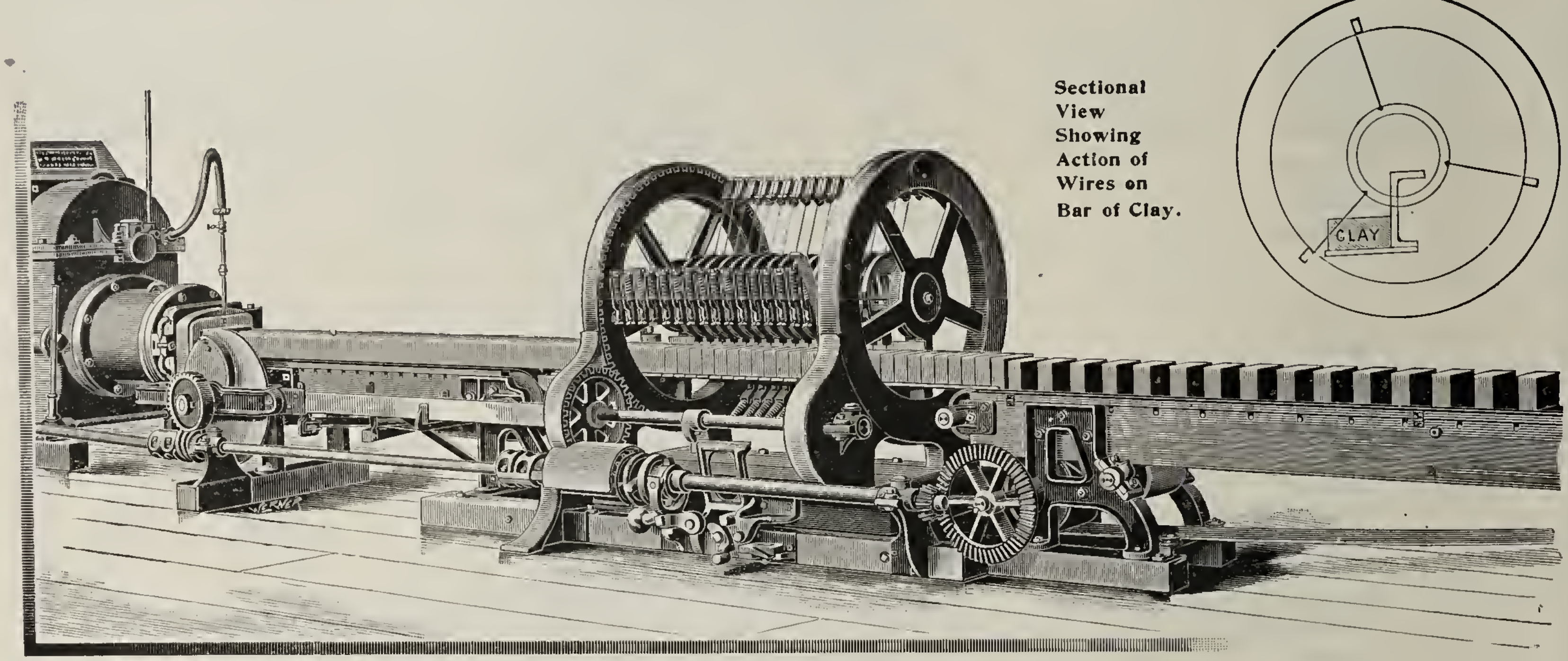
Send for catalogues and copies of testimonials.

H. BREWER & CO., Tecumseh, Michigan.

NO OTHER

AUTOMATIC CUTTER

Is "Just as Good" as This.



ROTATING AUTOMATIC CUTTER. Patented.

Why waste time and money using Cutters which are frequently out of order and cannot be depended upon to do good work?

Why not produce brick of **finest quality** when it can be done with less expense?

A multitude of others have found it profitable to use this Apparatus.

Why should you not use it also?

You will be satisfied with it.

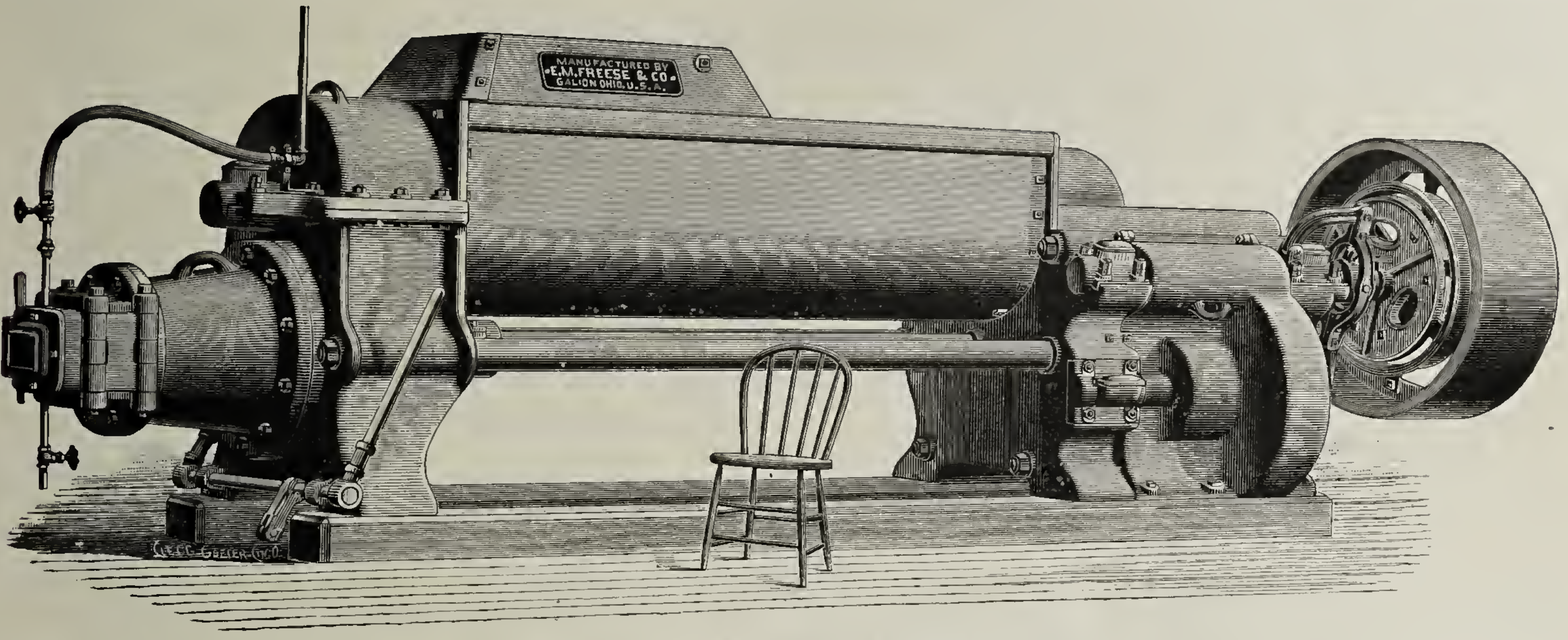
We will prove this statement if you will give us opportunity.

E. M. FREESE & CO.,
Galion, Ohio.

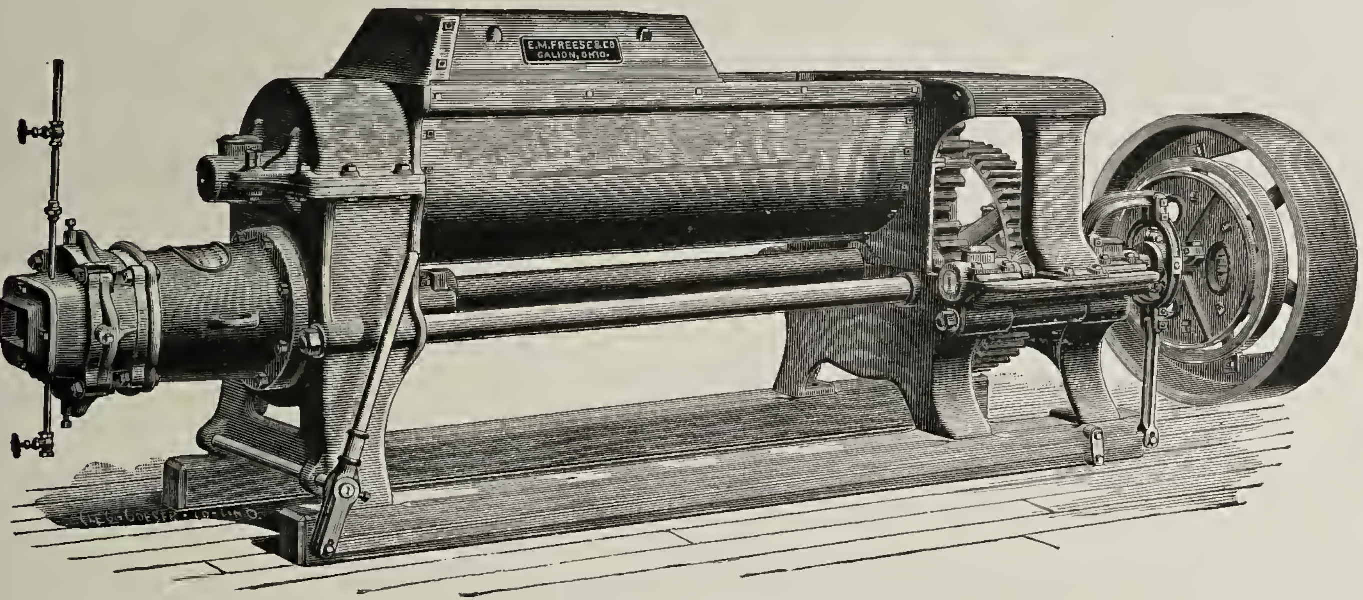
Mention The Clay-Worker.

Union Brick Machines

With Pug Mill Combined.


MANUFACTURED BY
E.M.FREESE & CO.
GALION OHIO U.S.A.

UNION BRICK MACHINE. (SPECIAL SIZE.)



UNION BRICK MACHINE. (No. 1 SIZE.)

We build these Machines in five (5) sizes.

Their reputation for convenience, enconomy and satisfactory service generally is established by their use in scores of the best Brick Plants.

E. M. FREESE & CO.,
Galion, Ohio.

SOME OF THE ARTICLES WE MAKE

Horizontal & Vertical Brick Machines

Clay Granulators,
Clay Elevators,
Clay Cars, Pug Mills,
Revolving Dump Tables,
Tempered Steel Brick Strikes,
Kiln Castings,
And other castings.

◆ ◆ ◆

Friction Winding Machines,
Friction Clutches,
Friction Clutch Pulleys,
Friction Cut-off Couplings.

◆ ◆ ◆

Power Freight Elevators,
Hoisting Machines,
And Some Other Things.

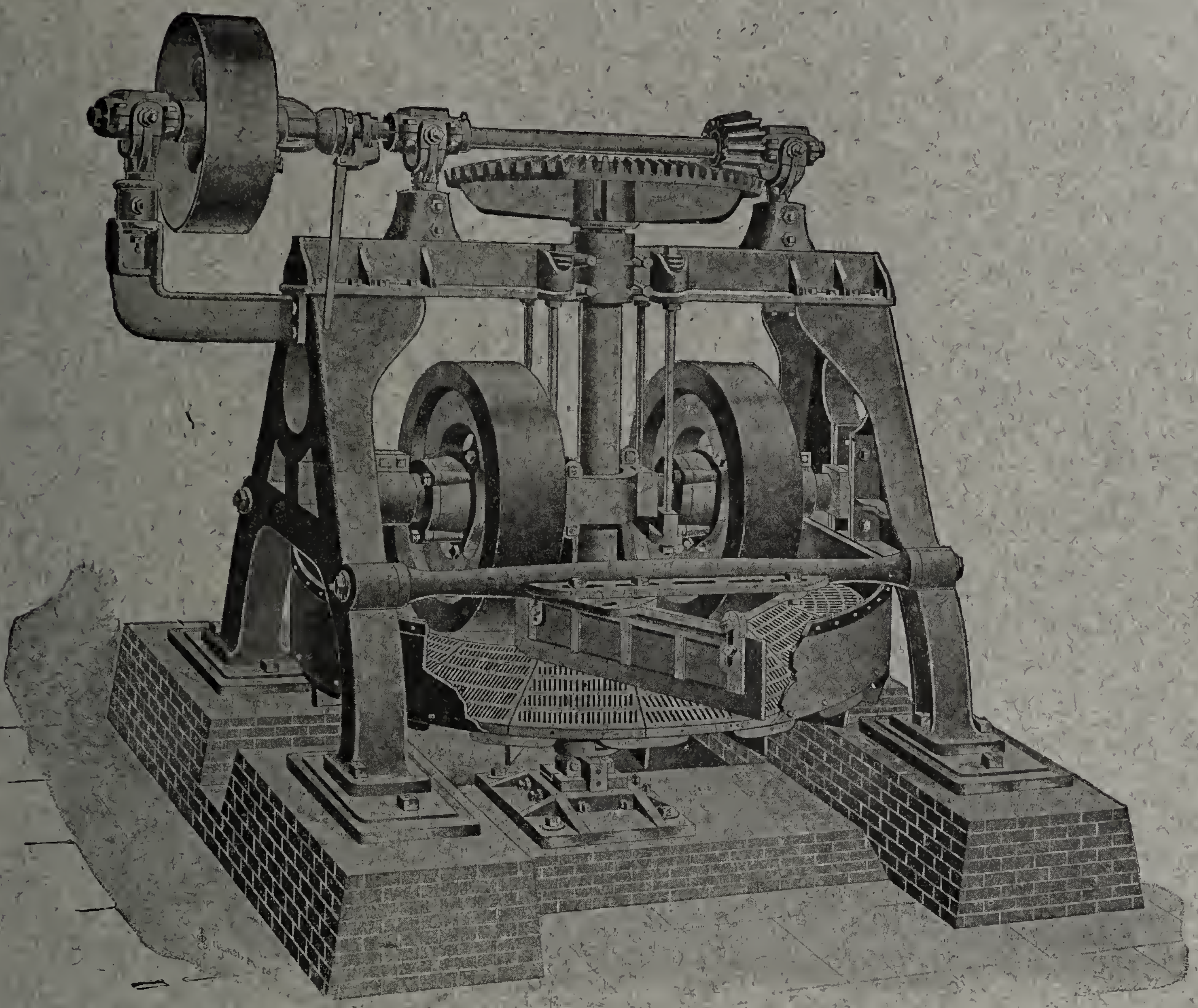
Have printed descriptive sheets describing many of these articles, which we will be happy to furnish, with prices on application.

It's not our aim to build the cheapest but we do try to build the best. Better Investigate Them.

The Eastern Machinery Co.,

Mention The Clay-Worker.

NEW HAVEN, CONN.



The FROST DRY PAN.

The ORIGINAL and BEST Dry Pan in the market. More of these Dry Pans in use to-day than all others combined. All sizes: both Wood and Iron Frames. Used by every Prominent Brick Manufacturer. Less repairs are required for the Frost Dry Pan than any other make. This is a very important fact. High Grade Automatic and Throttling Steam Engines, Horizontal Tubular Boilers and Plain and Submerged Tube Vertical Boilers. Send for Illustrated Catalogue.

The Frost Manufacturing Co.,

Established in 1851.

CHICAGO and GALESBURG, ILL., U. S. A.

AMERICAN BLOWER CO.

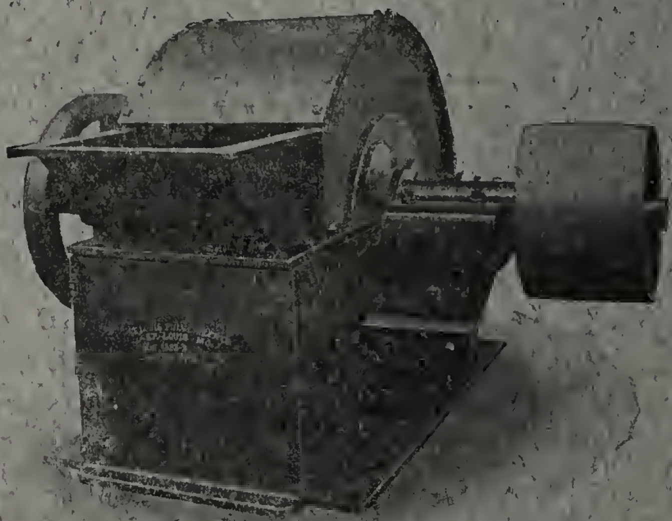
"A B C"
Waste Heat Brick Dryers are standard the World over.
Send for full detailed information.
American Blower Co.,
Detroit, Mich.

NEW YORK DETROIT LONDON

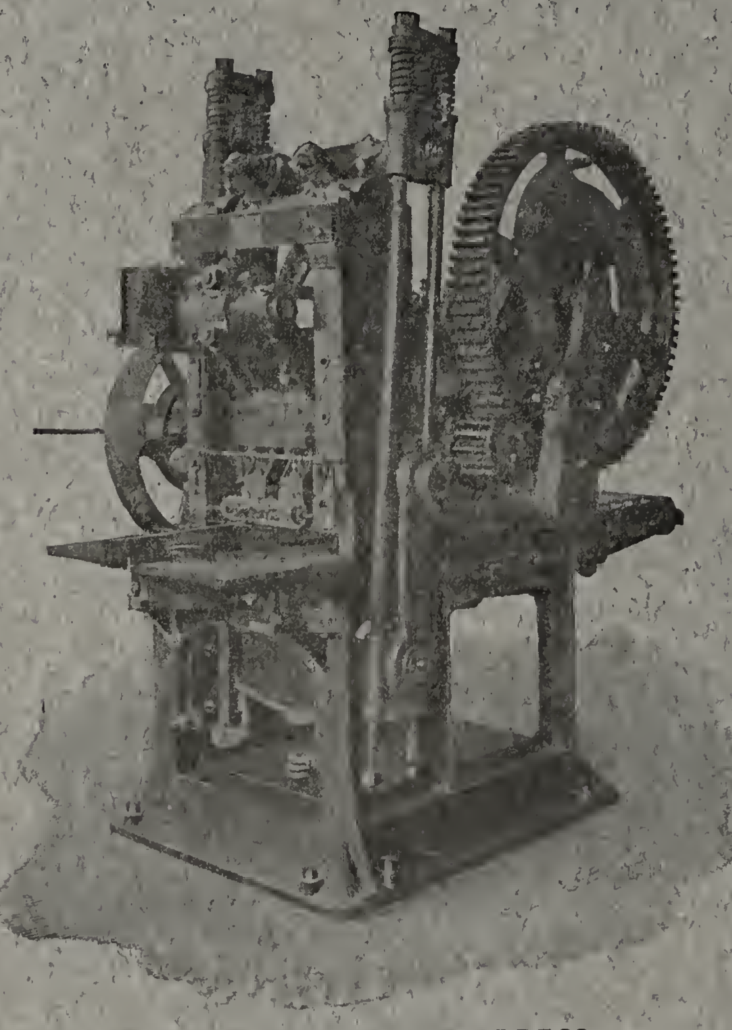
Schoellhorn and Albrechts'

PATENT

Pulverizers, Breakers and Disintegrators



St. Louis Pulverizer Company,
416 N. Main St.,
ST. LOUIS, MO., U. S. A.



The RICHARDSON REPRESS.

We Have Just Shipped

The Thirteenth RICHARDSON REPRESS to the City of Washington.

These thirteen Represses were shipped to five different plants, on eleven different orders, the last four years.

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We would be glad to take your order also, and at the same time please include what Dryes Cars you need. They are as high grade as our Represses.

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STEAM and HAND REPRESSES,
STEAM DRY PRESSES, two mould,
SWORD BRICK MACHINES,
STEEL DRYER CARS.

• • •

THE OHIO CERAMIC ENGINEERING CO.,
Cleveland, Ohio.

Table of Contents, Page 466.

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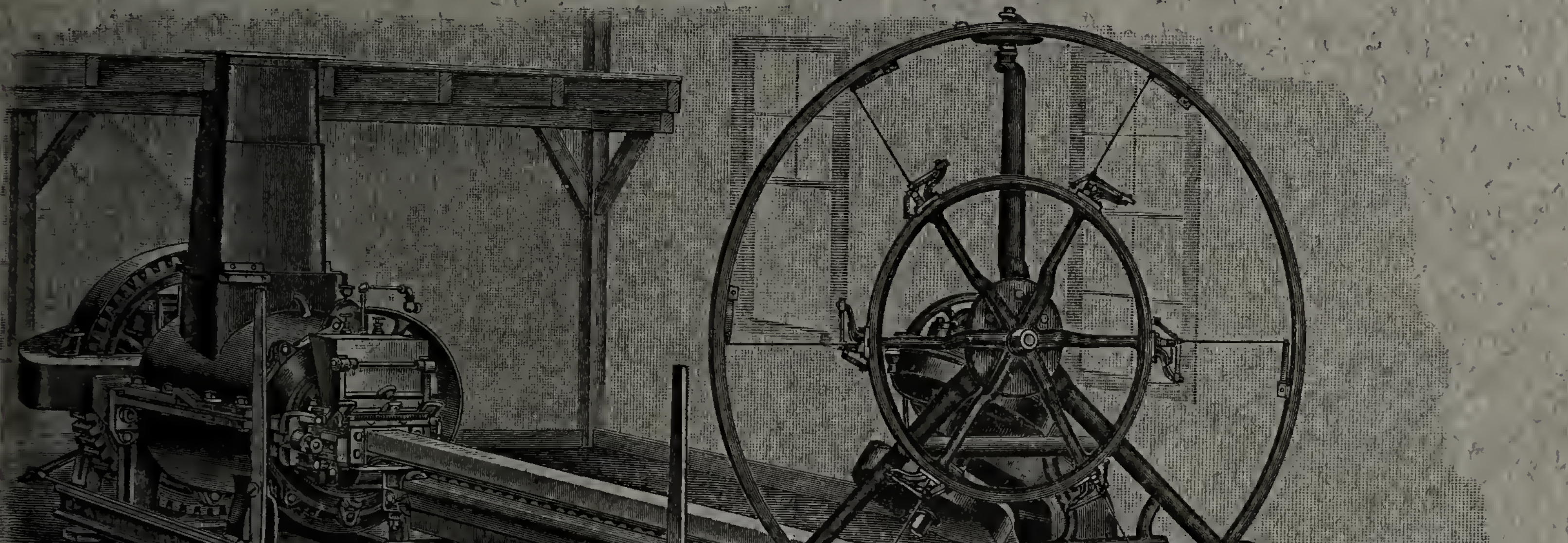
A Journal devoted to all clay working interests.
Including Brick Tile Terra Cotta Sewer Pipe Pottery Etc.
T. A. Randall & Co. Publishers.
Chandler Sc. Indpls.

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

Vol. XXXVII, No. 4. INDIANAPOLIS, IND., APRIL, 1902. $2.00 a Year in Advance.

Automatic Side-Cut and End-Cut Brick Machines.

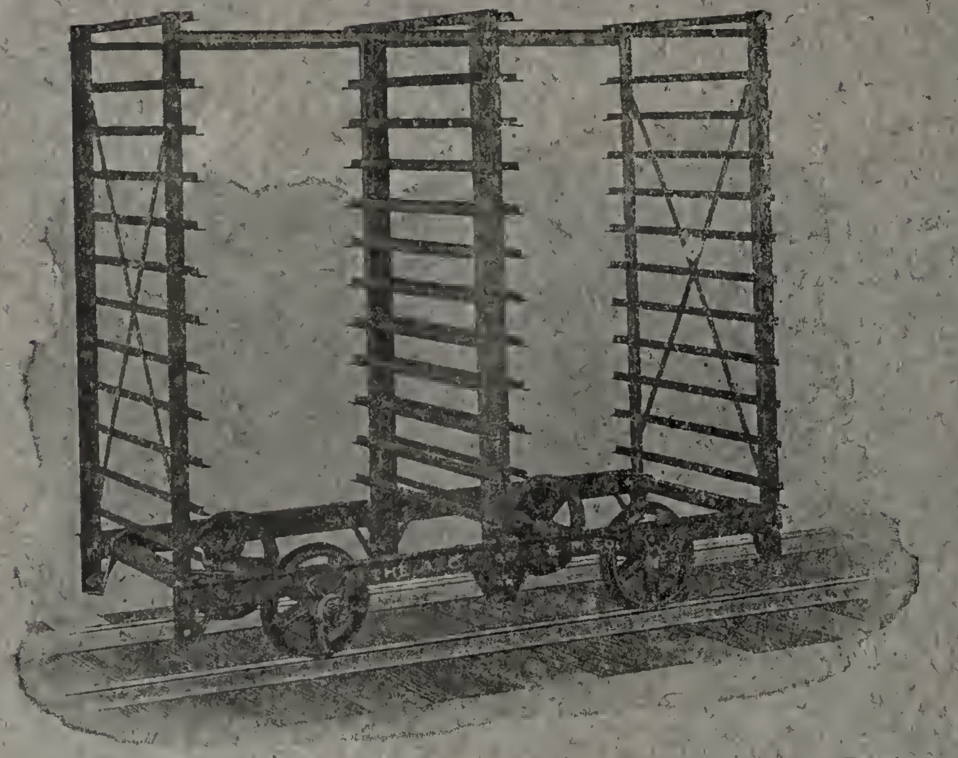

CHAMBERS BROS. CO.
PHILADELPHIA
L. Haugg, del. Phila.

CHAMBERS BROTHERS COMPANY,

FIFTY-SECOND STREET, BELOW LANCASTER AVE.,
PHILADELPHIA, PA.

DAVIS BROWN, Chicago Agent,
59 West Jackson Blvd.

See Ad. on Page 471.



No. 137 Rack Car with Wright's Patent Malleable Corner and Center Upright Brackets.

We also make a full line of

Dump Cars, Turn Tables, Transfer Cars, Track Switches, Etc.

Write for Circular.

The ATLAS CAR AND MFG. CO.,
(THE ATLAS BOLT & SCREW CO. PROPRIETORS.)
Cleveland, Ohio.

CARS!

WE ARE THE LARGEST MANUFACTURERS of

Dryer Cars

Of every description in the World.

We do not confine ourselves to standard styles and sizes, but build anything in the way of cars to suit the requirements of our Clients. Our long experience in the manufacture of cars, enables us to design and build the strongest, lightest and easiest running car on the market.

Don't Buy until you see What we have to offer.

INDEX TO ADVERTISERS.

Brick Machinery—Dry Press Process.

Name. Page.
Anderson Foundry and Mach. Works 420
Chicago Brick Machinery Co. 489
Chisholm, Boyd & White Co. 416, 417
Fernholtz Brick Machinery Co. The 419
Ill. Supply & Construction Co. 421
Ross-Keller Brick Machine Co 418

Brick and Tile Machinery.

American Clay-Working Mach Co., The 495, 506
Anderson Foundry and Mach. Works 420, 491
Battenfeld Mfg. Co., The 475
Brewer. H. & Co 504
Bonnot Co, The 507
Chambers Brothers Co. 413, 471
Chicago Brick Machinery Co. 489
Eastern Machinery Co, The 510
Fate & Co., The J. D. 505
Freese, E. M. & Co 469, 508, 509
Henry Martin Brick Mach. Mfg Co., The 502
Hensley, I. W. 415
Horton Mfg. Co., The 501
Ill. Supply & Construction Co. 421
Kells Foundry and Machine Co 483
Leader Mfg. Co, The 490
Madden & Co 482
Ohio Ceramic Engineering Co., The 512
Potts & Co., C. & A. 498, 499
Raymond Co., The C. W. 467
Stedman Foundry and Machine Works 423
Steele & Sons, J. C 486
Wallace Mfg. Co, The 503
Wellington Machine Co, The 473
Wiles Co., A. M. & W. H 488

Brick Kilns and Dryers.

American Blower Co, The 512
Barron, A. F. & A. E 494
Bushong, M. M 488
Crown Dryer Co., The 496
Dennis, F. W 492
Eudaly, W. A 588
Frey Engineering Co 493
Haigh, H 484
Illinois Supply and Construction Co, The 421
Justice, I. M. 485
Morrison & Co., R. B 484
New York Blower Co., The 496
National Dry Kiln Co, The 492
Phillips, S. G 481
Pike, E. M. 484
Reppell, L. H 485
Sharer, Geo. W 492
Standard Dry Kiln Co, The 426
Starkey, John 477
Wuerz-Kottenhagen 489

Brick Yard Supplies.

Atlas Car & Mfg. Co. 414
Arnold, D. J. C 423
Bechtel, B. E 486
Cleveland Car Co 497
Caldwell & Son Co., H. W 482
Carmichael, T. W 485
Carnell, Geo 487
Cox, Geo. S 484
Dunlap Mfg. Co 479
Frost Manufacturing Co 511
Gandy Belting Co., The 478
Gray, S. B 477
Gregory, M. E 481
Harrington & King Perforating Co, The 415
Henry Martin Brick Machine Mfg. Co, The 500
Horton Mfg. Co, The 501
Jeffrey Manufacturing Co, The. 480
Kendall & Flick 481
Marion Steam Shovel Co 490
Main Belting Co 479
Mershon, Schuette, Parker & Co 480
Newton, A. H 481
Phillips & McLaren 483
Rockwood Mfg. Co, The 483
Patterson Foundry and Machine Co, The 479
Smidth & Co., F. L 485
Scotts Patent Brick Car Co 500
Shaw, Willis 478
St. Louis Pulverizer Co 512
Tecktonius, E C 484
Thew Automatic Shovel Co, The 491
Williams & Co., M. F 486
Williams Patent Crusher and Pulverizer Co 422

Miscellaneous.

American Ceramic Society 489
American Road Machine Co 482
Audel & Co., Theo 478
Baird & Co., Henry Carey 481
Big Four Route 484
Caldwell Co., W. E 480
Chesapeake & Ohio R. R 483
Clark W J. Co., The 480
Clinton Paving and Building Brick Co., The 425
Coaldale Paving Brick Co., The 424
Connolley, W. A 477
Crown Fire Clay Co., The 478
Dean Bros. Steam Pump Works 479
Eastern Paving Brick Co. 424
Evens & Howard 478
Evert & Co., H. C 482
Gabriel & Schall 482
Green & Hunter Brick Co 424
Indianapolis Engraving and Electro Co 479, 482
Indiana, Decatur & Western 484
Indiana Paving Brick Co 425
Johnsonburg Vitrified Brick Co 424
Lake Erie & Western 484
McAvoy Vitrified Brick Co 425
Miller Oil and Supply Co 481
New York Brick and Paving Co 424
Ohio Steam Pump Co., The 480
Ohio State University 480
Pennsylvania Line 483
Purington Paving Brick Co, The 425
Perrine & Son, H. C 482
Reese-Hammond Fire Brick Co 478
Roessler-Hasslacher Chemical Company, The 487
Sangamo Brick Co 424
Terre Haute Brick and Pipe Co. 425
Vandalia Line 483
Wabash Clay Co., The 425
Ads., Small Wanted, For Sale, etc.

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WHEN WRITING TO ADVERTISERS
Mention THE CLAY-WORKER

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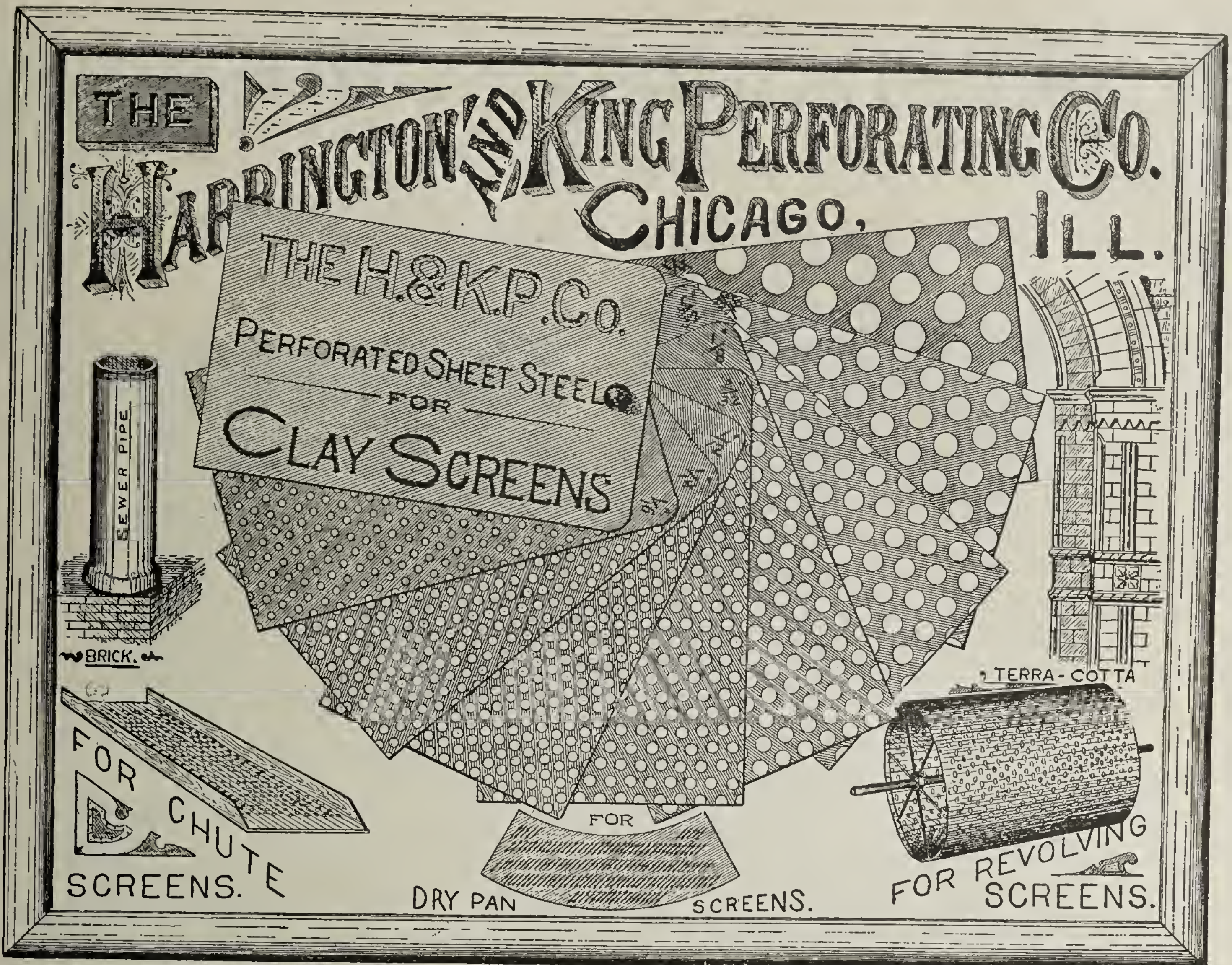

THE HARRINGTON AND KING PERFORATING CO.
CHICAGO, ILL.
THE H.&K.P.Co.
PERFORATED SHEET STEEL FOR CLAY SCREENS
SEWER PIPE
BRICK.
TERRA-COTTA
FOR CHUTE SCREENS.
FOR DRY PAN SCREENS.
FOR REVOLVING SCREENS.

Address all Communications to
THE HARRINGTON & KING PERFORATING CO., 231 N. Union St., CHICAGO.

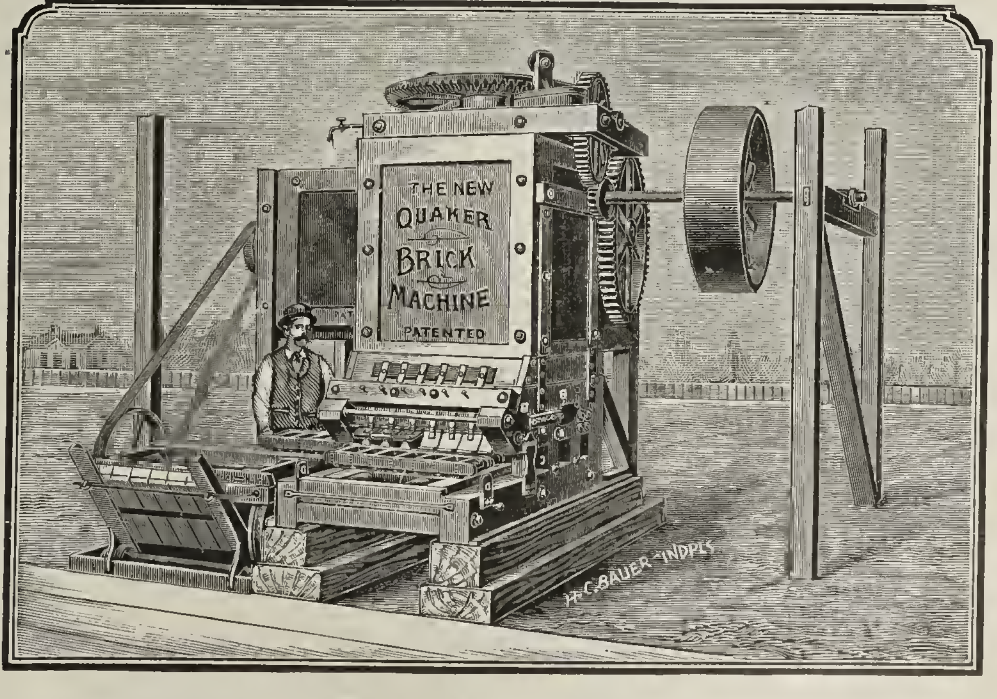
The Best for the Least Money.

Complete Combined Outfit, Consisting of the Extra Heavy Iron Quaker, Spiral Pug Mill and Mold Sanding Machines.

THIS OUTFIT is intended for fire brick, common brick, or street pavers. Its capacity is only limited by the ability to handle the product.

As will be seen, the manner of gearing has been simplified to the utmost extent, thus reducing the power required, so that a fifteen to twenty horse-power engine will run it with ease. No line or counter shafting necessary. No extra pulleys or belting.

I carry in stock a full line of first-class brickyard supplies at a very reasonable price.


THE NEW QUAKER BRICK MACHINE PATENTED
H.C.BAUER-INDPLS

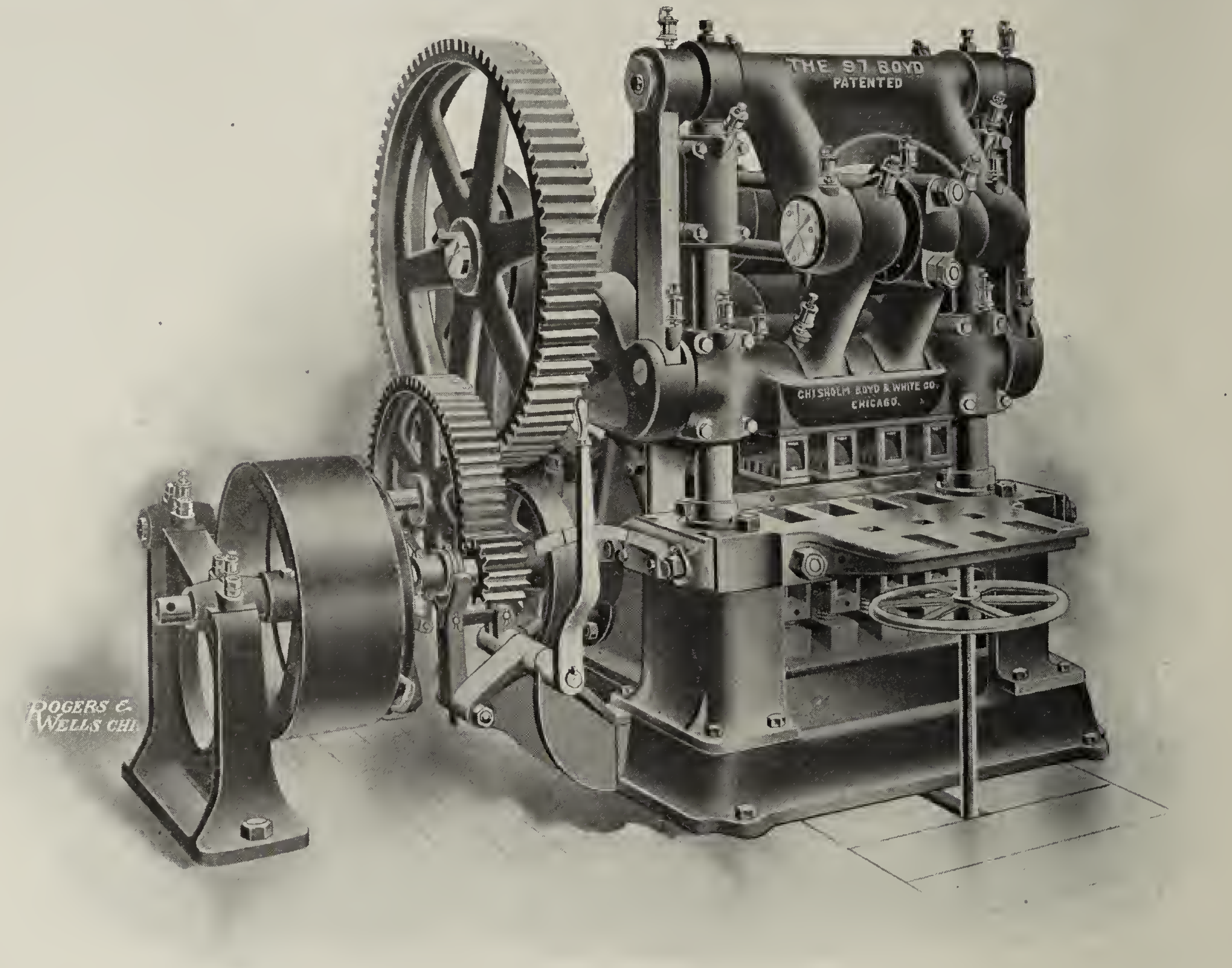
No. 1 Spur Geared Style, Capacity 40,000 or More per Day.

JAMES W. HENSLEY,
Successor to S. K. FLETCHER.
Indianapolis, Ind.

The Improved Boyd Brick Press.

The '97 Model.

IT'S NAME A GUARANTEE.



The '97 Boyd Brick Press has Enormous Strength and Great Durability: It is Compact; The Adjustments are Convenient; It Operates Quietly and Smoothly; The Workmanship and Material are of the best; The Design Ingenious, and shows the most Perfect Application of Scientific and Mechanical Principles to the Art of Brickmaking.

Sent on trial and subject to purchase after the making and burning of one or more Kilns of Brick.

Fifty Presses of this Pattern Now in Use.

Can not be broken in pressing brick. Fully Guaranteed.

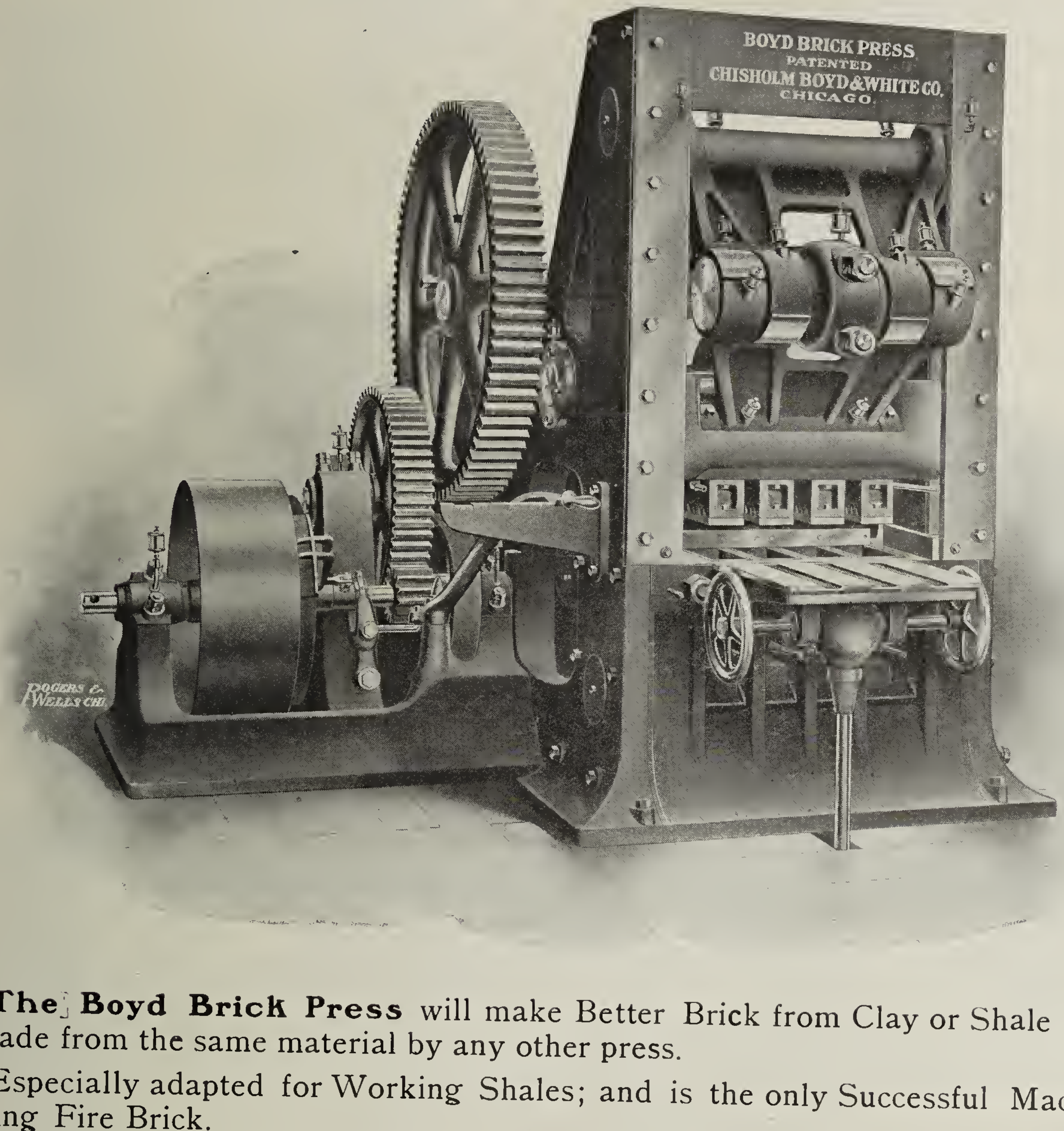
Write for Descriptive Catalogue, No. 9.

CHISHOLM, BOYD & WHITE CO.,
CHICAGO, U. S. A.

OFFICE AND WORKS:
57th and Wallace Streets.

Cable Address; CHISHOLM, CHICAGO.
A. B. C. and Liebers Code.

The BOYD BRICK PRESS.



The Boyd Brick Press will make Better Brick from Clay or Shale than can be made from the same material by any other press.

Especially adapted for Working Shales; and is the only Successful Machine for Making Fire Brick.

Its Record: More Boyd Presses in Actual Operation than of all other Press Brick Machines Combined.

Brick Plants of any desired capacity designed and constructed complete, Under Guarantee of Producing Satisfactory Burned Brick.

CHISHOLM, BOYD & WHITE CO.,
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OFFICE AND WORKS:
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Mention The Clay-Worker.

The LATEST IMPROVED

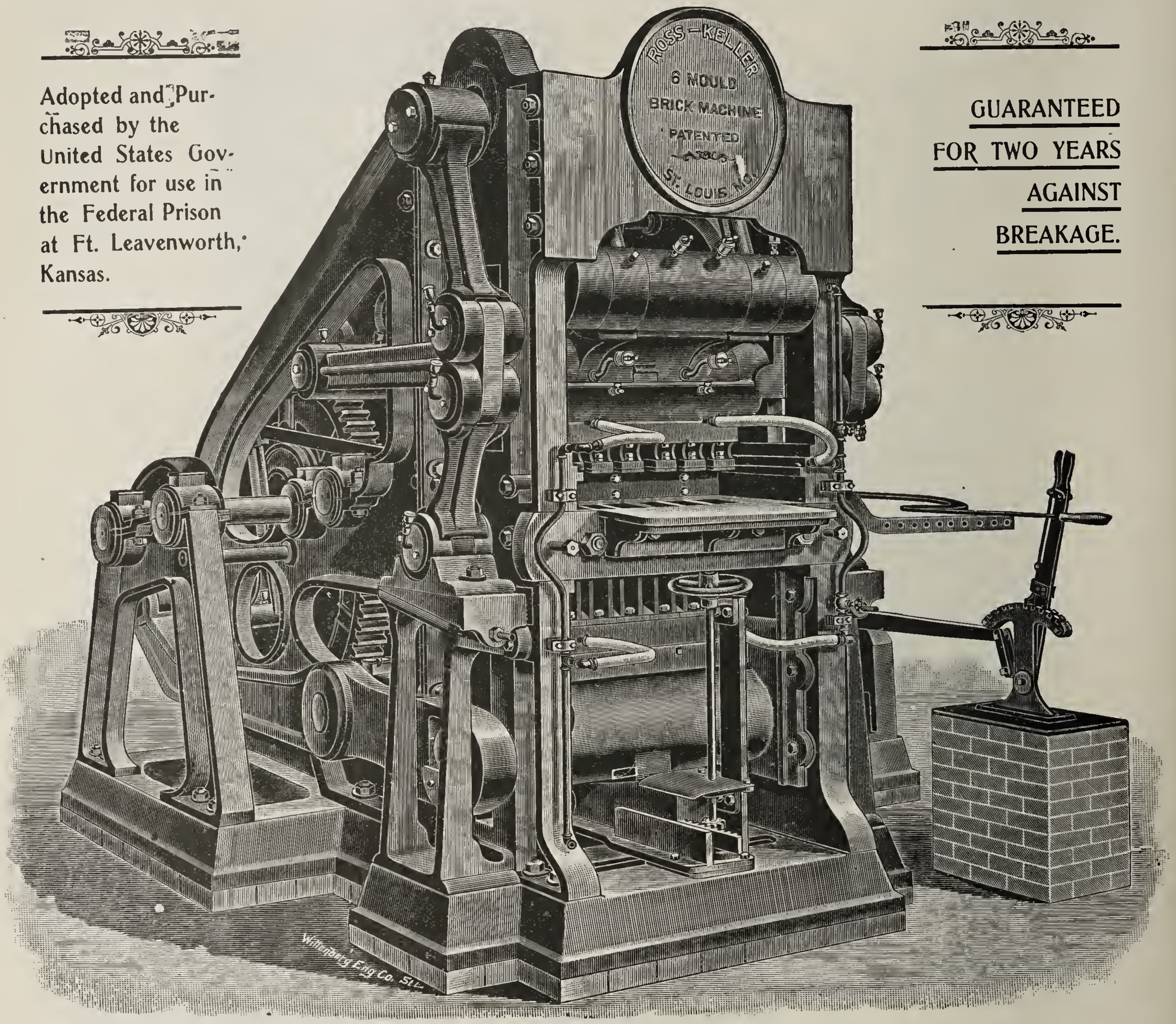
Ross-Keller TRIPLE PRESSURE Brick Machine

Manufactured in four and six-mould sizes. Weight of four-mould machine 58,000 pounds; capacity 24,000 brick per day. Weight of six-mould machine 75,000 pounds, capacity 35,000 to 40,000 brick per day.

BRICK SET IN KILN DIRECT FROM MACHINE.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

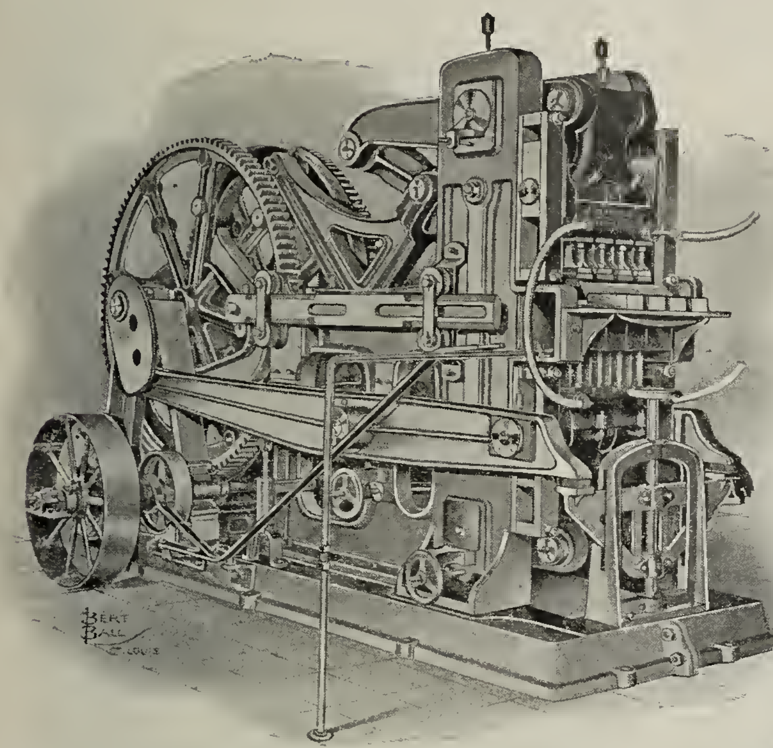
GUARANTEED FOR TWO YEARS AGAINST BREAKAGE.



THIS machine has an unbroken record of success. It is used on a number of the best equipped brick plants in the United States. It has never failed to give entire satisfaction and we are perfectly safe in guaranteeing that it will work any clay of which pressed brick can be made, and make them better and cheaper than any other press. It makes better brick because the pressure is greater and is applied in a way most effective. It makes brick cheaper because it is unbreakable and hence there are no repair bills or expensive delays and stopping of work which brickmakers know are more costly than the repair bills themselves. If you want to make the best brick at the least expense the season through don't fail to investigate this machine, with it you can "put money in your purse." Let us tell you more about it and give the address of those now using it. Remember "the proof of the pudding is in the eating of it."

For Prices and Full Particulars, address **ROSS-KELLER BRICK MACHINE CO.,** Fullerton Bldg., ST. LOUIS, MO., U. S. A.

The New Fernholtz Brick Press.



WONDERFULLY
IMPROVED.

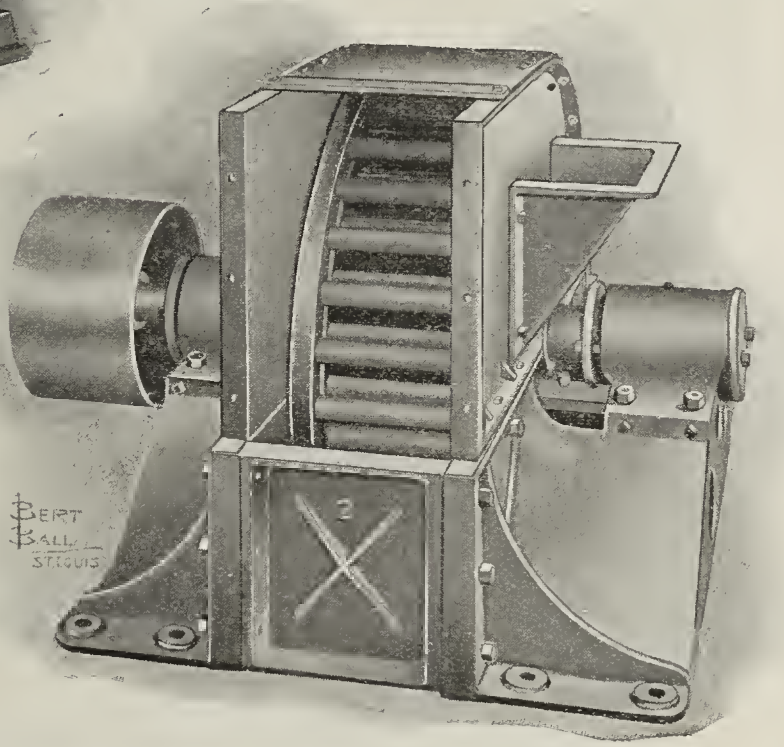
Fitted with the Celebrated

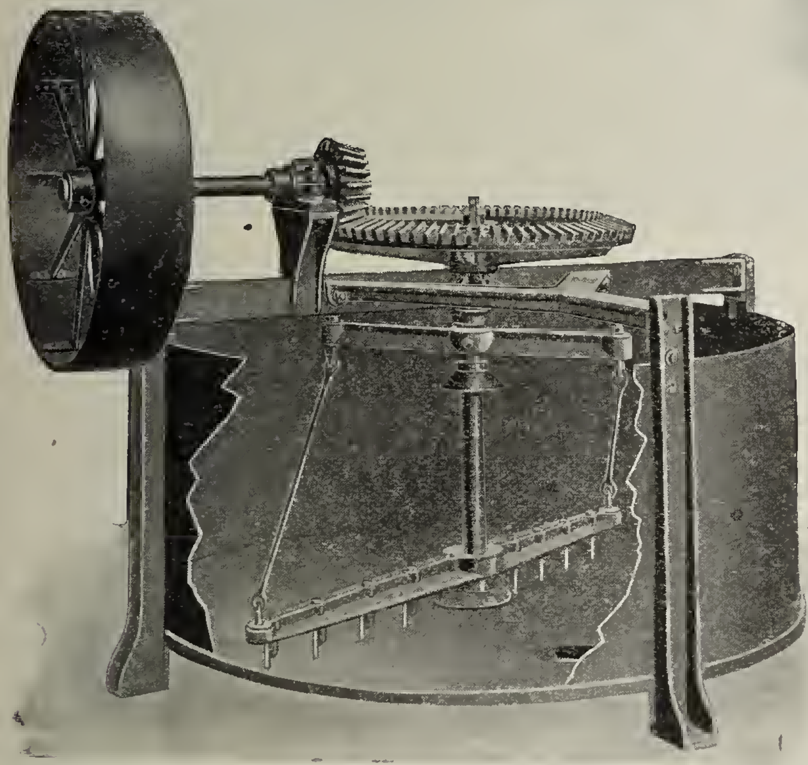
FERNHOLTZ MOLD BOX

Which is used by leading Brick Manufacturers in other Dry Presses.

The Fernholtz
PATENT
Clay Pulverizer.

No more rivetting Pins in Cage.
Any one can put them in. Most economical Clay Grinder ever made.





The Fernholtz Iron Frame Clay Mixer.

"The Mixer that Mixes."

WE HAVE a first class repair department and can repair all kinds of Brick Machines and Machinery. We make a specialty of Molds for Fancy Shape brick at reasonable prices.

Dealers in BRICKYARD SUPPLIES.

If you don't see what you want ask for it. No trouble to answer questions.

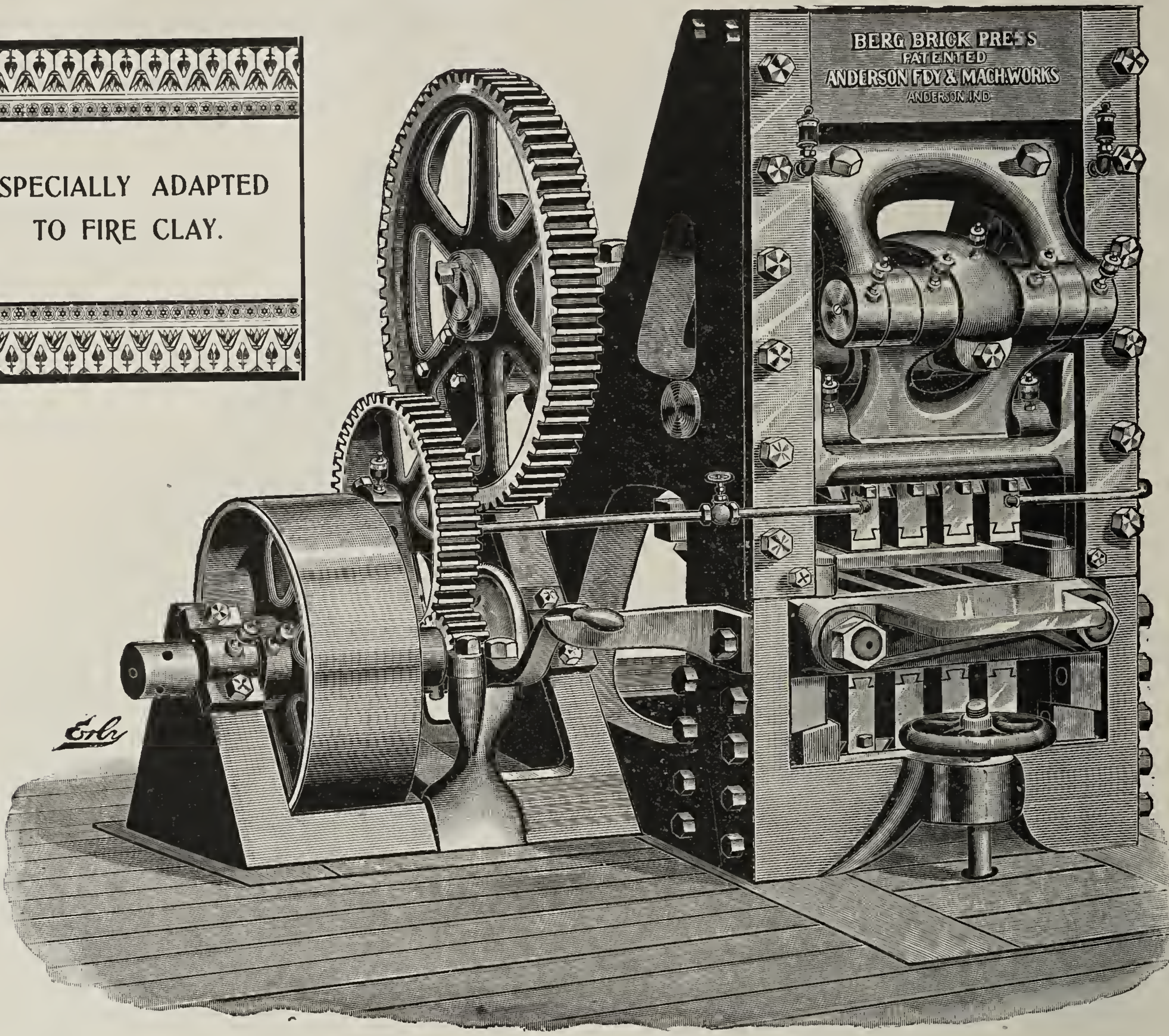
The Fernholtz Brick Machinery Co.,

CABLE ADDRESS "FERNBRICK."
WESTERN UNION CODE.

1214 to 1216 Poplar Street, ST. LOUIS, MO., U. S. A.

The BERG BRICK PRESS.

ESPECIALLY ADAPTED
TO FIRE CLAY.



The Highest Development of the Art of Brickmaking—so Pronounced by the U. S. Government.

Three distinct pressures.
Greater Pressure than any other machine.
Greater Strength than any other machine.
Will put more clay into given space than any other machine
Less working parts than any other machine.
No Plunger Stems, eye rods or Springs.

Mold Liners Made of Tempered Tool Steel.

Makes all size Brick and Tile from 2 to 24-inch.

SOLD BY

Chicago Brick Machinery Co.,
225 Dearborn St., CHICAGO.

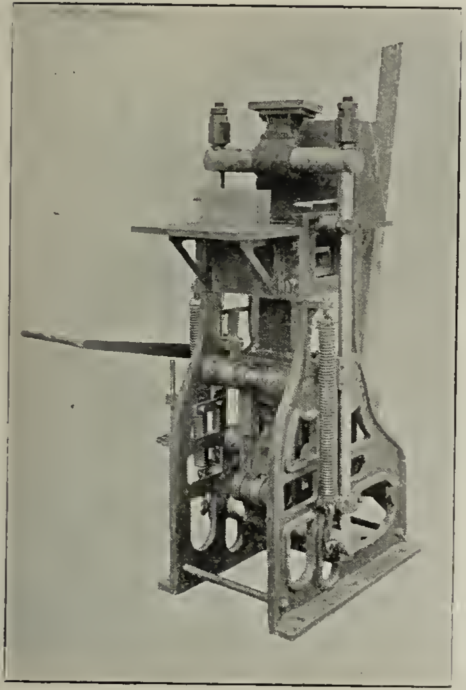
MANUFACTURED BY

The Anderson Foundry & Machine Works,
Anderson, Indiana.

THE NEW

Grath Hand-Power Brick Press

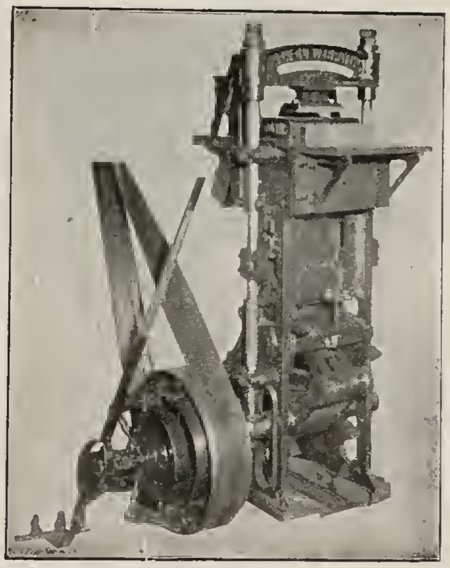
FOR MAKING PLAIN AND ORNAMENTAL PRESS
BRICK FROM SEMI-DRY CLAY.



The accompanying cut shows the only successful **HAND POWER PRESS** for pressing brick direct from the clay. The brick made on same are equal to those made on any steam power or hydraulic press. They have a polished face and perfect edges and corners. As will be seen, the press is equipped with charger and feed box. Two men can easily make 2,000 best quality press brick per day. By simply changing the liners and die plates, brick of any size up to 12½ inches long, 8½ inches wide and from 1 to 4¼ inches in depth can be pressed. In making brick on edge the mould is 9 inches deep. No brickyard is complete without a press of this sort. It is also recognized as the only successful press for making plain press or front brick for small yards that are making brick by the plastic process.

The Coffeyville (Kansas) Vitrified Brick & Tile Co. were the first one to order one of these presses, and to show what they think of same, they have only recently placed an order for two more of them.

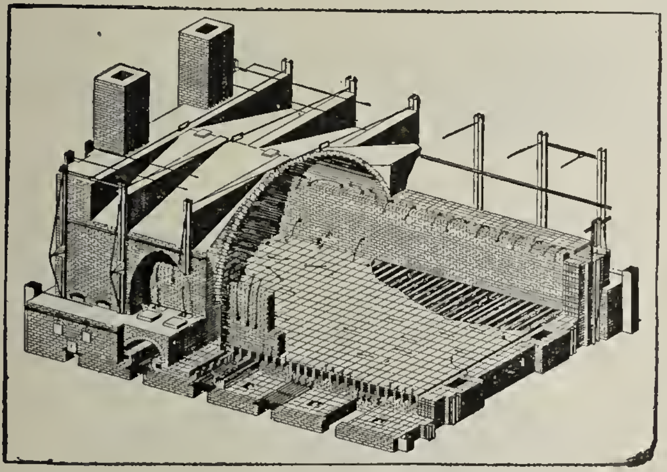
The Grath ONE AND TWO Mould Steam Power Press



The accompanying cut shows the latest improvement in Brick Presses which are built in two sizes. The One Mould, which has a capacity of 5,000 best quality press brick per day. The Two Mould having a capacity of 10,000 best quality press brick per day. This press is so constructed that all shapes and sizes of ornamental brick can be made on same by simply changing moulds and die plates, and is the cheapest as well as the simplest and most powerful Press of its kind in the market. The brick made are very dense with perfect edges and corners. The Press is guaranteed against breakage for one year. All parts subject to strain are of steel.

The Grath Gas and Coking Furnaces

Can be attached to ALL kinds of Kilns, either old or new, and produces better results with SLACK than lump coal in ordinary furnaces. PROTECTION GUARANTEED TO ALL USERS. REWARD FOR INFORMATION ON INFRINGEMENTS.



The GRATH Combined Radiating Floor and Direct Down=Draft Kiln,

(THE PERFECT KILN.)

BUILT ROUND, SQUARE AND CONTINUOUS.

PATENTED.

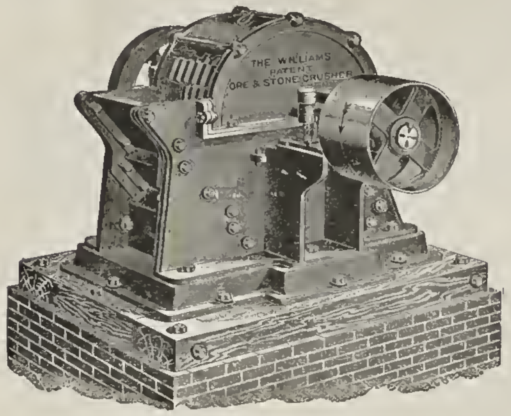
BY OPERATING the Tile Dampers over the furnaces the heat is directed to any part of the kiln. When the dampers are closed all the heat from the furnaces is drawn into the flues under the Radiating Floor, then up the bag on the opposite side, then down through the ware. If the dampers are entirely open, all of the heat from the furnaces ascends directly up the bag and then down through the ware. If the dampers are split, part of the heat ascends up the bag and the balance is drawn into the flues under the Radiating Floor, up the bag on the opposite side, and then down through the ware. The heat passing under the Radiating Floor burns the ware in the lower part of the kiln by radiation to any degree of intensity. Thus it will be seen that all the material in the kiln is thoroughly burnt to any degree all at the same time. This constitutes the long sought for perfect kiln. For Catalogue and Prices apply to

Mention The CLAY-WORKER.

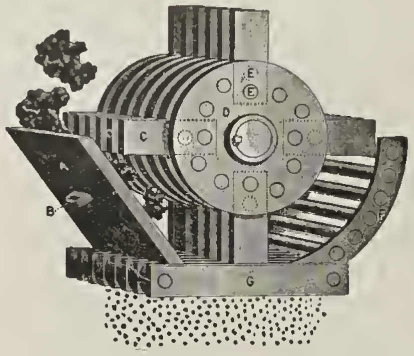
The Illinois Supply & Construction Co., ST. LOUIS, MO., U. S. A.

The Williams Patent Crusher and Pulverizer Co.

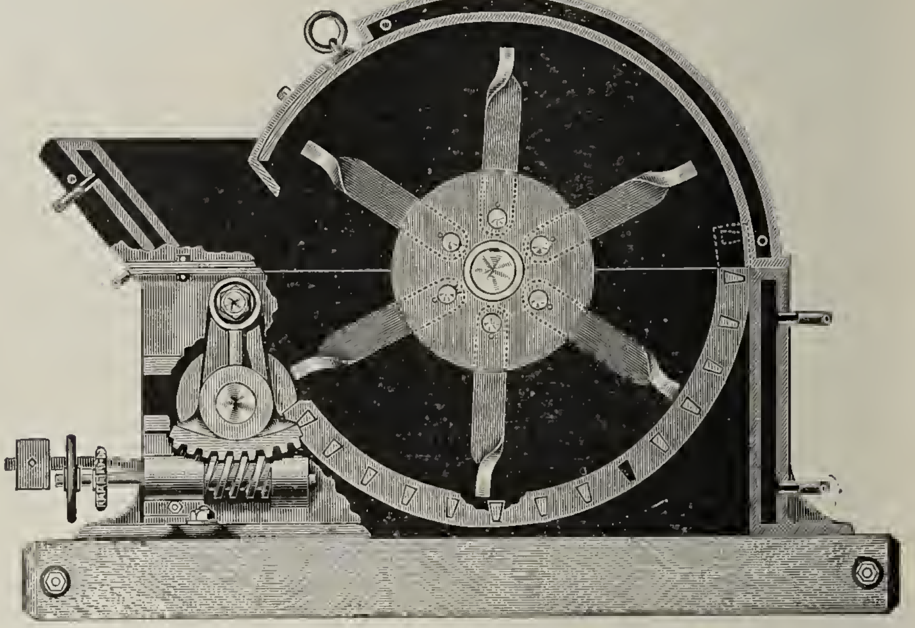
St. Louis, Mo., U. S. A.



SHALE CRUSHER ahead of a Pan. 5 Sizes.

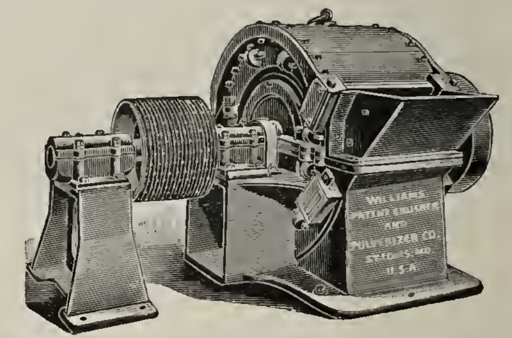


Interior of Same.

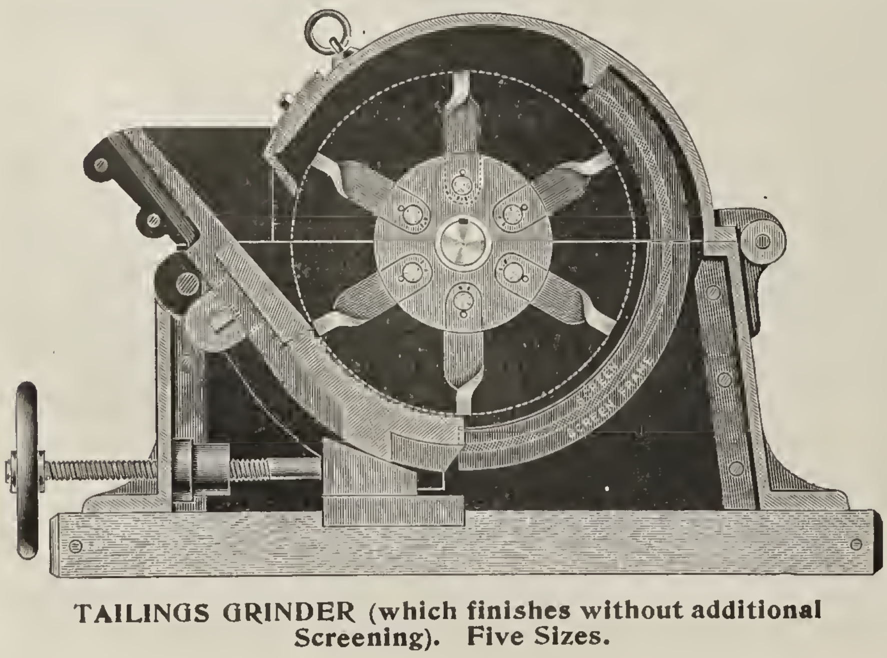


WET and DAMP CLAY DISINTEGRATOR, from the Bank. Five Sizes.

WE NEVER FOLLOW BUT ALWAYS LEAD. Our Steam Screen leads them all. We guarantee to work satisfactorily any clay that will make a Brick, wet or dry, with less cost than any other machine on earth. : : : : : :


WILLIAMS
PATENT CRUSHER
AND
PULVERIZER CO.
ST. LOUIS, MO.
U.S.A.

SHALE and CLAY PULVERIZER. Five Sizes.



TAILINGS GRINDER (which finishes without additional Screening). Five Sizes.

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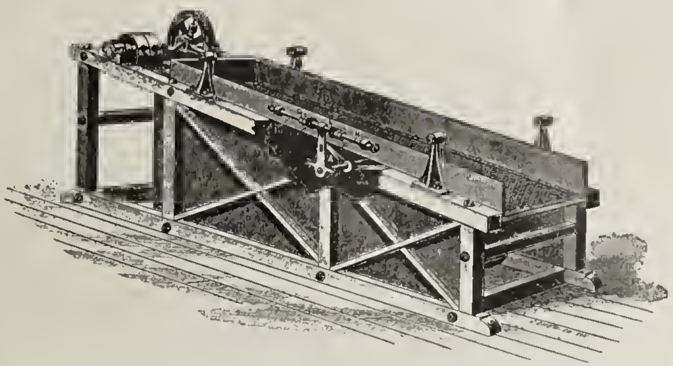
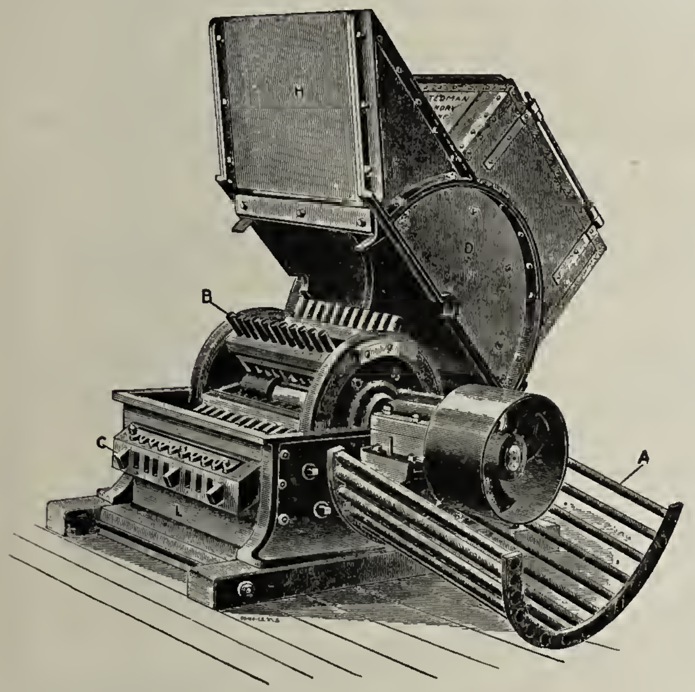
CHICAGO OFFICE, 741 Temple Court Building.
SAN FRANCISCO: Partridge Building.

STEDMAN'S AGITATING INCLINE SHAKER SCREEN.



A GOOD Screen for properly screening to any degree of fineness a great variety of materials, and especially clay, is a long felt want. Our Incline Agitating Shaker Screen meets the requirements of the trade in the most successful manner possible.

In this screen we have one of large capacity for small floor space and one that will screen fine without clogging, as the agitating device we have underneath the screen wire prevents any clogging of the screen holes when screening clay or any other material in a dry or semi-dry condition. The screen will run with little power and without any shake or jar to the building, as the moving parts are well balanced by an adjustable counter-weight within the rim of the balance or fly wheel.



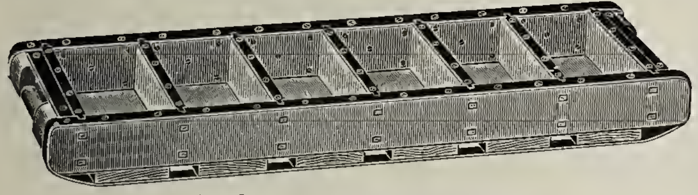
STEDMAN'S TORNADO CLAY PULVERIZER.

For Thoroughly Pulverizing Clay in a Dry, Semi-Dry or Damp Condition.

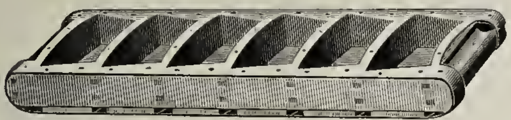
Its construction is such that it will not clog in pulverizing damp clay, and the journal bearings are constructed dust proof.

Write for catalogue, giving full description, references and testimonials.

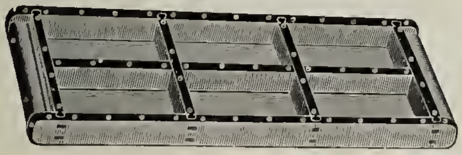
Stedman Foundry and Machine Works,
Aurora, Indiana.



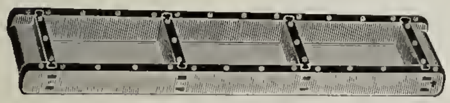
Six Brick Machine Mould.



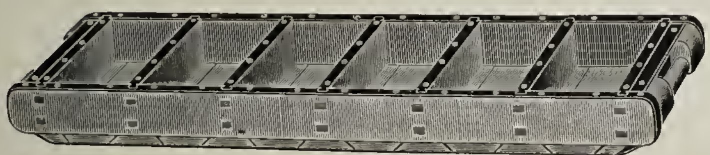
Circle Mould.



Hand Mould, Six Brick.



Hand Mould, Three Brick.



Roots Patent Bottoms.

DO IT NOW.

PLACE YOUR ORDER for 1902 brick moulds with Arnold. You can have them made and shipped any time between now and May 1st, 1902, and if you have the order placed *there* you know you will get the best there is made, and will get them promptly and when you want them. We make moulds to fit "any old machine" that uses moulds and guarantee satisfaction if you will give us the following particulars:

1st. Size of the brick.
2nd. Number of brick in a mould.
3rd. Thickness of partition or distance from center to center of bars in die.
4th. Length of mould over all allowing 1¼ inches at each end for handles if possible.
5th. Style of handle by number, (see our catalog).

We also make hand moulds any number of brick and any size desired.

Machine moulds with Roots Patent Bottom. We have made quite a number of these moulds in 1901, they are designed for making a better quality of brick than ordinary molds, and cost but little more. In addition to moulds we make a full line of Trucks and Wheel Barrows, also make special Trucks and Wheel Barrows to order, and a full line of Furnace Fronts, Kiln Doors, Grate Bars Ventilators, etc.

Let us know what you will need and get our price before you place your order elsewhere. Get our catalog. Address

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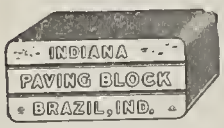
JOHNSONBURG VITRIFIED BRICK CO.
Johnsonburg, Penn.

Street Paving **Brick and Block.**

High Grade Fire Brick. Samples on Application.

INDIANA PAVING BRICK AND BLOCK CO.
W. W. WINSLOW, Proprietor.



Street Paving Brick and Block.
TELEPHONE 1190.
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VITRIFIED PAVING BRICK.

A valuable treatise on the manufacture and use of Paving Brick up-to-date. By H. A. Wheeler, E. M. Mailed to any address on receipt of $1.00.

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Standard Paving Brick,

Also Fine Pressed and Ornamental Brick.

COALDALE VITRIFIED PAVERS,
Represent the Highest Standard of Excellence.

Not only have they repeatedly withstood the most exacting tests required by expert engineers, but they have proven by that more practical test—actual use, to have unsurpassed wearing qualities.

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New York Brick & Paving Co.,
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Sewer and Hard Building Brick,
. . . ALSO . . . .
Berlin Vitrified Brick that Withstands all Acids.

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STREET PAVEMENTS and PAVING MATERIALS.

A Manual of City Pavements: The Methods and Materials of Their Construction. For the Use of Students, Engineers, and City Officials.

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President Brooklyn Engineers' Club, Mem. Am. Soc. C. E., Mem. Am. Soc. Municipal Improvements, and Prin. Asst. Engineer, Department of Highways, Brooklyn, N Y.

8vo. xii+532 pages; 60 figures. Cloth, $4.00.

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MANUFACTURERS OF THE
HIGHEST GRADE

VITRIFIED PAVING BRICK and BLOCK,

For Streets and Sidewalks. Positive guarantee as to wearing qualities. Largest capacity in the East.
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Thurber Brick Are now recognized as equal to the best paving brick produced in this country. There is no better paving material than shale brick and Thurber brick are made of the best shale, by improved methods that insure a uniform product—that is unexcelled for wearing qualities. We guarantee them fully. Send for samples, prices, etc.

FINE FACE and HIGH GRADE VITRIFIED PAVING BRICK a Specialty.

GREEN & HUNTER BRICK COMPANY,

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The Purington Paving Brick Co.,

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HAS the largest and best equipped plant in the United States for the manufacture of Paving and Sidewalk Brick. The Galesburg Paving Brick have a reputation second to none and this Company points with pride to its record for quality of material and its methods of conducting its business.

Correspondence respectfully solicited.

The Terre Haute Brick and Pipe Co.,

Manufacturers of Best Quality of

VITRIFIED PAVING BRICK.

You should use them in sewers and building foundations as well as streets. If you do not think so—write us, we will say why.

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Address **WILL P. BLAIR, Sec'y.**
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The Clinton Paving and Building Brick Company,

Manufacturers of the Highest Quality of

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Which are offered to the municipalities of the Central States under positive guarantee as to wearing quality. None better.

Prices and samples sent on application.
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MANUFACTURERS OF ALL SHALE

PAVING BRICK AND BLOCKS.

Our leading brands are POSTON BLOCK, WABASH STANDARDS, "SPECIALS," for crossings on macadam streets, GUTTER BLOCKS and COLUMBIAN SIDEWALK BRICK.

Our material has for years successfully stood the heaviest traffic of Indianapolis, Terre Haute, East St. Louis and dozens of other large cities of Indiana and Illinois. We ask investigation and comparison by those seeking the best paving material. Samples furnished on application.

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Two Yards Connections with all Railroads Centering at Springfield.

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FRANK B. McAVOY, SEC. AND TREAS.

McAvoy Vitrified Brick Co.,

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Is the largest and best equipped plant in the East for the manufacture of Paving Brick. All brick sold under a guarantee.

Correspondence solicited.

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WORKS:—PERKIOMEN JUNCTION, PENN.

Then you won't expect anything back. But when you invest your money in a Brick Drier, you do naturally look for good returns. Hence it's the part of wisdom to investigate before you let go of your cash; otherwise you are likely to waste it on a good-for-nothing Drier that will cost more every working day and bring no profits. We ask you to investigate

THE STANDARD DRIER

It employs the MOIST AIR SYSTEM, the most effective and economical drying process of the present day. This claim we will be pleased to prove to you if given opportunity. We HAVE proven it time and again. As a result, we have a large file of complimentary letters from brickmakers who have installed The STANDARD; they write us that they would not exchange for any other, though in many cases they changed from some other Drier to The STANDARD.

PLANTS OF ANY CAPACITY INSTALLED
UNDER GUARANTEE TO DO ALL WE CLAIM.

Send for booklets and catalogue
giving full and comprehensive particulars

THE STANDARD DRY KILN CO.,
INDIANAPOLIS, IND., U. S. A.

THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXXVII. INDIANAPOLIS, IND , APRIL, 1902. No. 4.

WRITTEN FOR THE CLAY-WORKER.

NORTH CAROLINA KAOLIN MINING.

Development of a Great Clay Industry.

THE UNPRECEDENTED rapid growth of American commerce of to-day is astonishing the world. All Europe stands looking on with wonder and anxiety, well described by Frank A. Vanderlip in his able article in the January number of Scribner's, on the "American Commercial Invasion of Europe." I know of no better illustration and confirmation of this than I found on my last trip of inspection in North Carolina in the surprising advancement of kaolin mining in this State and the commercial invasion of European markets in the product. But a short time ago the foreign product was practically the only kaolin used in this country. Now, owing to the American progress and improvement in machinery, this State produces many thousand tons annually. It is found principally in the western part of the State, in a number of counties, as Macon, Jackson, and recently in Swain county. The deposits are of a residual nature, or, to speak more plainly, large dykes of decomposed granite and feldspar, this process of decay having been going on for centuries, and in this respect are different from the sedimentary deposits of Florida.

Birdseye View of the Southern Kaolin Mining Co.'s Plant.

But as I am digressing from my subject, showing the cause of American success in the product from improvement in machinery, I will return and describe the new and successful process of handling kaolin as I found it up in the mountains, one and a half miles from Bryson City, Swain county, on the Southern Railroad, built and operated by Northern capital—Detroit parties known as the Southern Kaolin Mining Co.

To those who are familiar with the old way of mining and washing kaolin, in digging shafts, old-fashioned sand wheels, expensive machinery, pumps, etc., they will appreciate the innovation of a plant of this description, mining automatically and requiring but comparatively little manual labor at the mill to run it, and for the first time producing valuable by-products from the kaolin. The mines, I found, were immense dykes, and the development work already done by tunnel, shafts, etc., showed the kaolin deposit to be from 200 to 300 feet in width. The mine is located on the side of a mountain, having a mountain stream above it, all the stripping of earth and development work being done by running water in V-shaped troughs at comparatively no expense, exposing the kaolin, and then running it by water to the mill below. Here commences the automatic handling of the clay by one of the most simple and successful working machines it has been my good fortune to see.

Taking the crude material as it comes from the mine in the water, separating automatically the clay and its by-product successfully from the raw material, the kaolin is then turned into the floating troughs and then to the settling tanks. It is then pumped by centrifical pumps into the filtering bins and carried by screw conveyor to the dry kiln or sun kiln sheds, the whole process requiring no manual labor or handling from the time it leaves the mine until it is dried for shipment.

Such American improvement and desire to be always doing better, in saving of labor and cost of production, is what makes "commercial invasion" into European markets a realization and a success. May it always remain so.

I was interested enough in the new process to take a photo of the kaolin coming down from the mine, and to also make an analysis of the clay, both of which I inclose, showing the clay to be unusually fine.

Moisture	2.72
Silica (total)	46.47
Alumina	35.87
Lime	1.75
Ferric oxide	1.27
Magnesia	0.79
Sulphuric anhydride	0.19
Water (less on ignition)	10.95
	100.01

CHARLES ALBERT CRANE.

SELLING BRICK FOR PROFIT.

(No. 4.)

By L. C. Moore.

THERE ARE MANY phases of this subject which we have purposely avoided, such as economy in all branches of manufacture, management of men and the labor problem in general. We started to discuss this subject, assuming as a starting point that, with all these problems solved, yet we often sell for a profit with the minus sign attached.

Our aim has been to urge upon all brickmakers that small sales with a good profit are far preferable to great sales at small profit. I know that this is reversing an old business adage, but it is one that has long needed reversing. But under a proper management, where manufacturers mutually consider each other's rights and welfare, good living profits will not materially lessen the amount of sales. It is true that to place our figures too high will surely invite competition from dealers in other materials, such as wood and stone, in buildings, asphalt in paving and cement in sewers. When this is the case it presents a different problem for solution from one of competition among ourselves. Then it is a question how far we can afford to go to meet the dealers in these less deserving materials, and how much of our desired profits we can afford to sacrifice to meet such competition. The individual manufacturer should not attempt to decide this question alone, but should invite his neighboring manufacturers to assist in the struggle, and no reduction in the prevailing prices for bricks should be made without a general agreement among all the manufacturers interested, and this reduction should be made solely to meet competition from dealers in materials of less desirable qualities than our own.

But, says one, why not take these dealers into the brickmakers' circle, thus widening the scope of influence and benefiting a greater number of business concerns? We have found it to our advantage at certain times to take in the stone man and make certain concessions to him, giving him the foundation while we took the superstructure. But as to the lumber man, he has had things so much his own way in our section of the West that he would scorn to be "taken in" by any set of brickmakers. We can only lie in wait for him, in hopes that the growing scarcity of his material and the consequent high prices will place him at such a disadvantage that our superior material will gradually force him to take a back seat. We cannot expect to drive lumber out of the market, neither is it desirable to do so. But some of us are getting tired of playing second fiddle to the aristocratic lumber man, who builds nine-tenths of our residences and calls us in to build the flues, and occasionally the sidewalks. We long to see the use of lumber grow beautifully less and the use of brick increase in proportion.

But, as a rule, we think it advisable that brickmakers should confine their mutual admiration societies to their own craft, and, though our interests may often conflict with those of men in other trades, I do not think it best to go outside of the brickmaking fraternity when attempting to form associations for our mutual benefit.

The interests of each brickmaker are so closely allied to those of other brickmakers within the same territory that it seems strange that they have not long ago found out how much may be gained by agreeing to live and let live, instead of each aiming to cut his neighbor's throat. There was no paper upon this subject at our last Convention, and it seems to have been the policy of the N. B. M. A. to avoid having the minutes of that body show any public discussion of the subject of controlling prices by combinations. But one could hear private discussion of this matter in the hotel lobby, and many who are familiar with the methods and plans of organizations for the purpose of controlling prices were able to give information of much value to one who was successful in getting his finger into their buttonholes. This part of the Convention's business, which the Assistant Secretary failed to catch with her quick ear and record with her magic pen, is to be classed among the most interesting and instructive experiences at our Convention. Some of the men who made no effort on the floor of the Convention knew their lessons to perfection when once they got an appreciative listener in some snug corner of the hotel lobby. You could never guess how much they knew until you had an hour's talk with them, and, by a few skillful questions, drew from them their varied experiences connected with brickmaking and brick selling. I learned that they gave the subject of sales equally as much careful consideration as they did the subject of manufacture. They were making good brick and selling them for a good profit.

ROOFING TILE COMPANY TRIES PROFIT-SHARING.

The Ludowici Roofing Tile Co., Chicago Heights, Ill., have decided to adopt profit-sharing with their employes and have posted the following notice, which is self-explanatory:

"Desiring as this company does that all its employes share in its success, the directors have decided that additional payment be made to each employe of a sum varying from 2 to 5 per cent. of the total amount of his wages for the entire year, the amount thus given to depend on the result of the year's business, but to be not less than 2 per cent. nor more than 5 cent. of his year's wages. This payment is to be made only to those employes who are at work at the end of the year and who have been steadily at work for six months prior to that time.

"The payment is intended as an incentive and encouragement for as good a work as can be done. Poor work increases the expense of manufacturing and reduces the profits, so that each one of you has something to do with the size of this additional payment at the close of the year, thus virtually making you partners in the business. Continued poor work on the part of anyone will not only cut down the sum to be thus divided among you all, but is likely to deprive such a person of all participation in it. The more you get out of this the better the company will be pleased, and we expect this year to show a much larger output of better goods than we have ever made before."

THE NORTHWESTERN BRICK MANUFACTURERS MEET.

AN INTERESTING CONVENTION was held at Princeton, Minn. The third annual meeting of the Northwestern Brick Manufacturers' Association was held March 4, and, according to a local paper, cream brick hospitality was on tap in a generous measure. Princeton is one of the brick centers of the State, and so is an attractive place for such a gathering. The meeting was called to order by O. Duclos, of Little Falls, a veteran brickmaker of that section. President W. P. Alsip, of Grand Forks, N. D., was unable to be present.

J. R. Farnham welcomed the visitors to Princeton in a happy manner, after which Secretary Louis Moline, of Wilmar, submitted his annual report, which told of progress and prosperity for the brickmakers of Minnesota and adjoining States. E. N. Farnham led in an interesting discussion on "Transporting Clay from Bank to Machine." W. H. Oakes spoke in an interesting manner on "Burning Brick." "Oil Fuel" was the subject of an address by Mr. Hess, of St. Cloud. Mr. Bowers, of Minneapolis, also spoke on the same subject. It seemed to be the consensus of opinion that at the present market price crude oil is both an excellent and an economical fuel for the clayworkers of that section. Wood is the chief fuel now used. M. S. Rusfeldt, of Albert Lea, gave the delegates, in an interesting way, the benefit of his experiences in the use of coal dust by mixing it in the clay for the purpose of facilitating the burning of brick. By this process, he explained, the brick are burned in less time and with less fuel. He estimated that he reduced his fuel bills more than $500 in turning out a little more than 2,000,000 brick, paying a dollar per ton for coal screenings. The coal dust was mixed with the clay in an ordinary tempering pit holding clay for about 20,000 brick.

The cost of fuel is an important item, and bids fair to be even more so in the future, wood, the chief fuel, growing scarcer each year. The matter was deemed of sufficient importance to justify further investigation, and a committee, composed of Henry Hess, H. H. Farnham and C. A. Sprandel, was appointed to further investigate the subject and report at the next convention. "The Grading of Brick" was exploited by F. J. Nixon, of Duluth.

—The Election of Officers.—

The following officers were elected for the ensuing year: President, E. N. Farnham, Princeton; Vice President, C. A. Sprandel, Little Falls; Secretary and Treasurer, Lewis Moline, of Wilmar.

It was determined to hold the next yearly meeting at Minneapolis, and H. H. Farnham, Henry Hess and W. H. Oakes were appointed a committee to prepare the programme and make arrangements for the meeting.

A banquet was tendered to the visitors by the Princeton Retail Grocers' Association. An excellent supper was served by the Ladies' Aid Society of the Methodist Church. After the substantials had been disposed of, J. R. Farnham, as toastmaster, introduced Mayor Armitage, who addressed the assembly in an entertaining manner, and was followed by Judge Keith and other local celebrities.

Those in attendance at the convention were: Chas. A. Sprandel and O. Duclos, of Little Falls; J. M. Moog, of St. Cloud; C. H. Beumer, of St. Augusta; Aug. Lundgreu, of Warren; Louis Moline and Nels Flykt, of Willmar; J. S. Bowers, of Minneapolis, representing the Hennepin Brick Co., of six yards; M. S. Rusfeldt, of Albert Lea, representing the yards at Albert Lea and also the Wrenshall yards; Henry Hess, of St. Cloud; F. J. Nixon, of Paine & Nixon, of Duluth, sales agents of the Princeton and Wrenshall yards; Philip Diesanz, of the Winona stone quarries and brickyards. Those present who represented local brickmaking interests were: E. M. Farnham, J. R., H. H. and C. G. Farnham, W. H. Oakes, Chas. Oakes, Milton Farnham, F. Reem and R. P. Morton, who has charge of the bookkeeping, etc., for the brickyards at Brickton.

TO EVEN UP.

"Mammy," said Pickaninny Jim, "you didn' fix me up no aigs foh Easter."

"'Deed, honey, I didn' hab the time to make no fancy work dis year. But you had all de hahd boiled aigs you could eat foh breakfas'."

"But dey warn' purty like whut de white chillun had."

"Well, honey, dat's de way dis worl' goes, so's to even things up—white aigs foh de cullud chillun an' cullud aigs foh de white chillun."—Washington Star.

THE HANOVER PRESSED BRICK CO.

THE HANOVER PRESSED BRICK CO.'S plant is located at the town of Hanover, Licking county, Ohio, eight miles east of Newark, and alongside of the main line of the Pennsylvania Railroad, between Pittsburg, Pa., and Columbus, O. The works have been in operation ten years. They make only a red pressed brick at the present time, while they have made an elegant terra cotta brick from a suitable fire clay deposit adjacent to the plant. The demand for their celebrated "Hanover Reds," however, in the last two years, has been so great that they have no time to produce any other product.

The accompanying photograph shows the shale bank, the material used exclusively in the manufacture of their reds. it has a face forty feet in height at present workings, and is dipping downward at the bottom, and rising with the slope of the hill top as they keep going inward to the bank. At no place have they more than eighteen inches of stripping. At the highest point tests show the shale to be eighty feet thick. The shale is of a hard substance, somewhat flinty, of a slate color, and free from grit. There are no foreign deposits in the shale. The only separation being required is about twelve feet off of the top, which is piled in the clay shed by itself and mixed at the dry pan with the lower strata, in the ratio of one wheelbarrow of top to two of the lower. The top layer does not shrink as much as the lower, and this mixture causes the brick, when burned, to be about the proper length—8 1-8 inches.

Unlike most shale, it can be taken from the bank at any time of the year, and, without treatment, go directly to the dry pan. It burns a rich, deep red of the cherry order, not the barn color or salmon red. The high color intuitively attracts the eye of the passing observer to the building constructed of these brick.

The shale bank is about one thousand feet from the clay shed. Four cars are used daily in the hauling. Each car will hold enough material to make six hundred standard brick. It costs about 35 cents per thousand for shale in the summer and 60 cents in the winter. They aim to get in enough clay in the fall to fill their clay shed, which is enough for about a million and a half of brick, and get shale only on the best days of the winter.

A steam shovel cannot be used on account of the height of the bank and the separation of the layers. A horse is used to pull the cars out of the bank, about two hundred feet, and then they go by cable down grade into the clay shed, the loaded car pulling the empty one up.

There is enough shale in the hill to last a hundred years. A twelve-inch sewer pipe is laid in the bottom of the pit, with abundance of fall, to a convenient gully about one hundred feet from the bank, which makes the bottom absolutely dry during the heaviest precipitation.

The capacity of the plant is eight million brick annually. It is designed to have the shale come in from the bank at one end and go out to the loading cars at the other, and nearly everything down grade. An eighteen-ton dry pan of the Stevenson make, lately installed, is used to grind the shale.

A four-mold Boyd press was originally put in. Another Boyd was erected last week, making, in all, three presses in daily operation. Only a press capable of powerful, uniform pressure can work this shale for good results. The shale is worked damp and screened fine. The concussion sound made from the pressure of the presses can be heard at a distance of one hundred feet. This accounts for the density of the brick. Few clays will stand pressure of this character without splitting in the molds. A good, sharp edge is formed on every brick.

They make 140 different styles of ornamental brick. A steam dry house, in which 60,000 brick can be made bone dry every twenty-four hours, is used. Exhaust steam is used in the daytime and live steam at night. The brick are run in from the presses on the cars, holding 500 each. When dry they are run on rails into kilns. It is estimated that 15 cents per thousand will dry the brick.

View of the Works of the Hanover (Ohio) Pressed Brick Co.

Griswold's down-draft kilns are used, with a capacity of 150,000 each. The company has just completed this winter, in the way of a new departure, a kiln eighty feet long, twenty-three feet wide and holding 200,000 standard brick, from which the best results have been received. It requires eighteen cords of wood at $2 per cord, ninety tons of coal at $1.70 per ton, and thirteen days to burn off 150,000 brick.

The labor of two burners is about $39 per kiln. The finest ornamental brick are burned in seggars, but the most of them are burned in the kiln. Steam radiators, reaching every portion of the plant, permit operation in the coldest weather, even should the thermometer register 20 degrees below zero.

All work is done by the day, except setting brick, for which setters receive 22 cents per thousand for standards, 35 cents for ornamental. Tossers get 18 cents for standards and 31 cents for shapes.

A siding, thirty feet from the double-track system of the

Pennsylvania lines, runs into and alongside the company's storage shed, which is five hundred feet long, and from which brick are loaded direct to the cars. They ship as far west as Chicago, east to New York city, south to the southern line of old Virginia and Louisville, Ky., and as far north as the northern line of Michigan.

The company has a new press brick office at the plant, also their main office at 102 West Broad street, Columbus, O. Both offices have a full clerical force. Their system of daily yard reports to the general office is very complete. Matters often touching thirty-eight different subjects are reported daily. Cars of shale loaded, number of men employed at the same, and cost, number of brick made and set in the kiln, unloaded from kiln, and kind, cars loaded, purchases made and from whom, etc., etc., are a sample of the reports.

In fact, everything, from the cost of a car of brick going out to a pound of nails coming in, is reported to the main office daily, at which a register book is kept similar to those used in banking institutions to show their daily balances. Thus a daily, monthly and yearly report is kept of every transaction.

Mr. C. H. Forry, whom we had the pleasure of meeting at the Cleveland Convention, is the superintendent of the plant. He is thirty-eight years old, was raised on a brickyard and thoroughly understands modern methods of brickmaking. Mr. Forry lives at Hanover, as does also Mr. J. H. Rodgers, secretary, and Mr. D. J. Clahane, president. Mr. Samuel Borger, vice president and treasurer, being largely interested in other enterprises, lives at Columbus, O.

Shale Bank of the Hanover Pressed Brick Co.

INDIANA'S CLAYS AND CLAY INDUSTRIES.

THE DIRECTOR of the Census has made public the statistics of manufacturing and mechanical industries for the State of Indiana for the census year 1900, taken in accordance with the provisions of Section 7 of the act of March 3, 1899. In his report the Director alludes to the fact that while Indiana was noted twenty years ago for its agricultural products and for its large timbered areas, and still ranks high in these respects, in manufactures it has reached even greater prominence than it attained in 1890. The State is environed with large cities, brought into close contact by numerous railways touching and crossing every section, and affording extensive market facilities for the products of manufactures, agriculture, mines and quarries. Navigable waterways add to these facilities. Prominent among the causes of Indiana's progress in manufactures are the utilization and development of excellent natural resources, including natural gas and petroleum, forests of excellent timber, extensive coal fields, oolitic limestone, kaolin and other clays and building stone.

The report shows that there were 607 establishments in Indiana engaged in the manufacture of clay products in 1900, with 4,859 wage earners and products valued at $4,222,529. In 1890 there were 784 establishments, 5,926 wage earners and products valued at $3,142,454. The increase in the value of the products during the decade was $1,080,075, or 34.4 per cent. It is claimed that machine-made terra cotta was first manufactured in Indiana, and that the several-cored vitrified conduits and the hollow vitrified arch blocks are Indiana inventions. Encaustic tiles are manufactured at Indianapolis and have an extensive market. The burning is done with natural gas. The clay for the low-priced tiles abounds in Clay, Owen and Lawrence counties, but for the finer kinds superior clays are brought from other States.

The table of itemized industries shows that during the last census year there were 558 establishments in the State devoted to the manufacture of brick and tile. The total capital employed was $4,505,080, of which $1,146,152 was in cash and sundries, $1,030,364 in machinery, tools and implements, $1,356,516 in buildings and $972,048 in land. The number of proprietors and firm members was 691, and there were also 148 salaried officials and clerks. The number of wage earners was 3,609 and the total wages paid was $1,195,540. The total miscellaneous expenses of these 558 establishments was $161,722, and the total cost of the materials used during the census year was $552,447. The value of the products in that year was $2,931,211.

The number of establishments devoted to the manufacture of pottery, terra cotta and fire clay products was forty-nine, and a total capital of $1,525,658 was employed, of which $599,683 was in cash and sundries, $301,136 in machinery, tools and implements, $442,676 in buildings and $182,163 in land. The number of proprietors and firm members was forty, while there were sixty salaried officials and clerks and 1,250 wage earners. The total wages paid in 1900 amounted to $581,242. The total miscellaneous expenses incurred in 1900 amounted to $79,553, of which amount $67,550 was for rent of offices, interest, etc. The total cost of materials used in that year was $312,195, while the value of the product in that year was $1,291,318.

WRITTEN FOR THE CLAY-WORKER.

THE CLAYWORKER IN MADAGASCAR.

THERE IS PROBABLY no race of people in the world that has at all emerged from the grossest barbarism with whose earliest development some kind of rude brick and pottery work is not associated. Madagascar is no exception to the rule. But in treating of everything relating to Madagascar a clear line must be drawn between the interior of the island, consisting of a high plateau, 4,000 feet above the level of the sea, enjoying a temperate climate and inhabited by a million of intelligent descendants of Malay immigrants, and the 2,000 miles of coast line, inhabited by earlier and inferior tribes who are little amenable to civilizing influences. Then, again, the sandy soil of the coast does not lend itself to the production of clay manufactures, whereas the argillaceous formation of the interior furnishes the material required without any trouble of preparation.

The building material, however, used throughout Madagascar, until quite recently, was of a purely vegetable source. With the exception of one iron tool like a meat chopper, a chisel and a stone to sharpen them on, nothing but products of the forest entered into the construction of a house. Each post was a separate tree, the walls were of bamboos flattened out, or of rushes and stalks of palm leaves held together by skewers of bamboo; the floors were made from pithy palm trunks, flattened out; the roofs of grass or of leaves of the traveler's tree; the whole joined together by tennon and mortise, or attached with cords which are nothing but the bark of trees or the creepers of the forest. The villages of the coast to this day consist of houses built in this manner; but in the meantime the Hovas of the interior had learned to make planks, hewn out of the trees with an ax, necessitating a whole tree for each plank, not to speak of the indomitable perseverance and the time and labor required to produce one plank. We see, then, that clay so far plays no part in the construction of houses in Madagascar.

—Primitive Clay Products.—

I am not going into the question of whether primitive man built a house before he cooked his first meal, or learned to cook his food before "he built him an house," but in Madagascar, as elsewhere, it seems that the necessity of some fireproof utensil for cooking first turned the ancient's attention to clay, whether he had previously built himself a house as above described or not. The most primitive form of employing clay as a medium for cooking food can be seen to this day in the roasting of the trandraka or tansec. This is a small animal peculiar to Madagascar, and may be compared to a hedge hog. When caught it is simply enveloped in a ball of clay, which is then cast on the fire. When brought to the proper point the ball is removed, allowed to cool and then cracked open like a cocoanut, when the roasted dainty is found inside with its quills conveniently imbedded in the calcined clay.

From this stage and from the simple expedient of digging a circular cavity in the clayey soil for cooking probably sprang the idea of forming a portable vessel of clay for cooking food. The clay is subjected to no preparation beyond being worked up with water; no machinery of any kind is used for molding the vessel, which is simply built up by the hand and shaped with the fingers. The invariable shape is a hollow hemisphere. This primitive form of pottery must date back several centuries, but it has never been improved upon. A gold prospector, in 1896, writing from the northeast of Madagascar, says: "The designs of the broken pottery found on the site of these ancient villages correspond in every way to those found below ground, except that while those found on the village sites are soft and easily broken, those discovered under ground are hard and require a hammer to break them. The designs on the old pottery are very original and simple."

Such, then, was the farthest stage of development in Madagascar at the time when Wedgwood was perfecting the art in Europe. These cooking pots seem to have been made all over the interior of the island, and the coast tribes purchased them at about one cent apiece. Even among the Hovas no inventive strides in the art were ever made beyond the manufacture of water pitchers modeled on the shape of a gourd and water bottles copied from those used in Mauritins. For plates and dishes and water vessels the mass of the natives content themselves with what nature furnishes ready made or easily prepared. Here at Tamatave the natives still eat off green leaves of the traveler's tree; in other parts mats and wooden platters are used, but nothing of clay.

—Brick Sun-Dried and Burned.—

It was not until the arrival of English missionaries in 1820 and subsequent years that the Malagasy learned from them that the clay of the soil could be utilized for making bricks. Consequently the native name for brick is biriky, the English word; and everything connected with its manufacture was copied from the old English hand-made bricks, 9x4½x2¼ inches. These for many years, and in great part up to the present day, are only sun-dried, and as at Antananarivo there are six months of the year without any rain at all, circumstances favor the industry without any outlay. As there were no roads, railways, carts or wagons in the island until a year or two ago, and as everything had to be carried on men's shoulders, bricks were only employed where they could be made on the site for building, or at least not more than a few hundred yards off; but then, of course, in Imerina every site answers that condition.

The cost of these sun-dried bricks was four or five cents per hundred, but the cost of carrying them any distance was out of the question. Buildings of sun-dried bricks are built with very thick walls—as much as five feet thick at the bottom for a storied building. The mortar used is merely the same soil mixed with water to the consistency of our mortar, or somewhat thinner; but the entire house, when the walls are completed, must be plastered with a kind of cement made by sifting the earth very fine and mixing it with cow dung. The colors most chosen are dark red or stone gray. In the course of time, as foreigners or wealthy natives required more imposing structures, the art of kiln drying or burning was introduced, everything copied on the model of old English brick kilns.

—The Introduction of Brickmaking Machinery.—

The first machinery for brickmaking was introduced about ten years ago to furnish the material for the Governor General's residency, which cost about $400,000. At Antananarivo, the capital, there is now established a professional or industrial school, which teaches all the arts, and I had occasion to visit it a few months ago, and particularly the department devoted to clay work. The work does great credit to the natives' intelligence and aptitude, and I brought away some very interesting specimens of the work.

To sum up, the country is susceptible of any amount of development, as witnessed by the fact that the space of only fifty years has sufficed to replace the wooden and wicker-work dwellings of more than a million population with substantial buildings of brick.

One final word for the coast. Tamatave, the chief port, until last year, could not count more than two buildings of brick, one built for an English bank building, and of imported bricks, the other a building (now the Town Gaol) of the first bricks experimented with clay taken from the hills outside the town. The Treasury Department, just completed, is of hewn stone. All other buildings, whether at Tamatave or all round the coast, when not of purely native construction, are built entirely of wood, and roofed, in the case of good houses, with shingles, but very generally with corrugated iron.

W. H. H.

OHIO RIVER POTTERIES UNDER WATER.

EAST LIVERPOOL, O., was visited by a flood the first week in March which very nearly crippled the potting industry for a few days. All of the river potteries were shut down for a period of four days, and for a time it looked pretty serious, considering that in some of the potteries the water was from five to eight feet in depth, and was still rising. The water started to come up on Friday and kept rising until Friday night, when it entered the potteries, which were compelled to shut down on account of it.

At the upper potteries, such as the Globe pottery, the Wallace & Chetwynd and the Harker pottery, the water was in the neighborhood of five feet in depth. It was necessary to remove all of the ware to a place of safety, causing much inconvenience and annoyance.

The East Liverpool Potteries and Porcelain Works During the March Floods.

At the lower potteries, the C. C. Thompson, the Murphy and the Cartwright plants, the water was in the neighborhood of six feet in depth, and in one place it is said to have been nearly eight feet in depth at the Thompson plant.

At the G. F. Brunt Porcelain Works all of the clay was elevated to keep it from being washed away. The machinery was elevated, that is, that which was of such a nature that the water would hurt it. All of the belts were removed, and, in fact, on the first floor everything was either elevated or removed to other quarters.

The Potter's Supply Co. also suffered to a large extent outside of being hampered in the way of getting out their orders. This concern is rushed to their fullest capacity, and the water has put them back some time in filling their orders.

All street cars were stopped for a time and traffic stopped in general. The lower pump station was flooded and for a time it looked as though the city were to be compelled to suffer from a water famine, as the reservoirs were fast emptying and neither pump station was running. However, city fire engines were brought into play and were brought to the river's edge, where they pumped water night and day into the city mains, supplying the demand, although no surplus was pumped into the reservoirs. Had these engines not been brought into play, every pottery would have been compelled to shut down, as they are supplied through the city mains.

Nearly all of the plants have, however, by this time recovered from the effects of the flood, although all of them are not cleaned up as yet. They all expect to get under headway again within a day or two without any serious delay, with the exception of having been delayed a short time in the filling of some of their orders.

TOM POTTER.

East Liverpool, O., March 10.

IMPROVEMENTS AT EAST LIVERPOOL POTTERIES.

The Knowles, Taylor & Anderson plant of the American Sewer Pipe Co., East Liverpool, O., has recently been inspected by officers of the company with a view to enlarging the plant. It has already been decided to increase the capacity of the plant from seventeen to twenty-seven kilns. The main buildings of the plant will also be enlarged by the addition of another story. It is probable that other additions will also be made. Additions to the Walker plant, also located at East Liverpool, will also be made in the near future. All of the dry pans will be reset and two new boilers installed. The past year has been an extraordinary one in the amount of goods turned out, and it is said that the managers and other officials are well pleased with the past year's work.

A MONEY MAKER FOR BRICKMAKERS.

D. A. Layton, of the Florence and Marion (S. C.) Pressed Brick Works, reports that during the period of a little more than a year since their "Standard" dryer was installed they have made and marketed more brick than in the four years preceding. Attributing this extreme increase largely, if not entirely, to their "Standard" dryer, Mr. Layton gives it his heartiest indorsement. He declares the "Standard" a money maker, and emphatically recommends it to all brick men who have the dryer question on their minds.

And if you find that swearing off
Has failed to help a bit,
Stop swearing off, and for a change
Just quit. —Chicago Tribune.

TRACTION ON WAGON ROADS.

By Ira O. Baker, M. Am. Soc. C. E.[1]

SOME EXPERIMENTS on the tractive power required to draw wagons on different roads and pavements were recently made by the writer, and it is thought that the results may possibly be of interest. The subject of traction is only briefly considered in any engineering literature with which the writer is acquainted; so before giving an account of his own experiments, he will discuss the general subject.

The resistance to traction of a vehicle on a road consists of three independent elements—axle friction, rolling resistance and grade resistance. Nothing need be said here concerning grade resistance, since engineers understand perfectly well that it is equal to 20 pounds per ton for each 1 per cent. of grade.

AXLE FRICTION.—The resistance of the hub to turning on the axle is the same as that of a journal revolving in its bearing, and has nothing to do with the condition of the road surface. The coefficient of journal friction varies with the material of the journal and its bearing, and with the lubricant. It is nearly independent of the velocity, and according to observations made by the author, seems to vary about inversely as the square root of the pressure. For light carriages when loaded the coefficient is about 0.020 of the weight on the axle; for the heavier carriages when loaded about 0.015, and for the ordinary American thimble-skein wagon when loaded the coefficient of friction is about 0.012. The above figures assume good lubrication. If there is a deficiency of lubricant, the axle friction is 2 to 6 times as much. The above figures agree reasonably well with results obtained for journal friction of machines. Apparently the value of this coefficient in Moran's experiments was 0.065. This difference is probably due to the better mechanical construction of modern American carriages and wagons.

The tractive power required to overcome the axle friction for American carriages of the usual proportions is about 3 to 3½ lbs. per ton of the weight on the axle, and for wagons with medium-sized wheels and axles about 3½ to 4½ lbs. per ton.

ROLLING RESISTANCE.—The resistance of a wheel to rolling along on a road is due to the yielding or indentation of the road, which causes the wheel to be continually climbing an inclination. The resistance is measured by the horizontal force necessary at the axle to lift the wheel over the obstacle or to roll it up the inclined surface. The rolling resistance varies with (1) the diameter of the wheel, (2) the width of the tire, (3) the speed, (4) the presence or absence of springs on the vehicle and (5) the nature of the road surface.

1. DIAMETER OF WHEEL.—The rolling resistance varies inversely as some function of the diameter of the wheel, since the larger the wheel the greater the force required to lift it over the obstruction or to roll it up the inclination due to the indentation of the surface. Table I, from an unpublished bulletin of the Missouri Agricultural Experiment station, shows the results obtained by Mr. T. I. Mairs at this experiment station with different sized wheels. The three sizes of the wheel used were as follows: The 50-in. being 44-in. front wheels and 56-in. hind wheels; the 38-in. being 36-in. front and 40-in. hind wheels, and the 26-in. being 24-in. front and 28-in. hind wheels. The load was practically 1¾ tons in each case.[2] The tires were 6 inches wide.

TABLE I.—Effect of Size of Wheels on Traction.*

Description of road surface	Mean diameter of front and rear wheels, ins.—50	38	26
	Tractive force, lbs. per ton.		
Macadam: Slightly worn; clean; fair condition	57	61	70
Slightly worn; clean; fair condition	57	61	70
Gravel road:			
Dry; sand 1-in. deep; loose stones	84	90	110
Up-grade 2.2 p. c.; ½-in. wet sand, frozen below	123	132	173
Earth road: Dry and hard	69	75	79
½-in. sticky mud; frozen below; rough	101	119	139
Timothy and bluegrass sod:			
Dry, grass cut	132	145	179
Wet and spongy	173	203	281
Cornfield: Flat culture; across rows; dry	178	201	265
Plowed ground: Not harrowed; dry; cloddy	252	303	374
Average value of the tractive power	130	148	186

*From a bulletin, not yet published, of the Missouri Agricultural Experiment Station.

Morin concluded that the resistance varies inversely as the first power of the diameter of the wheel; Dupuit that it varies inversely as the square root, and Clark claims that it varies inversely as the cube root.[3] According to some experiments made in England in 1874,[4] the traction varied more rapidly than the first power of the diameter of the wheel. The results of Table I vary nearly inversely as the square root of the mean diameter—certainly more nearly than either the first power or the cube root. For obvious

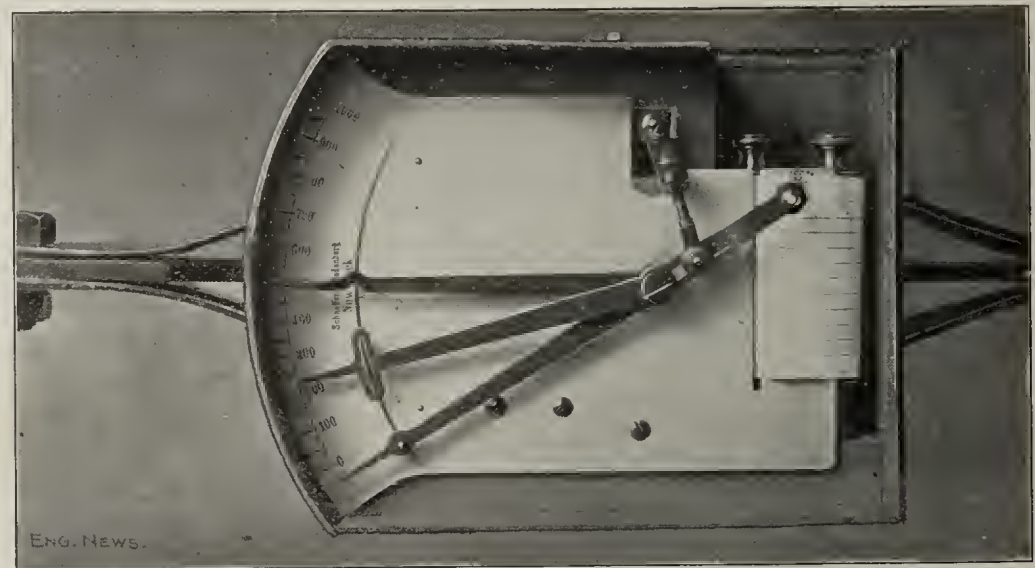

Fig. 1. Front View.
Dynagraph for Wagon Traction Experiments.

TABLE II.—Traction of Broad and Narrow Tires.*
(Figures give resistance to traction in lbs. per ton.)

Description of the surface.	Width of tire—1½-ins.	6 ins.	No. of trials.
Broken Stone Road: Hard, smooth, no dust, no loose stones, nearly level	121	98	2
Gravel Roads: Hard and smooth, few loose stones size of black walnuts	182	134	2
Gravel Roads: Hard, no ruts, the large quantity of sand prevented packing	239	157	1
Gravel Roads: New, gravel not compact, dry	330	260	1
Gravel Roads: Wet, loose sand 1 to 2½ ins. deep	246	254	2
Earth Roads: Loam, dry, loose dust, 2 to 3 ins. deep	90	106	2
Earth Roads: Loam, dry, hard, no dust, no ruts, nearly level	149	109	3
Earth Roads: Loam, stiff mud, drying on top, spongy below	497	307	1
Earth Roads: Loam, mud 2½ ins. deep, very sticky, firm below	251	325	1
Earth Roads: Clay, sloppy mud, 3 to 4 ins. deep, hard below	286	406	1
Earth Roads: Clay, dry on top but spongy below, narrow tires cut in 6 to 8 ins.	472	422	2
Earth Roads: Clay, dry on top but spongy below	618	464	5
Earth Roads: Clay, stiff deep mud	825	551	1
Mowing Land: Timothy sod, dry, firm, smooth; narrow tire cuts in 1 in.	317	229	1
Mowing Land: Timothy sod, moist; narrow tire cuts in 3½ ins.	421	305	1
Mowing Land: Timothy sod, soft and spongy, grass and stubble 3 ins. high; narrow tire in 6 ins.	569	327	1
Pasture Land: Blue Grass sod, dry, firm, smooth	218	156	2
Pasture Land: Blue grass sod, soft; narrow tire cuts in 3 ins.	420	273	2
Pasture Land: Blue grass sod, narrow tire cuts in 4 in.	578	436	1
Stubble Land: Corn stubble, no weeds, nearly dry enough to plow	631	418	2
Stubble Land: Corn stubble, some weeds and stalks, dry enough to plow	423	362	1
Stubble Land: Corn stubble, in autumn, dry and firm	404	256	2
Plowed Land: Freshly plowed, but not harrowed, surface rough	510	283	1
Plowed Land: Freshly plowed, harrowed; smooth and compact	466	323	1

*Missouri Agricultural Experiment Station, Bulletin No. 39, July, 1897.

reasons, the experiments can not be very exact, and probably the traction varies differently for different surfaces. The exact determination of the law of variation is of no great importance.

2. WIDTH OF TIRE.—If the wheel cuts into the road surface the traction is thereby increased, but with surfaces for which there is little or no indentation, the traction is practically independent of the width of the tire.

Table II shows the results of an elaborate series of experiments by the Missouri Agricultural Experiment Station. The load in each case was one ton. These results show that on poor macadam, poor gravel and compressible earth roads, and on agricultural lands, the narrower tire gives less traction, except as follows: (1) When the earth road is sloppy, muddy or sticky on top and firm underneath; (2) when the surface is covered with a very loose, deep dust and is hard underneath; (3) when the mud is very deep and so sticky that it adheres to the wheel, or (4) when the road has been rutted up with the narrow tire. The last conclusion was established by a large number of experiments not included in Table II.

Table III gives data on the effect of width of tire upon the tractive force obtained by the Studebaker Bros.' Manufacturing Company, South Bend, Ind., in 1892, with an ordinary 3½-in. thimbleskein wagon. Notice that on a hard and incompressible road surface, namely, wood block pavement and gravel, the narrower tire draws the easier, while upon the soft or spongy surface the wider tire draws the easier. Morin experimented with tires 2½, 4½ and 6½ inches wide, and concluded that on a solid road or pavement the traction was independent of the width of the tire, and that on a compressible surface the traction decreased as the width of the tire increased, the proportions depending upon the nature of the surface.

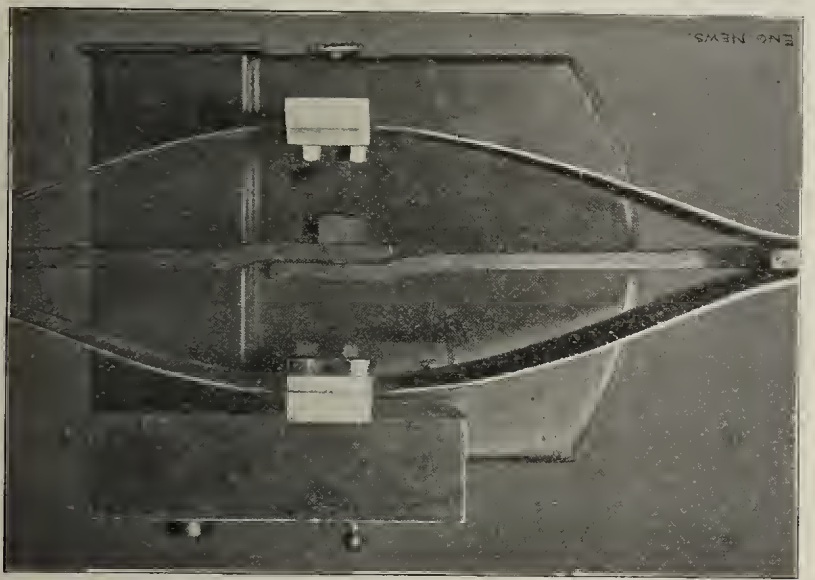

Fig. 2. Rear View Dynagraph.
Courtesy Engineering News.

3. EFFECT OF SPEED.—The rolling resistance increases with the velocity owing to the effect of the shocks or concussions produced by the irregularities of the road surface. The increase is less for vehicles having springs than those not, and is less for smooth road surfaces than for rough ones.

Table IV is a summary of Morin's results, showing the effect of a variation of the speed, for vehicles provided with springs. In a rough way the three speeds are 2½, 5 and 7½ feet per second, or about 2, 4 and 6 miles per hour, respectively. It is frequently claimed that Morin's results show that the traction increases as the velocity above 2½ miles per hour. Table IV certainly does not support this claim, and other experimenters report a greater increase of traction with an increase of speed than Morin.

TABLE III.—Effect of Width of Tire Upon Tractive Power.*
(Figures give resistance to traction in pounds per ton.)

Description of the road surface.	Diameter of front and rear wheels. 42 and 46 ins.				44 and 54 ins.		42 and 46 ins.		44 and 54 ins.	
	Width of tire, ins. 1½	4	1½	1	1½	4	1½	3	1¾	3
Sod	..	..	..	..	..	..	283	239	189	228
Roads:										
Earth: Hard	..	108	..	..	..	..	152	152	114	114
Muddy	..	243	268	304	236	254	..	..	265	228
Sand: Hard	199	162	171	164	141	168	..	..	..	..
Deep	371	351	..	..	..	..	..	..	..	..
Gravel**	..	..	98	117	83	80	..	..	66	76
W'd bl'k, r'nd	51	49	61	70	35	46	..	54	28	35

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*Pamphlet by Studebaker Bros. Mfg. Co., South Bend, Ind., 1892.
**Good.

The preceding data refer to the effect of speed upon the tractive power after the load is in motion. It requires from two to six or eight times as much force to start a load as to keep it in motion at two or three miles per hour. The extra force required to start a load is due in part to the fact that during the stop the wheel may settle into the road surface, and also in part to the fact that the axle friction at starting is greater than after motion has begun, and further in part to the fact that energy is consumed in accelerating the load.

TABLE IV.—Effect of Speed on Tractive Power.*
(Figures give resistance to traction in pounds per ton.)

Description of the road surface.	Stage coach. Walk.	Trot.	Fast trot.	Carriage. Walk.	Trot.	Fast trot.
Broken stone road:						
Good condition, dry, compact	42	49	50	41	48	49
Very firm, large stones visible	59	75	81	58	73	81
Little moist, or little dirty	49	75	88	48	74	88
Firm; little soft mud	77	92	100	76	91	99
Firm; ruts and much mud	95	108	117	93	108	116
Portions worn out; thick mud	112	127	134	110	126	132
Much worn; ruts 3 ins., mud	146	161	169	145	160	168
Very bad; ruts 4 ins., rough	164	180	..	162	202	..
Stone block pavement:						
Very smooth; narrow joints	32	48	55	31	47	54
Fair condition; dry	35	52	61	34	51	67
Moist, covered with dirt	35	49	56	44	60	67

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*Morin's experiments.

4. EFFECT OF SPRINGS.—Springs decrease the traction by decreasing the concussions due to irregularities of the road surface, and are therefore more effective at high speeds than at low ones, and on rough roads than on smooth ones. Apparently no experiments have been made upon the effect of springs, but a little data on this subject can be obtained by comparing the sixth column (that for the artillery wagon) of Table V with the last column of the same table.

TABLE V.—Traction of Different Vehicles on Various Level Roads, at Three Miles an Hour, in Lbs. per Ton.

Ref. No.	Description of the road surface.	No springs. Gun carriage. t = 4.5". a = 3". D = 60".	Freight car. t = 4.5". a = 2.5". D = 64".	Freight car. t = 4.5". a = 2.5". D = 80".	Artillery wagons. t = 3". a = 3". d = 45". D = 60".	Freight wagon. t = 4.5". a = 2.5". d = 36". D = 60".	Freight wagon. t = 4.5". a = 2.5". d = 44". D = 78".	On springs. Stage coach. t = 4.5". a = 2.5". d = 36". D = 56".	Carriage. t = 3". a = 2". d = 36". D = 56".	Wagon. t = 2.5". a = 2". d = 50". D = 58".
1.	Grass Plat: Very firm and dry	72	..	..	82	..	..	..	..	..
2.	Moderately firm	87	..	..	100	..	..	..	..	..
3.	A little moist	98	..	..	..	..	..	..	..	..
4.	Slightly wet	140	..	..	160	..	..	..	..	..
5.	Very wet, no water on surface	..	..	..	260	..	..	..	..	..
6.	Earth Road: Very good; nearly dry	57	55	44	66	74	63	77	76	64
7.	Covered with untrodden snow	109	105	84	125	140	120	146	..	123
	Gravel Road:									
8.	1¼—1½ in. loose gravel on firm earth	147	143	114	169	190	163	198	198	168
9.	2 —2½ ins. loose gravel on firm earth	172	168	134	198	225	192	233	233	198
10.	4 —6 ins. loose gravel on firm earth	185	180	144	216	241	206	250	250	212
11.	4 —6 ins. loose gravel and fine sand	196	190	153	247	251	217	267	290	225
	Broken Stone Road:									
12.	Good condition, dry and compact	32	30	24	37	40	34	42	41	35
13.	Very firm, large stones visible	37	35	28	43	47	40	49	48	41
14.	Little moist or little dirty	45	43	34	52	57	49	59	58	50
15.	Firm; little soft mud	57	55	44	66	74	63	77	76	64
16.	Firm; ruts and much mud	70	68	54	81	90	78	95	93	79
17.	Portions worn out; thick mud	83	80	64	96	107	92	112	110	94
18.	Much worn; ruts 3 ins.; thick mud	109	105	84	126	140	120	146	145	123
19.	Very bad; ruts 4 ins. deep; very rough	121	118	94	140	157	134	164	168	139
	Stone Block Pavement:									
20.	Very smooth; narrow joints	25	23	18	29	31	26	32	31	26
21.	Fair condition; dry	27	25	20	31	34	29	35	34	29
22.	Moist; covered with dirt	34	33	26	40	43	37	45	44	38
23.	Plank Road: Thick oak bridge floor	37	35	28	43	47	40	49	48	41

t = width of tire; a = diameter of axle; d = diameter of smaller wheel; D = diameter of larger wheel.

5. DIFFERENT ROAD SURFACES.—Immediately before and shortly after the introduction of railways, European engineers made many experiments on the force necessary to draw different vehicles over various surfaces. The experiments by Morin, made in 1837-41 for the French Government, were much the more elaborate, and appear to have been made with great care. Table V is a summary of his results for the traction of different vehicles on various road surfaces. These experiments are classic, but as the only reprint of them in English is a brief extract with results in vulger fractions (as is the original), the writer believes the data to be worth reproducing here. The table represents about 700 experiments. Any vertical column shows the traction for a particular vehicle on the various road surfaces, and any horizontal line shows the traction on a particular road surface for different vehicles.

Table VI shows data obtained by the author. The tractive power was determined with a Baldwin dynagraph, Fig. 1. The instrument consists of two long flat springs fastened together at their ends, and having their centers slightly farther apart than their ends. One end of the apparatus is attached to the wagon, and the team is hitched to the other. The pull of the team causes the centers of the flat springs to approach each other. One spring supports a graduated disk, and the other is connected to an index arm which is pivoted at the center of the graduated disk. From one end of this index arm the pull can be read directly from the graduation. There are two extra index arms—one to indicate the maximum power developed, and one to indicate a rough average. The former (the right-hand one in Fig. 1) is simply pushed around by the main index arm and is left at the highest point. The latter (the middle one in Fig. 1) has a transverse slot in which plays a stud on the main index arm. When making an experiment the main index arm is continually in motion, and the position of the auxiliary arm roughly indicates the average power exerted. The end of the index arm opposite the graduated arc records the amount of traction upon a strip of paper which is wound from one cylinder to another by clock-work situated back of the left-hand lower corner of Fig. 1. The autographic record is much the more accurate result. Fig. 2 shows a back view of the instrument.

TABLE VI.—Tractive Resistance of Level Pavements.

Ref. No.	Description of Pavement.	Lbs. per ton.
1.	Asphalt: Chicago—Calumet Ave., bet. 43d and 44th Sts.; clean, smooth, no cracks, 52 deg. F.	37
2.	Chicago—Calumet Ave., between 43d and 44th Sts.; clean; smooth, no cracks, 84 deg. F.	70
3.	Chicago—Washington Boulevard, between Halsted and Green Sts.; clean, smooth, no cracks, 42 deg. F.	34
4.	Brick: Champaign—University Ave., west of New St.; 3x9 ins., brick on concrete, corners rounded, sand filler, not worn, clean	17
5.	Champaign—Second South St.; as above except newer and covered with ½-in. of dust	31
6.	Champaign—First South St.; as No. 4, except cement filler, just completed	22
7.	Chicago—Peoria St., between Washington and Randolph; 2¼x8-in. brick on concrete, pitch filler, new	24
8.	Chicago—Laurel St., stock yards, 3x8-in. brick on gravel and cinders; sand filler, corners not rounded.	37
9.	Chicago—Exchange Ave., stock yards; 2¼x8-in. brick on sand and old macadam, tar filler, new	25
10.	Granite Block: Chicago—Exchange Ave., stock yards; smoothly dressed 3x9-in. blocks on concrete, joints ¼-in., tar filler, not worn	29
11.	Chicago—Randolph St., between Desplaines and Halsted; smoothly dressed, on concrete, pitch filler, new	30
12.	Chicago—Halsted St., between Randolph and Washington; ordinary granite, laid in 1892	56
13.	Macadam: Chicago—Michigan Ave., between 42d and 43d Sts.; granite top, no dust, no mud	18
14.	Plank Road: Oak plank, 3x12-in., nearly new	32
15.	Exactly same as above after worn down ¼-in. in many places; clean	38
16.	Substantially same as above; covered with ¼-in. fine, loose dirt	40
17.	Steel Wheelway: 8-in. 11¼-lb. channel on 2x8-in. pine, that on macadam, covered with ⅛-in. powdered stone	40
18.	Same when scraped clean with a shovel	19
19.	Same when covered with ⅛-in. fine dust	28
20.	Wood Block: Rectangular blocks, 3x12-in., considerably worn	36
21.	Round cedar block covered with ½-in. silica pea gravel	90
22.	Exactly same as above with ¼-in. crushed gravel	50
23.	Round cedar block, clean, blocks slightly convex on top	53
24.	Round cedar block, 2 ins. plank, 2 ins. sand; clean, not worn	37
25.	Same as above; clean, slightly worn	51
26.	Same as above; clean, considerably worn	54

The wagon employed was the usual thimble-skein four-wheel farm wagon, with a 2-in. tire. Experiments 3, 4 and 5 were made with wheels averaging 42½ inches in diameter, and the remainder with wheels averaging 47 inches. Usually the pavements were known to be level, and where they were not a trial was made in each direction, the mean being used to eliminate grade resistance.

Table VI needs no explanation, but perhaps a few remarks are permissible.

1. ASPHALT.—Notice in experiments 1, 2 and 3 the effect of temperature upon the tractive power. The results are very astonishing, but seem to be in accordance with the opinion of teamsters. The driver for experiment 2 seriously objected to making the test, because "it is so hot that it will pull very hard on the asphalt." No. 2 is the mean of two trials giving practically the same results. No. 3 was checked by another experiment on another part of the same street, the result being the same to a tenth of a pound.

Experiment 2 was made at a walk (about 2½ miles per hour), and a test at a trot (about 5 or 6 miles per hour) over the same course gave 79 pounds per ton. No. 3 was at a walk, and the same course gave 61 pounds per ton at a trot. It is recognized that the two tests are not consistent, but the only explanation suggesting itself is the difficulty of making tests at a trot.

2. BRICK.—Apparently these are the first traction tests ever made upon brick pavements. The result for No. 4 was the first made, and was so much of a surprise that the experiment was repeated at several places along the street—always with substantially the same result. The difference between Nos. 4 and 6 is surprising. Possibly part of the difference is due to the effect of traffic in smoothing the pavement. No. 4 is a year older, and also has the more travel.

3. GRANITE.—The result of No. 10 was a surprise, and therefore was carefully checked. None of the granite blocks experimented upon were much worn.

4. MACADAM.—Probably No. 13 can be regarded as the very best broken stone road.

5. STEEL WHEELWAY.—The results for this road were unexpectedly large, and are doubtless due to the deflection of the face of the track under the wheel. It is difficult to see how the wheelway in practice can be kept cleaner than in Nos. 18 and 19. Several questions naturally occur in this connection, but the discussion thereof is referred to the advocates of the steel wheelway.

In conclusion, the writer desires to acknowledge his obligation to General Manager Leonard and other officers of Union Stockyards, Chicago, for valuable assistance in making the experiments in and near the yards; to John B. Hittell, Chief Engineer of Streets, Chicago, for facilities in making the tests near the center of the city, and to Frank R. Crane, Instructor in Farm Mechanics, University of Illinois, for the manipulation of the dynagraph.

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[1] Professor of Civil Engineering, University of Illinois, Champaign, Ill.

[2] In all the data herein the ton is 2,000 pounds. In engineering literature on traction there is great confusion between "long" and "short" tons.

[3] Clark's "Construction of Roads and Streets," page 294; London, 1890.

[4] Clark's "Manual of Rules, Tables and Data for Mechanical Engineers," page 962; London, 1877.

[5] Missouri Agricultural Experiment Station, Bulletin No. 39, 1897.

[6] Experiences sur le Tirage des Voitures sur les Effets Destructeurs qu'elles Exercent sur les Routes; Executees en 1837 et 1838 par ordre du Ministre de la Guerre, et 1839 et 1841 par ordre du Ministre des Travaux Publics," A. Morin, Paris, 1843.

OBITUARY.

DEATH OF FRANK J. BYRNE.

WITH DEEP REGRET I have to record the decease of manufacturing firm of Peter Byrne & Son, of this Mr. Frank J. Byrne, the junior member of the brick city, who passed away on the 26th of March, at his late residence, 2545 North Eighteenth street, at the early age of thirty-six years. Mr. Byrne was taken ill last October, and, with the view of regaining his health, went South, where he remained until a month ago, when he returned, apparently much improved in health and eager to return to the yard. A few days before his death he suffered a relapse, and all medical attention and science could do was to prolong that life for a brief duration.

Mr. Byrne was well known in the northwest section of the city, where his father, Peter Byrne, has retained the hand yard previously described in The Clay-Worker. His untimely death in the early prime of manhood is a personal loss to a host of friends, who ever found him a man of exemplary habits, a warm friend and a devoted husband, and highly esteemed among the brick men. He leaves a widow. W. P. L.

FREDERICK HEMAN'S DEATH.

Frederick Heman, one of the oldest citizens, as well as oldest brickmaker in St. Louis, died recently at his home, 1817 North Leffingwell avenue. Grip was the direct cause. He was born in Germany January 2, 1828, and came to America with his parents when but five years old. When he reached the age of twenty he bought some land out in what was then the suburbs and started a brick yard for himself, and continued in the business, putting in modern improvements as they were invented until 1892, when he retired.

Written for The Clay-Worker.

BUTTON-HOLE TALKS.

THE HORSE WAS a reformed racer, and his speed was a recollection only. To be sure, while we were yet on the shell drive, another rig coming up suddenly would electrify him for an instant, and, indeed, the electrifying process would extend to the buggy and the judge as well. As the judge tugged at the lines and yelled whoa, I would lurch about in the rough sea occasioned by this frantic motion, coupled with the broken fifth wheel of the buggy, and, with wonder in my eyes and dust and horse hair all over me, would desperately hang on until quiet was restored. But when we had gotten way out past the shell road and well into the piny woods he forgot all this and settled down to the steady jog trot that was fitted for the long drive he well knew was before him.

The day was warm, sultry even, but the air was pure and undefiled. The pines were green, the magnolias glossy and the dogwood and ti-ti profuse in their bloom. The journey was beguiled with social chat, plentifully, to which I contributed possibly more than I should, for the judge was a good talker and very interesting in his narration of reminiscent incident.

We had gotten to talking of the very common method of specializing. How the field was now too broad for any one man to cover, and the consequent growth of the tendency to know one thing, and know it well, rather than have a slight smattering of many things. How the doctor now took lungs, heart, liver, eye or ear, tooth or toe, and learned all he could about the one, and much more than any one could who did not thus specialize. We had no dispute about it, as to the necessity and benefit of it. We were both in the affirmative, but we pushed the discussion along just the same. Then the judge continued:

"I recollect that after Fort Gaines, down there, surrendered, when Dauphin Island was covered with Federal troops, when their fleet seemed to cover all our waters, when over across the bay there whole armies were marching to the siege of Fort Morgan, that here at Portersville there was a bunch of old men, men who numbered their years at from sixty to ninety (all the younger men, you know, had long since gone to the front and had either died or were still fighting)—well, these old fellows were right patriotic, even if rheumatic, and they got the idea that they ought to organize a company of home guards. Old Capt. Pothersford didn't seem to enthuse so much, but the rest of them got real enthusiastic and hurried the thing right along. There was a rumor that the Captain had attended a military school or in some way had a smattering of military training, and so they suggested to him the possibility of electing him captain; possibly it was done to coax him into line with them. Anyway, it seemed to catch him, so they held an election and he was made captain. Then the question as to what other officers they should have arose, but the Captain made them a little speech, in which he told them that they didn't need any other officers, but that he could attend to everything himself. Anyway, this suited them all right, as what they were anxious for was to get organized, drilled and get to being 'real soldiers.'

"What they wanted especially was to drill, so a day was set and they assembled. Some came armed with those old, long squirrel rifles, some with shotguns; indeed, they had pretty much every kind of antiquated and worthless weapon, and their armory would have given a museum a fine start. Some even were without guns and had to content themselves with pitchforks and even clubs.

"The Captain, however, was not critical, so he assembled his force down on the beach, facing him and with the water back of him, and, after a good deal of effort, got them into a passable line and ready for their first drill. After his line-up talk the Captain said: 'Now, you all know what right about, face, means, I am sure, so when I give that command, what you want to do is to just turn clear plumb around and line up the other way. All ready! Right about, face!' They all turned, some one way and some the other, but all got around and they all felt a bit relieved to have executed the first movement successfully. The Captain then said: 'You all know what double-quick means, and when I give that command you are to run till I give another command or stop you.' Then he yelled, 'Double-quick,' and away they went. They were old and decrepit, short-winded and rheumatic, but they did their best. The Captain was more rheumatic than the rest and was soon left far behind. On they went over brush and stumps, but they kept at it, as they realized the dignity of the drill, but their line got broken and their wind gave out, and still no command came to halt. Finally, old Sam Johnson looked back and saw the Captain in the distance, hobbling along, and out of hearing, so he called to the rest that it was foolishness and to wait till the Captain came up. When the Captain came up, limping and blowing, Sam was pretty mad and took him to task, asking what in thunder he meant racing them away out into the woods and away where they couldn't hear his orders if he were to give them, anyway.

"The Captain was so winded that it was impossible for him to reply, so they had to wait for him to get his breath; but he finally addressed them:

"'Youall have 'lected me captain of this heah company of home guards, and I feel the honah. I assure you at the same time I realize that the purpose is to drill and perfect ourselves in such things as we will be called upon to do when we meet the enemy. You naturally expect me to use judgment, and that's what I've been doing, and what I propose to do. Those waters out there (and the Captain pointed toward the Federal fleet) are black with Yankee ships. Dauphin Island is blue with Yankee soldiers. Over there on the eastern sho' whole armies are massin' and pressin' toward old Fort Morgan. Gentlemen, when those Yankees start to come toward us it won't be necessary for me to give but one order, and you can't practice running too much.'"

GATES.

THE FAITHFUL SECRETARY COMPLIMENTED

Editor Clay-Worker:

At a meeting of the general committee in charge of arrangements for the recent Convention of the National Brick Manufacturers' Association a vote of thanks was unanimously extended to the National Secretary for his many courtesies to our committee, together with an expression of sincere appreciation for the part he had in making the gathering such a complete success.

The committee wishes for the Association and its capable and obliging Secretary a full measure of prosperity as time goes on. Yours very truly,

H. C. BRADLEY,
President Cleveland General Committee.

Cleveland, March 10.

People rarely buy on the spur of the moment. They usually make up their minds to buy at some future time. Even after you have convinced your man, and he has made up his mind to buy, your ad. ought to appear regularly, so as to remind him of his purpose.—Ex.

THE IOWA BRICK AND TILE ASSOCIATION.

PROCEEDINGS OF THE TWENTY-SECOND ANNUAL CONVENTION

Of the Iowa Brick and Tile Association, Held at Des Moines, January 22 and 23, 1902.

Des Moines, Ia.,
Tuesday, Jan. 22, 1902.

The twenty-second annual Convention of the Iowa Brick and Tile Association was called to order by President G. A. Wild at 10:30 a. m.

The forenoon session was occupied in the enrollment of members and reports as to the year's business. The reports generally showed an increased volume of business and a moderate improvement in prices. The rise in wages and increased cost of production, due to higher prices of fuel and other supplies, in some instances reduced the net profits, but on the whole the reports showed a satisfactory year's business.

The following Committee on Resolutions was appointed by the President:

L. E. Bentley, Tampa.
C. J. Holman, Council Bluffs.
C. E. Shaw, Iowa Falls.

The Globe Machinery and Supply Co., of Des Moines, extended a cordial invitation to the members to visit their place of business.

There being no provision for an evening session, this enterprising and hospitable company tendered to the members of the Convention tickets to the best seats in the opera house, where "Rip Van Winkle" was rendered by Thomas Jefferson, son of the peerless and immortal Joseph Jefferson, whose name is inseparably united to that of "Rip Van Winkle."

Tuesday afternoon the enrollment of members was continued.

Discussion of "Better Drainage Laws" was led by ex-President J. B. McHose, of Boone.

Mr. McHose apologetically said that he had been unable to find time to prepare a paper, and that what he should say must necessarily be entirely extemporaneous. He said that under the present Supreme Court decisions the man who owns land above another cannot get an outlet unless the owner of the lower land consents. The fact that the wet land may be malarial and may breed disease does not seem to affect the case. This shows the need of better drainage laws. The speaker said that he had not had the opportunity to give the matter the necessary investigation and thought, and was not prepared to propose the form of the laws needed. A decision was cited in which such action as draining through another person's land was declared unconstitutional because it took private property of one person for the private use of another. We are still hampered by this decision. Nature laid out the land, and taking water to its natural outlet is not taking private property for private use. However, the "Supreme Court has the last guess," and we must submit to the decision. Technically, the party above must pay all damages, and it is assumed that damage is done by draining across the land, although the work may drain a swamp on the line to the outlet.

President G. A. Wild, Cedar Falls, Iowa.

Mr. McHose believes that where lands are not productive and can be tiled, each party should pay his proportionate share of the expense. Probably every tilemaker here has sold tile to men for the purpose of laying an outlet through another man's land. This law is not just and should be changed. The Supreme Court that made that decision has gone, and something should be done in the present Legislature. If we act unitedly upon our Representatives we can do much to benefit our customers. We should dislodge the old feudal idea that one man must not take private land for public use.

Prof. Kent, of Ames, was introduced, and, in part, said: "The gentleman has struck right straight at the vital issue. The question to be settled is, are we taking private property for private use? If we can settle this, we will have done much towards solving the problem. We want to dislodge the selfishness and supreme contrariness of individuals in this matter. This is a civil right. As the gentleman said, nature left natural waterways and we must follow them before we can make progress. As to the decision of the Supreme Court, I can say that decisions of the Supreme Court of the United States have been reversed. The brick and tilemakers and farmers must reverse this decision. Land in Iowa has become so valuable that it must be brought to a high state of cultivation, and this cannot be done until this decision is reversed. I cannot understand how that decision was ever rendered, and it must be reversed.

"It is said that drainage takes stock water away, but there is no intelligent farmer but will concede that standing, stagnant water is not fit for stock, but is full of malaria and disease. The small objection that a few rows of corn or a swarth of wheat are destroyed is not worthy of consideration.

"The only damage that can be found in a swamp is in pulling off boots and kindred experiences. Many hunters object to drainage because they want to shoot ducks and geese.

"While the Supreme Court has decided that we shall not take private property for private use, and that we cannot go on another man's land, it should be decided, and is only equitable, that each man should pay for the benefits he gets. Now this proposition comes up: If I am the upper man and force you to drain when you are not able to pay, then the benefits should be paid by the man above and held as a lien upon the land, and permit him to work the improved land and thus gain the price assessed. Almost any ten-acre tract of wet land in Iowa will, if drained, become productive and thus render the owner able to pay the expense of drainage.

"I believe that the sentiment of the

people all over the State, and that people is represented in the Legislature, is such as would lead to the reformation of the present condition, which is simply a relic of the days of feudalism and the dark ages. A slough is a waterway, and the same rules should obtain.

"Our laws start out first and say that it must be for the promotion of public health. It might be difficult to prove the benefits derived from draining small tracts, but it is so that whenever a tract of swamp land is drained the health is improved.

"As the law now stands, this matter rests with the supervisors, and the consent of all land owners interested must be obtained. Sometimes good men are very contrary."

Prof. Kent here introduced the following resolution, which was referred to the Committee on Resolutions and adopted with their report:

"Whereas, about one-fourth of the farm lands of our State need drainage; and

"Whereas, the value of land has advanced to such a price as to make this drainage very desirable; and

"Whereas, the present drainage laws are inadequate to the promotion of efficient drainage in all cases; therefore,

"Resolved, That it is the sense of this Convention that the present General Assembly should so modify the drainage laws of our State as to provide for efficient and equitable interfarm drainage."

PRESIDENT WILD'S ADDRESS.

Gentlemen of the Convention:

In the history of our Association this is the twenty-second time we are assembled as a body of clayworkers. Our object in meeting is to discuss problems of interest and of vital importance to our calling, to gather new points for conducting our business, to meet and shake hands with those we have met in former conventions, and I hope that we will find many here who have come to us for the first time, that we will be privileged to make many new acquaintances and add largely to the roll of our membership. The place of our meeting will certainly bring back to our older members the days when our Association was not as strong as it is at present and when it meant a great deal of work and push to hold together the members as an organization, and still many of us can recall the pleasant hours that were spent very profitably at the past clayworkers' conventions held in the city of Des Moines.

It is true at one time we felt that we must leave the city and hold our conventions in other cities, which was done, and our Association is none the worse for it at this time. In holding our meeting here this year we feel as though we were again at home, and your President hopes that no mistake was made in our choice of the place, and now let us put forth every effort to make this session one of great benefit and interest to us all.

A convention can be of benefit to all its members only when each one takes a personal interest in the proceedings and takes part in the discussion of the various topics. Let none think that it requires a long standing membership to become an active member; let no one hesitate to express his views or relate to the convention his experience relative to the particular work under discussion. We have all come for the advancement of our business, and there is not one among us who is not willing to pick up some idea that has been found beneficial to others.

Clayworkers have a peculiar calling, different from all others in many respects. While in a general way we are able to define the methods of making brick into three different classes, there are but a few among us who are able to produce from two apparently similar clays the same quality of ware by applying the same process in the manufacture of both. Clays must be studied. That brick or tile manufacturer who thinks he knows all about his clay and that of his competitor is a wise man, at least in his own estimation, but I think men of such wisdom are not very numerous, even in our own great and enlightened State of Iowa. Hence we are here to learn, and desire to take home with us new ideas relative to the manufacture and sale of clay products, as expressed by our co-workers.

The past year has certainly been one of great prosperity to the country at large, and the clayworker has undoubtedly reaped his share of the profits and feels happy and contented. Perhaps never in the history of our country have we been able to record such a large volume and growth of business as has been our privilege in the closing days of 1901. In different localities the demand for brick and tile far exceeded the supply, and while plants and yards run to the limit of their capacities, they were even then unable to fill all orders. Such conditions are very desirable from our standpoint as manufacturers, and should be considered as the realization of our most sanguine dreams of the past. Whatever the prime factor or original causes for the existing conditions may be, we all should recognize that we have reasons to be thankful.

ROBERT GOODWIN, JR., Redfield, Iowa.

When the brick or tile manufacturer receives more orders than he is able to fill then there is a time when he is tempted to raise the price of his wares, desirous of realizing larger profits, knowing well that his customer must pay the price. This may be a good business policy, and is perhaps indorsed by a large number of our members. Still we ought to consider well before we raise the price of our wares above that point which gives us a good legitimate profit. Let us be cautious. Let us consider well the conditions existing in our territory, and let us not forget that a very high price on brick or tile not only may prohibit the use of the same on a large contemplated improvement, but at the same time invites competition. Lumber is higher and there are many justified reasons for its being sold at a high figure; in fact, the time is not far distant when the price of lumber must be raised still higher. It is our duty to encourage the use of clay products for building purposes, and therefore we must not lose sight of the fact that our price must be so adjusted that brick or tiling will take the place of lumber.

The uses of brick should be multiplied. No material will stand climatic erosion as well as brick. Its desirability as building and paving material cannot be surpassed. In view of this fact it is our urgent duty to do some educational work along this line among the general public; clayworkers must get hold of the spirit of other trades. What might be termed political work is one of the essentials of a large brickmaking concern of the present day. By the use of tact and proper methods with our architects, city engineers, city councils and other similar bodies, much might be accomplished to induce cities and towns to use brick in place of inferior materials in the construction of municipal improvements. However, the methods employed for this purpose must be honorable and in nowise reflect upon our characters. We can all be instrumental in inducing individuals and communities to use our products on a larger scale, if we never let an opportunity pass to speak a good word for clay wares.

The fact that the past season has been a prosperous one to most of us will induce many to enlarge their plants. In so doing they will be able to take care of more orders and have larger profits at the end of the season. This is perfectly in line with sound business principles. In addition to the enlarging of factories, many new ones with large capacities will probably be built during the coming season, requiring large expenditures of money. We are a growing State, consequently industries must grow in size as well as in numbers. There is danger, however, in overdoing.

It is true we have no cause to be alarmed at present; there is not a single reliable sign to-day that we are again on the verge of hard times. I speak of this matter with considerable hesitation, knowing that no dark cloud appears before the commercial horizon to even indicate the advance of a coming storm, and yet I feel as though I ought to speak a word of warning to those who contemplate very large improvements. It is not my purpose to discourage such improvements which will be founded on good sound business principles. Prospective plants with a large amount of excellent clay, large territory and good shipping facilities should be built, and there can be no question why such plants cannot do well and pay dividends, if properly managed. But there are at times plants contemplated with only promoters and men of capital with no intimate knowledge of the clayworking industry back of them. The latter as well as the former are in it for money, although quite different as to methods of getting the same. After such plants are built and hard times should come, there is bound to be a crash, and as a usual thing the promoter has the money and the capitalist the experience. Let us not forget the lessons the years of 1892 and 1893 have taught us and let us profit by the same.

This convention might take up the work of creating a standard size for building brick. At present each locality has its own size, and one can find brick measuring scant 8 inches long and 2 inches thick to a brick nearly 9 inches long and fully 2½ inches thick. Let us try and see if we cannot agree on a size that will serve as a standard and that we can recommend to every brickmaker in the State.

The programme to be given will again be greatly enhanced by the different papers to be read here by the professors of the State Agricultural College of Ames, and our organization is very much indebted to the latter for their hearty co-operation. I am sure we all appreciate their efforts, and in order to give our thanks tangible shape, every one of our members should use his influence and persuasive powers with his respective Senator and Representative, impressing him of the benefits we clayworkers will derive from the special department of the school at Ames, and urging him to give it liberal support, so that it may in time rank second to none. A resolution, properly framed, indorsing the work of the school at Ames and setting forth in unmistakable terms what we would like to have our Legislature do, should be passed by this organization and be presented to the upper and lower house.

Now let us do our work here in a social spirit, that the hours may not only be of benefit to us, but that we may always look back upon them with memories of pleasure as well as profit. (Applause.)

Secretary Goodwin announced that the next in order would be a paper by Prof. S. W. Beyers, of Ames.

DISTRIBUTION OF CLAYS OF ECONOMIC IMPORTANCE IN IOWA.

By S. W. Beyer, of Iowa.

In considering the distribution of the clays of Iowa the subject might be taken up from a geographical standpoint alone, or according to the kinds of clays, or the grouping be made dependent upon the nature of the manufactured products. For present purposes it has seemed best to treat the subject from the geological standpoint, in which all may be referred to two groups, belonging to two widely separated geologic eras. Generally speaking, during the first era the great State of Iowa emerged from the sea bottom to land surface, from the northeast toward the southwest, with the exception of a small area in the northwest corner, where occur the oldest rocks in the State. Barring the exception mentioned, there was a progressive upward movement, interrupted doubtless by numerous oscillations until the State was entirely retrieved from the dominion of the sea. The deposits which formed the basal series, upon which the latter group was superimposed, were laid down by water and then in water under marine conditions, and are stratified. The clays and silts, which comprise probably one-fourth of the deposits, were consolidated along with the intercallated sandstones and limestones, and constitute the shales of various kinds and fire clays of the lower lying rocks. Widely separated in time and unconformably overlying the so-called country rock is the unsorted, unconsolidated, heterogeneous debris of the gracial epoch.

In discussing the distribution of the shales and clays in some detail, they may be considered in the order of their deposition, from the bottom of the section upward, or, what amounts to the same thing, from the northeast corner, southwestward. Geologists classify stratified rocks according to the fossils contained and their lithological character, and have given names to the various rock formations. The oldest rock series in the State containing shale of economic importance is known as the Trenton limestone of the Ordovician. At the base of the Trenton there is a shale band of some six feet in thickness of excellent quality, but is everywhere overlain by a heavy bedded limestone, unless otherwise removed by erosion. Numerous outcrops are known in Allamakee county along the various creeks near Waukon. This deposit has not been utilized. Near the middle of the Trenton series other argillaceous beds appear, but usually in thin bands, interleaved with limestone ledges, which render them of doubtful economic importance unless they could be used in the manufacture of Portland cement. Near the summit of the formation occurs the most important shale member. This bed attains a thickness of twenty feet and outcrops at numerous points in Allamakee, Winneshiek, Fayette, Clayton and Dubuque counties, but has been developed only at Clermont. There it has been wrought into cream colored brick and tile of excellent quality.

Above the Trenton comes the Maquoketa, which is essentially a shale formation throughout, and is generally spoken of by geologists as the Maquoketa shales, and is believed to be the equivalent of the shale beds which occur along the Hudson river, in New York, and the Black river, in Wisconsin. The Maquoketa exhibits numerous outcrops, forming a zig-zag line across the northeast corner of the State, from Winneshiek to Dubuque and Jackson counties. These shales reach their maximum thickness towards their southern extension, reaching in places 150 feet. Toward the north they feather out, almost entirely disappearing near the Iowa-Minnesota line. This great formation, comprising one of the most important general purpose clays in the State, is almost wholly undeveloped. Near Colesburg, in Delaware, it has been utilized in a small way in the manufacture of pottery, chiefly unglazed ware. The Silurian contains no shales worthy of mention.

PROF. S. W. BEYER, Ames, Iowa.

The Devonian, in Iowa, was ushered in and closed by a shale-making epoch. Certain wells sunk near the eastern border of the Devonian reveal a black, carbonaceous shale, and occasional outcrops are visible along the streams in the same locality. Professor Calvin has given the name Independence to the formation. This shale reaches a considerable thickness in places, but is usually interbedded with thin seams of limestone. So far as ascertained, no attempts have been made to utilize it commercially, with the possible exception of Cresco, in Howard county. Its presence has given rise to considerable speculation as to the possibility of finding coal in the localities in which it occurs, and has been the cause of some money being spent in useless prospecting.

The upper shale member of the Devonian is much the more important one from an economic standpoint. The principal outcrops known occur along Lime creek, in Cerro Gordo and Floyd counties, and take the name of Lime Creek shales. These beds present some variations from point to point. In certain localities a seam of very refractory clay occurs, which burns a cream color and shrinks but little on drying. The Lime Creek shales exceed a hundred feet in thickness, but only about fifty feet are workable in the clay industries.

The lower carboniferous or Mississippian series, while essentially a great limestone formation, contains several beds of economic importance. The greatest of these is at the base of the series as developed in Iowa, and is known as the Kinderhook shales. These are typically exposed in Des Moines and adjoining counties. At Burlington the Kinderhook attains a thickness of about 150 feet, less than half of which lies above the level of the water in the Mississippi river. The beds are overlain by heavy beds of limestone, much more resistant to the weathering agencies than the underlying shales. As a consequence, there is a tendency to undermine the softer materials below and vertical escarpments are common. The area of outcrop for the shales is very limited. The gradual dip of the beds to the westward carries them below the surface, so that they do not appear on the surface away from the immediate vicinity of the great river and its larger tributaries.

Other seams of limited extent occur higher in the series, but few are worthy of special mention. Such seams have been explored and developed to a limited extent in Lee, Des Moines and Louisa counties. Clays of excellent quality occur near Keokuk and Parrish.

Of all the shale and clay-bearing formations the Des Moines stage of the carboniferous, generally known as the coal measures, excels. Unlike the series just considered, where the shale members are of minor importance, here shales constitute fully one-half of the entire series. Drill records and shafts show that our coal fields contain from one to ten seams of coal, varying from a mere film to several feet in thickness, and as a general rule each seam is accompanied by a leached ash-colored clay or clay-shale below and overlain by a dark shale above. The former was the old soil, and is generally thoroughly leached of its soluble constituents or fluxes, and takes the name of fire clay, because of its ability to withstand high temperature. Aside from the including shales and clays, oftentimes the most important seams have no apparent relationship to the coal veins. The coal measures cover more than one-fourth of the superficial area of the State, the western portion of which presents but few exposures, owing to the thickness of the drift covering. Outcrops are confined chiefly to a zone twenty miles in width on etiher side of the Des Moines river, from Humboldt, Hamilton and Hardin counties on the north to Davis, Van Buren and Lee counties on the south. Des Moines may be considered to be the geographic center of the coal measures district of the State, as well as the center of the clay industries. Outliers of the coal measures, which furnish valuable deposits of shale, occur in Scott, Muscatine and Louisa counties.

At the close of the coal measures period the sea was entirely eliminated for the time being by a general upward movement of the land surface. As a consequence there are no deposits within the confines of the State representing this time. At a later period the sea again encroached upon the land and the northwest fifth of the State was submerged. A series of rocks similar to those put down in the earlier seas was repeated here. Outcrops of shales belonging to this time, the Cretaceous, are confined to the immediate vicinity of the Missouri river and its larger tributaries, with the possible exception of certain shale crops which appear along the Raccoon river in Calhoun and Sac counties. Sioux City is the center of the industry using Cretaceous clays.

The unassorted clays of the various drift sheets cover almost the entire State, save an irregular area in the northeast corner, reaching a width of forty miles on the Minnesota boundary and extending as far south as Jackson county, the strip averaging ten to twenty miles in width. The weathered portions of the Kansan, Illinoian and Iowan sheets are used to a limited extent in the manufacture of brick and tile. The finer wash and partially rearranged portions of all of the drift sheets, in the form of alluvial and second bottom or terrace deposits, afford an abundance of raw material for sand brick. These deposits were among the earliest in the State to be utilized, but are giving way to the more popular loess clays and the shales of the stratified series.

The Wisconsin or youngest drift sheet offers the most obstacles to its use on account of the great abundance of lime present, both in the form of pebbles and bowlders and in the comminuted state. Because of the youthfulness of the Wisconsin drift the weathering agencies have not had sufficient time to relieve it of its excess of lime. Hence this work must be done artificially by a process known as slumming. Numerous attempts have been made to utilize this drift, but few attempts have been attended with success. The Wisconsin covers a tongue shaped area in the north central portion of the State, comprising some thirteen thousand square miles. The Iowa-Minnesota line forms the base of the lobe, which extends from the northeast corner of Lyon county, on the west, to the middle of Worth county, on the east, and the apex of the lobe is Capitol Hill, in the city of Des Moines. The territory covered by the Wisconsin drift includes all of the upland lakes and ponds, and exposures of the underlying stratified rocks are extremely rare save along the Des Moines river, and even here from Humboldt north. The district comprises the typical prairie portion of the State. There are almost no native building materials in the line of building stone and lumber and at the same time nature has been most parsimonious with her supply of workable clays. More than one-third of the entire area requires thorough tiling before it yields to cultivation. Local demand for clay goods vastly exceeds the local supply, and by far the greater portion of the clay products used are supplied by outside manufacturers.

Overlying the Kansan drift, beyond the limits of the Wisconsin and possibly the minor portions of the Iowan and Illinoian, is the loess. The loess is the most generally distributed surface deposit in the State, and is the most widely used in the clay manufacturing industries. More than two-thirds of the factories of the State use the loess. In the eastern and southern portions the loess rarely exceeds from ten to thirty feet in thickness, but along the Missouri river it often attains much greater thickness. The loess outcrops and is utilized at several points within the Wisconsin area, where it has been uncovered by the streams.

Deposits younger than those of the drift sheets and loess may be found along the principal streams previously mentioned as alluvial, and certain deposits found near the bluff faces, which are being accumulated at the present time. The latter deposits have a wide distribution and are confined to no particular drift sheet, but, as in the case of the loess, are typically developed on the stream ridges and bluffs which face west.

In Story and adjoining counties which lie in the Wisconsin area the bluffs which face the principal streams on the east are generally covered with a structureless deposit of sandy silt and clay, free from pebbles and bowlders and thoroughly leached. Such deposits are supposed to be accumulated through the agency of the wind and have been used at numerous points in the manufacture of sand brick.

O. T. Denison, Mason City, Iowa.

Summarized briefly, Iowa possesses no deposits of pure kaolin or kaolinite, such as are used in the manufacture of high-grade chinas, porcelains and fancy wares. The clays and shales are all mechanical mixtures composed of clay base, silt and fine sand varying widely, both chemically and physically. Clays which have accumulated in place are unimportant and confined to the "geest" of the northeast corner of the State. The great bulk of Iowa clays have been transported. Of these the sorted and stratified materials of the older rocks, whose outcrops occur along the great rivers of the State, furnish an abundance of crude material adapted to the manufacture of all grades of brick by all the processes—hollow block, drain and floor tile, sewer pipe, terra cotta and the various grades of pottery. The unassorted to the partially assorted materials of the drift and associated deposits, which cover almost the entire area of the State, afford raw material, which can be wrought into common brick, drain tile and burnt clay ballast. None of these deposits have been fully explored and their development is in its infancy. (Applause.)

After reading the paper Prof. Beyers gave a short, but interesting, explanation of the drift period. During these remarks he presented various theories that have been advanced as to the cause of the ice age. The first mentioned suggests that at some time in the past that part of the earth's surface which bears traces of glaciation was raised to a great elevation. Geology teaches that the relative elevation of different portions of the earth's surface has changed repeatedly during the geologic ages.

Another theory offered suggests that prior to and during the glacial period the atmosphere contained an excessive amount of carbon dioxide (CO_2), which acted as a blanket and prevented the rays of the sun from reaching the surface of the earth.

A third theory that has been offered as giving a possible explanation of the glacial covering of the drift period is the known variation of the inclination of the earth's axis, which astronomers tell us is constantly changing and swinging through considerable variations and returning again through long cycles of time.

The Association tendered the Professor a rising vote of thanks for his highly interesting and instructive entertainment. The following paper was then read:

DRYING CLAY WARES BY USE OF A SUCTION FAN

By O. T. Dennison, Mason City.

One can hardly expect to offer you anything new on the subject of drying clay wares, but in these days, when so many clayworkers are experimenting with various methods of drying, it has occurred to me that an account of some experiments may be of interest to some clayworker who may be contemplating work along this line, and possibly thereby save him some costly experience.

That air and not heat does the drying is axiomatic, but a fact often overlooked in establishing clay drying apparatus. Heating the air simply increases the capacity of the air to carry water. Very cold air is usually much dryer than warm air. After air has absorbed all the water it will carry at a certain temperature, drying of the clay ware ceases, unless other air is admitted, so that, as a general proposition, since heat costs money, the most economical drying is by use of constantly moving large volumes of air, moderately heated, if heated at all, and that heat obtained at smallest cost. The heat that ordinarily goes to waste, that of exhaust steam and that from cooling kilns, can be utilized for drying clay wares by use of fan at the small cost of power to run the fans. We have found the suction fan more effectual than the force fan, since the suction fan to a small extent lessens the density of the air, the same as heat does, and thus increases its carrying capacity, and whatever rarifying effect we get from the fan is at less cost than that obtained from fuel.

In proof of this statement I cite the fact that there is a perceptible falling of the barometer when taken to the drying room operated by suction fan, and a rising of the barometer when taken out again. We use a suction fan, eight feet in diameter, five feet long, on a four-inch shaft, running 175 to 200 revolutions per minute. This fan, with spokes thirty inches long, is set in brick housing with outlet into the outer air through a stack five feet square, extending through the roof of the building, takes the air down through a coil of one-inch pipes, into which the exhaust steam enters through six-inch headers, thence the heated air is drawn underground in duct to the drying tunnels, one hundred feet long, thence down into duct, which leads to the center of the fan at each side, thence to the outer air. In summer the air enters the drying tunnels at 135 to 145 degrees Fahrenheit. In winter the air reaches the tunnels at about 100 degrees, varying with the temperature of the outside air and with the speed of the fan. In cold weather the fan is run at less speed, since the aim is to run the fan at such speed only as will condense all the exhaust steam, and this speed will give the dryer all the circulation needed for drying the wares in twenty-four hours.

The coils for the exhaust steam contain 15,000 lineal feet of one-inch pipes in two coils. The top consists of 5,000 feet in ten-feet lengths, in forty lines leading from a six-inch pipe header fourteen feet long through return bends to a like header at the bottom of this coil. The bottom header is of the same construction, with 10,000 feet of pipe, the inlets to each coil are connected with the main exhaust pipe, and the outlets are connected to 4½-inch pipe, which leads the water to filter through cinders, taking out the oil; thence the water falls into a cistern, from which the boiler feed pumps or injector puts it back into the boilers as hot as it can be handled with pumps.

Just before the duct from the fan enters the drying rooms, a duct from the base of the kilns is connected, with suitable dampers, to switch the suction of the fan from one kiln to another, and the fan takes the hot air from the cooling kiln, passing it into the dryer, first mixing enough cold air with the hot to properly temper the air as it enters the dryer. We have found in winter the strong draft required to take hot air downwards in the kilns and thence into the dryer brought into the dryer about the doors considerable cold air, and we are now installing a five-foot fan in steel housing at a point between the kilns and the dryer, this to act as a suction fan on the kilns and force the hot air into the dryer, mixing with the air which comes from the coil. This latter fan has water-cooling bearings, the fan being overhung, so that no matter how hot the fan and housing may become the bearings are cool.

By these methods we obtain all the heat from the exhaust steam, send it through the wares in the dryer, mixed with all the heat from the cooling kilns that is needed, and at the same time get nearly all the water of the exhaust steam, put it back into the boilers hot, separated from the cylinder oil, which remains in the cinders filter. All over Iowa the water available for boiler use carries very much of carbonate of lime, a cause of much waste of fuel and many "bagged" boilers.

Our experience teaches that the pipes in the coils should not be less than four inches, center to center, as the air will not pass over and around the pipes rapidly enough to condense all the steam and thus absorb the heat.

The pipes should have not less than two and one-half inches fall in each ten feet of run, for the rapid draining away of the water. We use by this method the exhaust steam from about one hundred horse-power engines. We find this method of drying very economical, rapid and satisfactory.

Large volumes of rapidly moving air at any temperature above freezing will dry clay wares as rapidly as is needful.

I have seen a strong wind at 10 degrees below zero absorb ice one-eighth inch thick in one hour, no heat applied.

A back pressure valve is placed in exhaust pipe to relieve the engines of back pressure, if from any cause it should arise.

Not less than 15,000 lineal feet of one-inch pipe of 5,000 square feet of radiating surface will condense 100-horse-power exhaust in very warm weather.

The ducts from fan to dryer are about four by five feet, of brick, and all angles are made large to permit easy flow of air. Dampers are placed in the outlets of each drying room to "shut out of the circuit" any room not needed, as in case the ware is all dry or in case of too rapid drying and cracking of the wares. Closing of all the outlets of the tunnels renders the fan useless, or makes it no more effective than revolving of a pulley and very little power is then used.

M. Joesten, Sioux City, Iowa.

The ducts from the kilns are of brick, arched, wholly underground, two by two and a half feet in area, and out of the way of firemen.

It appears that the hot air of a cooling kiln will as readily pass downward inside a kiln as in a pipe leading from the crown downwards outside the kiln. It requires strong suction of the fan in either case and air-tight flues. (Applause.)

Mr. Denison was absent in the South, but his paper was read by his son, L. W. Denison.

Secretary Goodwin read a letter, stating that J. Berlingett, superintendent of the St. Joe & Grand Island Railway, and H. V. Clarke, traveling freight agent of that line, were in attendance with samples of clays from Steele City, Neb. They desired to interest parties with capital who would investigate the clays with a view to establishing a clay-working plant at that point.

Wednesday Morning.

The Convention was called to order by the president, and a paper by M. Joesten announced as the first order of business.

BRICKMAKING AS SEEN FROM THE OFFICE WINDOW.

By M. Joesten.

The men that assemble at our annual conventions are mostly well versed in the different qualities of clay, its composition, of shale or loam, contents of silica and magnesia, the color it will burn; in fact, some of them would make a valuable acquisition to a State geological dissecting room. Others, again, have combined with the above knowledge what class of machinery is best adapted for certain kinds of clay, and sometimes become so enthusiastic in clays and the process of making it into brick that, if they should have a mishap to the business end of their engine shaft, they could easily be utilized to keep things going until necessary repairs were made.

As a consequence of constant association of clay and machinery, these brickyard managers have partaken to a great extent of the material they handle and become rather earthy, and do not account the office business of very much value; in fact, sometimes they are in doubt whether the office man does more damage to the furniture or to his clothes. Being themselves very much disinclined to close application of desk work and when, after a long siege of hand work, the office man is obliged to take a vacation in order to gather his shattered nerves together again, and the clay manager has to lend a helping hand in the office, he finds it not to be all play. When the office man returns, instead of his books being written up, he is handed a lot of papers by the clay manager, with the remark, "I did not know whether I would get these things right or not, so I kept them on these papers for you to arrange." And then, after a while, to take the place of his "welcome home," the clay manager will incidentally remark, "There is a —— sight more work in this office than I had any idea of," and with this parting shot the clay manager hies himself off again to his clay, to earth, and regales himself by counting how much brick comes through that machine a minute, while the office man sets himself about the laborious task of getting the fragments of the business together again.

In these two or three years of exceptional prosperity it is not to be wondered at that these clay managers are getting egotistical, that they feel as if they were the whole thing, "so to say," when everything is coming their way without even the asking for it, when it is not the question whether there is money enough for the pay-roll, but rather how much is the surplus.

The majority of men who attend our conventions have been in the business a decade or more, and have, therefore, seen other times than at present—times when on the morning of pay-day the clay manager would come into the office and consult with the office man, of how enough money could be got together to pay off in the afternoon.

The writer remembers very vividly some experiences of the early '90s, when, after a long pursuit of the contractor in the suburbs, he finally found him, and after giving him some taffy about the beauty of the house he was building and his artistic taste, finally very timidly edged up to his errand, that it would be very acceptable if he could accommodate him with a little money for the brick furnished in the house that was nearly completed. And this great contractor would swell up in indignation that he should be asked for money. He had no money; the owner of the house had the money, and he paid all bills; if my bill was correct he would O. K. it and I could go to the owner and get the money. Away the collector went joyously, thinking he would have an easy time now of getting the money. Finally he finds the owner, to whom he presents his bill, and the owner looks askance, and after a little hemming and hawing, and being further pressed to the point, finally blurts out that he is to get the money from the building association. Upon the interrogatory of when that will he, he cannot say, but volunteers the suggestion "If you can get it any sooner than I, I will give you an order on them." At this stage of the game the collector is not so sure about his footing, and leaves the owner with the remark "that he will see the building association." The building association is found upstairs in some back room, with a clerk in attendance. Upon interrogation of when Mr. Jones is to get his loan, the languid answer comes, "Mr. Jones? Yes, his application for a loan is in." "Yes, but when will he get his money?" "Well, I don't know; there will be a meeting next Tuesday, at which time we expect some money to be paid in on stock subscription." "Then you have not the money on hand?" "No, it has to be paid in first." "And how much do you expect to get in next Tuesday?" "Well, I don't know, but there are still six applications ahead of Mr. Jones." That was the last straw, etc., and the weary collector wended his way downstairs and pondered upon how that was going to pay for labor and coal, by having to add a few dollars to it yet for a loan, which might be questionable assets. But that does not alter the fact that a set of laboring men must be paid, and being unable to realize upon that which is actually due to him, he turns to the only source left to him, of borrowing from his banker, where he has perhaps already attained his safe limit, and the banker, after listening to his pleadings of his pressing need on the one side and meditating upon whether he will get his money back on the other, finally says, "Well, John, I don't know anything about brickmaking, but I guess I come —— near owning a brickyard."

Instances without number like the above might be cited, but no doubt each of you had similar experiences; it is, therefore, useless to weary you with more.

But you will say, "We have had this experience, and paid for it, and will not let it occur again." Oh no, not next year, for then you will still be riding the high horse of prosperity, and may be yet the year after. But it will not always be thus. These periodical times of depression will come along, and in order to make good collections you ought to begin by making good sales.

Custom has decreed that the manufacturer enter into a quasi partnership with the contractor, by being paid off in installments of 70 to 80 per cent. of his goods delivered, and upon the last payment is to await the total finishing and final settlement of the contractor and owner, a long time after the brickmaker's goods are done with. An unjust partnership, for the reason that it is of unequal proportions of merit and risk, and yet the brick manufacturers have helped to inaugurate this custom. There is no good reason why the manufacturer should be drawn in to assist the owner, to see that the contractor performs his part of the contract in which the manufacturer had no part in making, and, therefore, no good reason why the manufacturer should wait for his payment of goods after delivery.

But some will say, "You have the lien law." Yes, that is true, but the lien law is not an ideal of perfection, and then, all business done where law and courts have to be invoked is unprofitable, and after each experience you will say that you would have been better off without that sale.

You as an organization have it in your power to remedy those evils, by "getting together" and imbibing a little more of that modern religion according to the apostle, "Saint J. Pierpont Morgan," which seemingly leads us back to apostolic times by calling it "community of interests."

For after all is said and done, your whole business resolves itself into "How much money is there in it?" and after the trials and tribulations at the yard of refractory clay, imperfect machinery, unsatisfactory men, your thoughts instinctively turn to your office, and you wonder how this thing is going to turn out, whether there will be enough money coming into pay everything, and not least of all, whether you will have any yourself some day. You turn to your office man, who has tabulated the whole business as it transpires, and he tells you all about it, for, remember, he has worked with his brain harder than any other man with his muscle, for while the latter pursues one particular routine of work laid out for him, the office man has to keep track of a hundred and one details, and make himself into the combination of salesman, credit man, collector and buyer, and no matter whether you make brick by stiff mud or dry press process, whether you burn in up or down-draft kilns, the ultimate point in view is, "The money there is in it," and your office man can tell you all about it, and a good office man is a valuable acquisition to a brick manufactory. (Applause.)

F. A. Stephenson, Mason City, Iowa.

Prof. I. A. Williams, of Ames College, next read a paper on clay testing.

ON CERTAIN PHASES OF CLAY TESTING.

By I. A. Williams.

As reported to you at our Convention last winter, the Department of Mining and Engineering in the college at Ames is engaged in making a series of physical tests of Iowa clays. At that time these investigations were scarcely begun, but during the present year, through the co-operation of the clayworkers of the State in furnishing samples of their clay materials, we now have the work fairly under way.

It was the original intention to carry out, separately, series of tests dealing with the different physical properties of clays. That is, to apply those tests to Iowa clays which have been found useful in deriving an insight into the properties of clays elsewhere. Elaborate investigations of the character of Iowa's clays have never yet been made. It, therefore, becomes a matter of importance to obtain information along all these lines, and the methods employed must be largely similar to those which have been in use among earlier investigators for determining those characteristics of clay which make it of use to man. It is true that no two clays will show exactly the same in all their physical properties when subjected to the same tests, although they may be alike in appearance and essentially the same in chemical composition. But in order to ascertain their similarities and difference it is essential that the tests applied be uniform, so that any results derived will be intelligible and comparable. It is also true that some of the methods of testing clays which were in vogue a few years back are now partially or entirely discarded as failing longer to signify what they were at first designed to express. With more extended researches in this, as in other lines of inquiry, they become insufficient. An instance of this is found in the use of the tensile strength of dry clay as a measure of plasticity. This has been used to a considerable extent, and, while there are now strong grounds for knowing that the tensile strength of dry clay is not always a measure of this important property, still this method is quite widely used and perhaps for the one reason more than any other, that no better means has yet presented itself. Moreover, in order to be on a par with those of our neighboring States possessing similar classes of clays, that have carried on more or less extended experiments in gaining a knowledge of their clays, we must employ parallel methods of research.

In taking up this new line of work, therefore, it was thought desirable to subject our clays to all methods of treatment for determining their several properties that have been to any considerable extent employed in the past, whether these tests could be recommended most efficient at the present time or not. In this it is evident that all the information obtained might not be of the highest possible and immediate value in a practical way, but it forms a necessary basis for further investigation, and all adds to the sum of our knowledge of the properties of clays, the ultimate end of which is utility—to aid in bringing about the fullest development and utilization of our abundant clay resources.

The final aim and object of all investigations, then, be they physical or chemical, is to gain such a knowledge that clays may be surrounded with conditions, which if they meet these conditions, will be suitable for the manufacture of a certain class of ware. At present much can be told by observing the properties of raw clays, as to whether they will be available for making brick or tile, or other ware, but science here has far from reached that stage where it is possible to say with certainty this clay is suitable for manufacturing one class of ware and that clay has properties which adapt it to another line of manufacture. These things can now only be conclusively ascertained by putting the clay through the actual processes of manufacture. It must be molded, dried and burnt. When subjected to actual trial, a clay does not always act exactly as would be expected from its chemical and physical properties as we are now able to express them, though, by present means, it is usually possible to predict fairly accurately some of the principal changes which a clay will suffer. For instance, it is commonly possible to tell about what color clay will burn from its chemical analysis, and also something concerning its fusing point from its chemical and mechanical analysis. We are reaching towards the goal which it is the purpose of all these lines of investigation to ultimately attain, but before this, the avowed object of all efforts along these lines, is within grasp, there are a few difficult steps to be taken and obstacles to be surmounted. And yet, all the properties which clays possess, all the peculiarities which they exhibit, when subjected to the several conditions of manufacture are, and must be, due to peculiarities in their chemical and mechanical make-up. It is quite often easy to understand just why one clay shrinks more than another in drying, because of difference in size and shape of grain composing them. But even this will not always hold true. Occasionally clays that consist of the same elements in the same proportions behave very differently in use under the same conditions. This is found to be owing largely to the way in which these elements are combined in the clay, that is, the mineral constitution of the clay. It thus becomes a chemical problem to analyze the material mineralogically and then find out just what the mineral make-up has to do with the behavior of the clay. It remains, therefore, to perfect the present methods of analysis and of clay testing, or devise new ones, so it can be told by the knowledge derived from these means what a clay will endure, what changes it will suffer under heat, and, therefore, for what use best adapted.

It is thus seen that investigations of raw clay materials may be carried on along two principal lines, physical and chemical. Chemically, clays are found to be composed of certain elements. These elements are restricted to a certain few, but the proportions in which they occur in clays vary largely. For ordinary brick clays, chemical knowledge has its greatest utility in furnishing a means of interpreting the different phenomena which these clays undergo in manufacture.

Burning brings about a change in the physical condition of a clay through chemical processes. These changes may be entirely conducive to the structure desired in the finished product. Oftentimes, however, through some slight irregularity in some part of the operations of manufacture, or, even in the absence of any known irregularity, there occur changes which are detrimental and hard to account for, and, therefore, much more difficult to remedy. A kiln of ware may soften and lose shape when burnt at the usual heat for the clay employed. Clays are not constant in composition, although they come from the same bank and even the same stratum. Such a state of affairs might be brought about by a variation in composition, and would be emphatic recommendation for an occasional analysis of any clay in use. Again, a kiln of ware may be carried somewhat, perhaps only a few degrees, beyond its usual finishing temperature, or be held at or hurried through a given stage of the burn other than is commonly done. As a result, the ware is cracked or disfigured or partially fused or melted down. These accidents, if we may call them such, frequently happen, sometimes through neglect and at other times unavoidably. Though the variation in some part of the process may be ever so small, the fact that ware is spoiled establishes a danger line which must not be passed. A knowledge of the composition of the clay in use is here quite important as indicating to a considerable degree the limitations of a clay under fire. In other words, it shows in what direction danger is imminent and puts the operator on his guard to approach that line with trepidation.

Clays are always impure. That is, besides the alumina silicate base there are always present larger or smaller quantities of the fluxing elements—those substances that make the clay fusible? Common among these are lime, magnesia, iron and soda. In general, it may be said that the larger the percentage of impurities present, the lower the temperature required to melt the clay. Sometimes large amounts of one or more of the fluxes are present at the expense of some others, while occasionally there are several in nearly equal proportions, or some of the common ones may be absent entirely. Although one may replace another to some extent in affecting fusibility, still each possesses its own characteristic influence and mode of action. Some, as the alkalis, are slow in their action, and when the temperature is reached at which they become chemically active, a gradual softening or vitrification is brought about eventually leading on to easy fusion with rising temperature. On the other hand, lime, for instance, which, in the absence of the alkaline fluxes, does not begin action until a fairly elevated temperature is attained in the neighborhood of 2200 deg. F., is very violent when its work is once begun. It gives little warning in the way of a gradual softening of the ware, but the clay is changed, within a rise of a comparatively few degrees, from a firm body to a slagged and shapeless mass. The province of chemical investigation embraces the determination of the percentages of impurities in clays, as also of the essential ingredients. From this standpoint, chemical control is just as important in the clay industries as in any other industry using the raw products of nature. It furnishes a means of first, avoiding difficulties, and, second, of explaining one if it occurs.

C. J. HOLMAN, Sergeant Bluff, Iowa.

A most important application of chemical analysis is made in the compounding of body mixtures in the manufacture of many of the finer grades of clay wares. Pottery and tile bodies are nearly always mixtures of clays and other substances, and a strict knowledge of the exact composition of their ingredients is imperative. In the making of glazes and enamels compounding of the raw mixtures is coming to be done more and more by making use of the chemical formulae. These applications are, of course, somewhat out of line for the larger number of us, so I have merely stated these facts to show to what extent chemistry plays a part in the clayworking industries.

It is the primary object of this paper to present to you an outline of some of the work in clay testing that is being carried on at the Iowa State College. As previously stated, we have set out to investigate Iowa clays from all standpoints, to determine all possible concerning their several properties by methods at present in use.

Among the physical properties of clays which it is of interest and importance to determine are: Slaking, or the crumbling of clay when wet with water; fineness of grain and porosity; plasticity, that power that clays possess of taking any shape when wet, which form is retained when dry; shrinkage on drying and in burning; fusibility, the power of clays to withstand heat.

Clays as they come from the bank are often fairly dry if they have been protected from percolating waters or have dried out by exposure. They are seldom impregnated with sufficient water that they do not need some addition before reaching the molding machinery. The object in adding water is to bring the clay to a plastic condition. This it does by breaking down the more or less solid structure and reducing it to a pulpy mass. This crumbling, or slaking, as it is called, can best be noticed by treating a few small pieces of air-dried clay. When they are immersed in water, if the clay is not too thoroughly indurated, small fragments will begin to scale off and settle to the bottom of the containing vessel. These small pieces, which are usually of a flaky nature, continue to form and themselves to become gradually reduced in size until, if the clay be a coarse-grained one, the original structure of the clay is entirely destroyed and it is reduced to a pulverulent mass. The readiness with which clays respond to water treatment varies very much, from those that slake down in a few seconds to the harder shales which show practically no effect after a week's soaking unless they are first broken up by grinding. Experiments of this sort with shales from different formations in Iowa showed a range of variation of from 50 minutes to several weeks for the complete slaking of small samples with a maximum diameter of one inch.

The importance of this property is at once apparent. A clay which takes water eagerly and crumbles down will work up into the plastic, moldable condition much more readily than one which is more resistant to this slaking action. It is very important also in connection with the weathering of clays. Where clays or shales are exposed to the weather, either artificially or naturally, they gradually break down or weather. Water is very important in this process, as it exerts not only a slaking or crumbling action, but a chemical or solvent action as well.

The facility with which a clay absorbs water and the amount required to render it plastic depends to a considerable extent on the fineness or size of the individual grains of which the clay is composed. It is evident that if a clay is made up of multitudes of small mineral particles, it is impossible for them to be in contact with each other at all points even when the clay is in the most compact condition, unless they are of similar shape and size. That they are not is evidenced by the fact that dry clay absorbs water, which shows that it is porous. The microscope also reveals the shape and size of grains to be variable. Some are flat and rounded, others are elongated or sharp and angular in outline. The size of these grains ranges from sand which is visible to the unaided eye to such minute particles that the highest power of the miscroscope fails to delineate them. It is clear that such a mass of grains, varying as they do, could not settle together in such a way as to fill all the space which the total volume of the clay occupies. That is, when the particles are in contact at all possible points there are still left between them small spaces, and these spaces connect with others, thus forming a pore system throughout the clay mass. Whether these openings are small or large depends on the shape and size of the clay particles, whether they are all or nearly of one size or have a range of sizes. Thus the very smallest might fill in the spaces between the larger ones. It is difficult to say whether one clay is more porous than another if nothing is known as to the size and shape of the grains. One may absorb water greedily because of its coarse grain and large pore spaces, and we would call this a porous clay. Another, while it may not take up water with such avidity at first, may ultimately require just as much to saturate it as the former coarse-grained one. The actual amount of pore space in the two would be the same, and their differences with reference to water absorption would probably be due largely to form and size of the individual mineral particles of the clay.

The composition of clays with reference to the size of grain is determined by analyzing them mechanically. The common method of accomplishing this is by thoroughly agitating the clay in water and by allowing it to settle for different lengths of time, at the end of which all that still remains in suspension is tapped off. In this way it is separated into a series of sizes and the diameter of the individual particles is measured by the microscope. No such analysis of the shale clays has as yet been made, but analysis of the Missouri river loess clays, which respond to this method of analysis more readily, show the extremely finely divided condition in which some of the particles exist. The range in size, barring out concretions and all matter remaining on a 150-mesh sieve, which was never over 3 per cent., runs from a maximum of .004 inch to below .0001 of an inch in diameter.

Plasticity, or the power of clay when wet to take a shape and retain it, is perhaps the most important characteristic which clays possess. Just what the real cause of plasticity is is not known. Some have attributed this property to the size of grain, holding that the finer the grain of the clay the greater the plasticity. Some have assigned as its cause the plate or scale like form of the particles, and that the strength of the clay is due to the interlocking and cohesion of the grains. Others have said the more water required to bring the clays to a workable condition the greater the plasticity. Still others make use of the tensile strength of dry clays as an index of this property, regardless of the amount of moisture required.

This latter method has been used to some extent in determining the plasticity of Iowa clays. They were made up to a plastic condition with water and molded into brickettes, figure 8 in shape, in cement brickette molds. After there drying, the smallest cross section was accurately measured and they were broken in a cement testing machine. Their strength in pounds per square inch was calculated. For the shale clays, they were found to stand a pull of from 40 to 210 pounds per square inch. Among clays of this class those standing highest were in general the most plastic. In comparison with clays of other classes, however, as the loess clays, which when mixed with water were short and showed very poor plasticity, this relation was not found to exist. Some of these stood a tension as high as 310 pounds per square inch. Such a tensile strength compares excellently with natural cement, and many seven-day heat tests of Portland cement give values only a little higher. A duplicate set of the brickettes broken dry are to be burnt and broken in the same way, the object being to determine the relation of the strength of the dry clay to that of the burnt product. In other words, to ascertain if the strongest clay when dry tests the highest when burnt.

It is well known that clays on drying undergo a decrease in all their dimensions. This decrease is due to the settling together of the clay particles when the water is evaporated. The fact that the larger the amount of water necessary to render a clay plastic, the greater the shrinkage is found to be, suggests that the loss of the water is the prime cause in bringing about the diminution in volume. In speaking of the porosity of clays, we have seen that the volume of pore space may be measured by the amount of water that will be absorbed without changing the solid form of the body of clay. That is, the water required to fill the interstices among the grains when they are touching each other at all possible points. This is called pore water and does not alter the volume of the clay. If more water than is necessary to fill the pore system is added, it begins to get in between the points of contact of the clay granules, and, therefore, to force them apart. Soon each little particle is surrouned with a thin film of water, separating it slightly from each of its neighbors. When clay is dry, the cohesion or attraction of each clay particle for every other holds the mass intact. When the clay is wet and each particle is separated from every other by a film of moisture, this same force of attraction still exerts itself to hold the mass together, but because of the intervening space and the confining film of water through which it must act, it is weakened, and the particles are not held as firmly together as in the dry clay. Thus surrounded and lubricated, so to speak, with a capsule of water, each grain glides upon its neighbors when subjected to any outside pressure, and the clay may be deformed and molded into any shape without rupture. If now, more water is added than is required for plasticity, the film round each grain becomes thicker, the distance across which cohesive attraction must act is greater, so great, perhaps, that the particles no longer cling to each other, and the clay gradually melts down and loses its shape entirely. During successive additions of water the clay will increase in volume so long as it retains its shape. If the water is now allowed to evaporate from the clay, the conditions that were noted in wetting up will be repeated in reverse order. The clay will begin to shrink as soon as water commences to leave it, and will continue to do so until the film of water is removed from between all points of contact of the grains and they again settle as closely together as possible. At this stage shrinkage ceases, but there is still left in the clay all the water the pores can hold, which amounts to from 1 to 5 per cent., depending, of course, on the porosity. Generally speaking, the finer-grained clays shrink more because of the larger number of minute grains to be surrounded with water. But they are usually the more plastic and strong, and hence better able to withstand an excessive shrinkage without cracking. The most prevalent cause of cracked ware is the too rapid evaporation of the water from the surface of the ware, the moisture from the interior being unable to reach the outside as rapidly as it would be evaporated.

J. B. McHose, Boone, Iowa.

The lineal shrinkage of those of our shale clays that have been tested runs from 3 to 11½ per cent. Among the loess clays, it is somewhat less, from 2 to nearly 6 per cent. These results were derived from the brickettes used for tensile strength tests.

Fire shrinkage is another important factor in the utilization of clay. By this is meant the change in volume which a clay suffers during burning. This contraction begins to take place at red heat in all clays and continues to vitrification where the clay reaches its greatest density. The temperature of the vitrifying point, of course, varies with different clays. The shrinkage which begins at red heat is largely due to the loss of water which was chemically combined in the clay. This water varies in per cents. from 3 to 4 to nearly 14 in high grade clays. Any carbonaceous or organic substances in the clay commence to burn out at red heat and are a factor in the shrinkage of the clays which begins at this stage. The expulsion of these ingredients leaves the clay in a porous condition, but its contraction is not great until a sufficiently high temperature is attained that the clay commences to soften and to fill in those open spaces. If the heat is carried far enough the pores are eliminated and the clay shrinks to its limit. Fire shrinkage has not been determined on any of our clays, but in Missouri shale clays it is found to vary from 1 to 7 or 8 per cent. Loess clays vary from 2 to 10 per cent.

The practical bearing of the determination of both air and fire shrinkage comes in the application of any given clay to the manufacture of ware of given size. It is necessary to know how much a clay when molded with a certain percentage of water will change in volume through drying and burning. With this knowledge, dies and molds may be constructed which will form ware of such a size that when it comes from the kiln it will have the exact dimensions desired in the finished ware. In this regard, it would, of course, be necessary to experiment with the clay, ground to the fineness, mixed with the per cent. of water and burned to the temperature required in the actual manufacture of the ware.

When we speak of the fusibility of a clay we have in mind the temperature required to fuse, or melt it. Clay, being a mixture of minerals, does not act in changing from the solid to the liquid form, as do many elementary substances or simple mineral compounds. Lead, for example, on being heated to a certain temperature begins to melt and, little matter what the mass may be, in the space of a few seconds, perhaps, and with very little, if any, rise in temperature, becomes a thoroughly liquid substance. Similarly with ice. On being warmed to 32 degrees F. it changes to a liquid, water, and its temperature will not rise one degree until it is all converted to the liquid condition. It is not so with a clay. Clays are composed of minerals, each having different and fairly distinct melting points of their own. When a clay is subjected to a rising temperature the melting points of its several components are successively reached and at each of these points the minerals tend to fuse. Any substance fusing in contact with another which is more refractory will tend to attack the latter, forming a compound with it which is more fusible than the second substance alone. That is to say, the fusion point of each has been changed, the former raised, the latter lowered, by both merging into a compound whose melting point is intermediate between the two. As the temperature rises the fusion point of this composite substance is reached, and as it melts attacks still more resistant elements in the clay, lowering their melting points, and so on till ultimately the most refractory alumina and silica are brought into fusion at temperatures very much below their normal melting points. From this it may be drawn that the larger the proportions of these substances in a clay that melts easy, the lower the temperature at which the whole clay body will be brought into a state of fusion. Also the freer a clay is from the fluxing ingredients the higher will its melting point be. It would seem, therefore, that in order to determine the fusibility a chemical analysis only would be necessary, from which might be expressed the relation between those elements that melt readily and those that are difficultly fusible. This has been attempted, but so differently do these elements act in the presence of each other and in such various chemical combinations do they occur that no effort along this line can be said to have been entirely successful. Besides expressing a relation between the fluxing compounds and the infusible base of the clay as an index of fusibility, the fineness of grain and compactness or density are known to exert an influence. The finer grained a clay the more closely the little particles will be packed together when the clay is dry, and, therefore, the more points at which they will touch each other. The more intimate the contact between bodies the more readily will heat be transmitted from one to another, and consequently if one particle melts its influence upon those which it touches will be the greater. Any formula, therefore, which assumes to express fusibility from the composition of a clay must take into account, as well, the physical condition, as oftentimes quite as inportant as the other. The only means of determining without question the fusing point of clays is by actual temperature experiments.

The temperature at which clays fuse varies considerable. Impure clays melt at from 1000 degrees to 2000 degrees F. More resistant ones, those that are freer from impurities, stand as high as 2800 to 2900 degrees F., and the purest varieties do not melt at temperatures that are accurately measurable by any instrument yet devised. Temperature tests have been made with some of the Iowa shales used in the paving brick industry. They were found to soften at from 2200 degrees to 2500 degrees F., and to lose shape at 90 to 275 degrees higher.

There are not many clay wares that require burning to vitrification. Usually when a clay is burnt to such a condition and treated in the ordinary way, while it is compact and non-porous, it is often brittle, besides being a better conductor and will not serve the purpose of a less hard burnt product. Paving brick and sewer pipe are vitrified, but they are given a tenacity or toughness by very slow cooling, a process analogous to the annealing of glass, which fits them for their special purpose. In the making of any vitrified ware, they must be annealed to give them the requisite strength. With clays used for the manufacture of this class of wares it is very essential to know the temperature required to fuse them, and especially the range between incipient vitrification and fusion. Where different strata in the same bank are made use of, it is essential to know the heat resisting qualities of the clay from each in order that the proper proportions may be taken to give the product the required characteristics. With clays that are not used for making vitrified ware it is also useful to ascertain the fusion points and the changes that occur in the clay at higher heats, that control may be had of the burning process, and, in this way, knowing the limitations of the clay, turn out the best possible product from the raw materials made use of. (Applause.)

H. L. ZARTMAN, Sioux Rapids, Iowa.

Mr. Beasley suggested that it would be well to call the attention of the Convention of the State Association of County Supervisors, which was in session, to the superiority of clay products for the purpose of constructing highway culverts and bridges. He stated that pile bridges are used very extensively, and are at best only temporary affairs, while properly built structures of well-burned clay would be practically everlasting.

The supervisors are usually men who have not made a study of clay products and who have never had their advantages presented to them in the best way.

Mr. Bentley, of Tama, said that they put in two brick culverts ten feet in diameter free of charge to demonstrate the advantages of brick for the purpose.

Mr. Lewis, of Williamsburg, said that stone had been extensively used in his vicinity. Through his influence two six-foot culverts were put in with his guarantee to keep them in repair for a specified time. There has been no need of repairs, and the cost of the brickwork was less than the work could have been done with stone.

Mr. Beasley said that if brickmakers were given an opportunity to figure on such work they would easily show, durability considered, the superiority of brick for the purpose.

Mr. Stookey spoke of the increasing use of brick for highway bridges and culverts in Illinois and other places. The combination steel and concrete bridges were mentioned by him, and the thought expressed that probably combinations of steel beams for ties across brick arches would be just as practical and effective as combinations of steel and concrete, and much more satisfactorily constructed.

On motion a committee of three was appointed to ask a hearing of the Convention of Supervisors with a view to laying this matter before them for their consideration, with a view to increasing the use of clay products in the construction of highway bridges.

L. C. BEASLEY, Council Bluffs,
E. J. SMITH, North English,
D. W. STOOKEY, Cedar Rapids,
Committee.

THE FUTURE TILE BUSINESS.

By H. L. Zartman.

We find nothing so uncertain in this world as dealing with the future. We always expect much and often get little. So, in calculating the future of business, we must consider its past, and then we can arrive at some approximate conclusion.

The drain tile business was largely overdone in the years of 1894 to '96, and then it began a gradual increase up to the present, when we have just closed up one of the most successful years in the history of the drain tile or clay industry.

In comparing the statistics of the clayworking industries of the United States for the last six years, we find that the productions have increased from $64,865,385, in 1894, to $96,212,345, in 1900, while the drain tile productions decreased from $5,803,164, in 1894, to $3,026,213, in 1898, or from 8.99 per cent. to 4.23 per cent. of the total, and increased from $3,026,213, in 1898, to

$5,842,562, or 6.58 per cent. of total, in 1900.

We can see that the tile business is now better than it has ever been known in the history of the country. I consider that there is a cause for every effect. The principal cause for the decrease from 1894 to 1898 was the continued low prices for grain following the panic of 1893; another was the dry seasons of 1894-5-6. I heard a number of the farmers and other men blaming the tile business for causing the dry weather, and some even predicted that this country would become a desert if tiling was continued; and one even blamed the low prices to the tilemaker. And yet there was little wonder for the decrease in the tile business.

Let us look a little farther into the statistics. We find that the bottom of the tile production was reached in the year 1896. Since then the United States statistics show an increase of $3,129,144, and Iowa shows up well in the revival, its increase being $153,498 up to the year 1901.

There was $225,650 worth of drain tile manufactured in 1896, and nearly 35 per cent. of the firms reporting were idle. In 1897, $372,070, an increase of $140,420, and slightly more than 20 per cent.; in 1898, $343,265, a slight decrease in tile, but an increase in clay products, there being 349 plants in operation—nineteen above 1897—and, from being idle, there were undoubtedly a number of these plants that did not manufacture tile.

In 1899 we find $377,586, or $34,361 over the production of 1898. An estimate would place the clay product 25 per cent. above 1898. For 1900 we have $379,140, an increase of $1,560, with 381 plants reporting.

Thus you can see there has been a steady increase since 1896, and, when the reports for 1901 are made, I think you will see a marked advance, more than ever before, for the memory of the past year is still in our minds, and never has there been so successful a year as 1901.

We sold all the tile we could make, and put forth every effort to turn out all we could. We got the best prices that we have had since the decline of which I have spoken. And, as we look into the future, can any one deny that it seems to be a bright one for the tile manufacturer?

Land has increased in value from $35 and $60 an acre to $60 and $100 an acre, and this has made it plain to the farmers that it is unbusinesslike to have $60 to $75 land lying idle when it is the best land they have when drained, and I think the Iowa farmers are looking at tile drainage from a different standpoint than they did a few years ago, for it was then hard to make some of them believe that it paid. With prices for grain and stock at the very top notch, it makes it possible for them to buy, and they can, with prices where they now are, afford to pay more for their tile, and, if we do not get good prices for our tile now, we never will. When we get better prices we can afford to make better tile, put in better machinery, and make more profit than we have been making.

Let us, as an association, be more neighborly and work more in unison, and help each other, and keep up the prices, for I think we can still have better prices and not make too large a profit. And, when we meet together in 1903, we will bring in our report even better than that of 1901, the banner year for the tilemaker. (Applause.)

A member said that his brick show fine cracks in burning, while he thinks they have dried free from cracks, and he would like to know the cause. Several expressed the thought that the checks occur in drying, but are very small and cannot be seen with the eye, but can with the aid of a glass. The checks open and become visible during burning.

—Discussion of Lien Laws of Interest to Clayworkers.—

Mr. J. B. McHose said that the question of liens on buildings for material furnished is generally well known. As to drains laid of tile, the question seems to be open, as it has never gone to the Supreme Court. In the construction of public buildings the brickmaker cannot protect himself with a lien upon the building. His claim is against the contractor, and not against the building.

PROF. A. MARSTON, Ames, Iowa.

Mr. Holman thinks the present laws are of no use, because a contractor can easily defer payment until the time has expired during which a lien may be filed. Against the contractor this time is ninety days, and with a sub-contractor thirty days. The general opinion seemed to indicate that brickmakers can derive little benefit from the present lien laws.

The law should hold the owner of the building responsible for the payment of all bills for material. A lien upon a sidewalk for material is not good, even if the owner should do the work himself without the intervention of a contractor.

It has been decided that the property cannot be held for the cost of the walk, since it is laid outside the property line and is not on the property.

The following paper was then presented by Prof. Marston:

TESTS OF STRENGTH OF HOLLOW BUILDING BLOCKS.

By A. Marston.

At the present time interest is being attracted to the use of hollow blocks in place of solid brick in building construction. The advantages of these blocks are well known and some of them may be enumerated as follows:

The principal advantage, probably, is in the saving of weight. In shipping this is of great importance, especially where the material must be sent a long distance. In the walls themselves the saving of weight may often be of great importance, as it lessens the loads on the other parts of the building and on the foundations. Another advantage is in the air spaces in the walls made by the hollow spaces, which insure a dryer wall. As regards the convenience in rapidity of laying the writer's impression is that the hollow blocks have the advantage in this, but he would request the opinions of the members of the Association who have had experience along this line.

However, hollow blocks are comparatively new in the construction of brick masonry, and it often becomes difficult to secure their use. The principal objection which is raised to them is their lack of strength compared with solid brick. This objection is so strongly urged that it furnishes a valid excuse for the presentation of the few tests which are to be described below. In the summer of 1901 the Grinnell Opera House Company, of Grinnell, Ia., was considering the use of hollow bricks in the construction of their new opera house. Fearing that they were too weak for the purpose, they decided to have some tests made before deciding on their use. The specimens to be tested represented the product of the Mason City Brick & Tile Co., of Mason City, Ia., and were not selected by the company for the test. Instead, they were taken at random from a pile of hollow blocks already delivered in Grinnell for the construction of another building. Hence they may be supposed to represent the average material that is actually used in building.

Four blocks were tested. Tests were made on the 100,000 pounds Riehle testing machine, at the Iowa State College, at Ames, Ia. The sizes of the blocks were respectively 4x8x12, 4x4x12 and 4x5x12. Two blocks 4x8x12 were tested. The 4x5x12 is an unusual size. The above are the nominal dimensions in each case. Actual dimensions sometimes varied a quarter of an inch or a little more from those given. The results are indicated in the following table:

Size and Position of Block.	Total Load. Lbs.		Tons per sq. ft.	
	1st Crack.	Crushed.	1st Crack.	Crushed.
12x8x4—Flatwise....	13500	79500	10.9	64.0
12x8x4—Edgewise...	9000	39750	13.5	59.6
12x5x5—Flatwise....	10000	34000	11.5	39.1
12x4x4—Flatwise....	12000	38600	17.6	56.5

In all the above tests the specimens were imbedded in plaster of Paris at the top and bottom, which was allowed to set ninety minutes. An adjustable top bearing was used to enable the machine to adjust itself to lack of parallelism of the top and bottom.

For comparison it may be said that architects allow 5 to 10 tons per square foot pressure on brick masonry. This would give a large factor of safety, even in the case of walls built of hollow blocks. Of course, in the wall built of hollow blocks piers of solid brick are usually built to carry concentrated loads from beams and trusses. It would take a solid wall of common brick about 80 feet high to give a pressure of five tons per square foot from its own weight alone, and, of course, the wall of hollow blocks would have to be much higher than this before giving a weight of five tons per square foot, which our tests show would be only about one-tenth of the strength of the hollow blocks.

The writer has made a few other tests of hollow blocks, which gave still stronger results than in the above cases. It would therefore appear, in general, that hollow blocks should furnish a wall amply strong for the circumstances under which they are commonly used.

Mr. Holman asked whether there is any advantage in the hollow block over the hollow brick.

Prof. Marston said he had no preference for hollow blocks, but would consider that very satisfactory results could be obtained from the use of hollow brick.

E. J. Smith likes hollow brick. They are very easy to lay and give many small holes in the wall, which he considers more satisfactory than fewer larger ones. Because the blocks are large and build up faster more wall can be laid in a day than with brick. Blocks by their great length and fewer joints strengthen the longitudinal strength of the wall. Brick have a vertical joint every eight inches, while block have joints only every twelve inches.

Similarly, brick walls have joints every two and one-half inches in height, while a wall of blocks only for every thickness of the block, whatever that may be.

Mr. Smith recommends that two sizes of blocks be worked together into the same wall, 4x5 and 5x5 inches, respectively. The 4x5 blocks have two faces alike, and either may be chosen for the front, while those 5x5 may have either of their four faces chosen. The two larger faces of the 4x5 are like the 5x5. These blocks will lay a nine-inch wall and do not need headers. For the first course lay a course of 5x5 blocks outside and back up inside with a course of 4x5 blocks, with the five-inch faces on top and bottom. Thus the two courses are level on top. Lay the next course with 4x5 blocks outside and 5x5 inside. This gives a lap of one inch, and the wall of one block is directly over the other, and there is a continuous wall from top to bottom. Mr. Smith says he has built over twenty buildings of blocks and never had a complaint.

Mr. Joesten asked for data of tests of hollow brick. Prof. Marston said that he had no data at hand, but, of course, hollow brick would not be as strong as solid brick.

Mr. Smith said that architects had asked for tests of the strength of hollow block. He explained a test that he had made. After investigating this test, the architects said that the masons need not be afraid of walls made of the blocks until they get over six hundred feet high.

Prof. Marston offered to test Mr. Smith's blocks and Mr. Holman's brick if they would send him samples.

On motion, each member was requested to bring samples of his wares to the next Convention, and the Secretary was instructed to embody this request in his call for the meeting.

—Report of Committee on Resolutions.—

The following resolutions were reported by the committee and adopted by the Convention:

Whereas, the clay industries of Iowa now yield an annual output exceeding two and one-half millions of dollars, and

Whereas, the State is still obliged to import a much larger amount of clay goods which, with a proper development of Iowa's clay resources, would be unnecessary; and,

Whereas, the State College at Ames has already been of great assistance to the clay industries of the State, but is greatly hampered in this work by lack of funds; therefore, be it

Resolved, That we heartily indorse the askings of the college from the present Legislature, and we strongly urge the Legislature and the trustees of the college to provide funds to the amount, at least, of ten thousand dollars ($10,000) for the construction and equipment of a building for ceramic work, with ample annual support for carrying on investigation and instruction along this line; and

Resolved, That the Secretary be instructed to print these resolutions and send a copy to the Governor, each member of the Legislature, the president of the college and each trustee.

Resolved, That the thanks of this Association be extended to the Globe Machinery and Supply Co., of Des Moines, for its practical expressions of generous hospitality in the entertainment of the members.

L. E. BENTLEY,
C. J. HOLMAN,
C. E. SHAW,
Committee.

—Report of Treasurer.—

Amount of cash received from members	$85.00
Expenses	31.50
	$53.50
Balance from last year	79.00
Amount in treasury	$132.50

On motion $25 was tendered the Secretary as a token for his faithful services in the past.

—Election of Officers.—

W. W. Lewis, Williamsburg, president; L. C. Beasley, Council Bluffs, vice president; Robert Goodwin, Jr., Redfield, secretary; F. A. Stephenson, Mason City, treasurer.

Prof. Marston, of Ames, spoke and, in substance, said: "We met with you two years ago and liked you, so we came again. Through the ringing resolutions passed by your Association two years ago, together with the personal efforts of your members, the Iowa Agricultural College has received the building that is now nearing completion. We want you to see this building and the college, so we invite you to meet with us next year."

The invitation was enthusiastically and unanimously accepted. A rising vote of thanks was tendered Professors Marston and Beyers, and the Convention adjourned.

The meeting was one of the best attended, and, as a whole, was one of the most satisfactory and enjoyable ever held in Iowa. There is an increasing fellow feeling between the members that proves the truth of the old saying, "This fellow feeling makes us wondrous kind." The members are first drawn together by business sympathy, but through conversation this sympathy widens. One speaks of his home and family. Inquiries and comparisons develop an interest in each other's family. Comparisons of methods in business are forgotten, and in several instances we found clayworkers talking together about affairs of a different nature. Among these may be mentioned investments, other business occupations, church interests, Y. M. C. A. work and the home training of children.

The McHose family was represented by at least six members, belonging to three generations, and amply verified the truth of the old saying, "Like father, like son."

One of the encouraging signs of the times is the advancement being made in the grade of papers read and the higher quality of the discussions.

The clayworkers have evidently passed the primary stages in the study of the business. Clayworking has been raised to a position where art and science are called upon to lend their aid in the production of such wares as are demanded by the trade of to-day.

The broad, rich prairies of Iowa have tempted the ditching machine to enter, and testimony shows that it has come to stay. Some of the tilemakers own and operate steam ditching machines, and sell their tile in the ground by the rod.

Of course, the Convention would not have been complete without the optimistic inventor, who had originated the best plans and methods for new kilns, dryers, fuel savers, etc. Truly, Iowa soil that is well tiled will produce rich and abundant crops of almost anything.

LIST OF MEMBERS IOWA B. & T. ASS'N.

S. J. Harris............................Adel, Ia.
D. J. Spencer..........................Afton, Ia.
Prof. I. A. Williams...............Ames, Ia.
C. A. Tramp.......................Audubon, Ia.
J. B. McHose..........................Boone, Ia.
Dunlap Mfg. Co.............Bloomington, Ill.
Amer. Clayworking Machinery Co.,
F. H. Coble......................Bucyrus, O.
Chambers Bros., Philadelphia, by
G. A. Wild...................Cedar Falls, Ia.
Charles B. Ebert..... ....Chanute, Kan.
Davis Brown ....Chicago, Ill.
H. De Joannis...................Chicago, Ill.
G. H. Hartwell..................Chicago, Ill.
Walter Newcomb.................Corning, Ia.
L. C. Beasley..............Council Bluffs, Ia.
L. E. Chamberlain...........Creighton, Mo.
G. M. S. Peterson...........Cumberland. Ia.
C. W. Raymond Co...............Dayton, O.
G. M. Raymond....................Dayton, O.
H. E. Nelson.......................Dayton, Ia.
Leader Mfg. Co....................Decatur, Ill.
C. Greene..........................Dennison, Ia.
McKissick & Kiles...............De Soto. Ia.
Globe Machinery & Supply Co..........
.... Des Moines, Ia.
Iowa Pipe & Tile Co.........Des Moines, Ia.
Iowa Brick Mfg. Co..........Des Moines. Ia.
Robert Goodwin, Sr..........Des Moines, Ia.
Des Moines Mfr.'s Supply Co...........
...........................Des Moines. Ia.
Eagle Iron Works...........Des Moines, Ia.
Carl E. Bechtell..............Des Moines, Ia.
Dale Bros. ....Des Moines, Ia.
J. B. McGorrisk...............Des Moines, Ia.
Capital Pipe & Tile Co.......Des Moines, Ia.
J. C. Mardis...................Des Moines, Ia.
W. E. Hamilton, A. Iron Works........
...........................Des Moines. Ia.
J. L. Raney.......................Fairfield, Ia.
Straight Bros. ....Fondo, Ia.
Ft. Dodge Brick & Tile Co...Ft. Dodge, Ia.
J. A. Conger......................Goldfield, Ia.
Thos. Goodwin...........Grand Junction, Ia.
J. W. Dorley....................Greenfield, Ia.
S. McHose.......................Grinnell, Ia.
Arthur McHose...................Grinnell, Ia.
H. H. McHose....................Grinnell, Ia.
W. E. Berry.............Guthrie Center, Ia.
F. W. Heidenreich..............Hedrick, Ia.
T. A. Randall & Co.......Indianapolis, Ind.
C. E. Shaw....................Iowa Falls, Ia.
H. H. Hood...............Jewel Junction, Ia.
W. D. Simmons...................Jamaica, Ia.
A. C. Zortman....................Jamaica. Ia.
F. G. Snyder........................Jewell. Ia.
H. R. & A. C. Heath.............Lehigh, Ia.
George J. Bailey..................Lehigh, Ia.
Straight & Campbell.............Lehigh, Ia.
F. C. Mullinnix ....Leon, Ia.
C. H. Newby.....................Lynnville, Ia.
F. A. Stephenson.............Mason City, Ia.
L. W. Denison................Mason City, Ia.
C. E. McHose....................Maxwell, Ia.
David McAllister..................Newton, Ia.
S. M. McHose......................Nevada, Ia.
F. E. Marlin................New Sharon. Ia.
F. A. Younkin................New Sharon, Ia.
E. J. Smith................North English, Ia.
Geo. Siegel........................Osceola, Ia.
D. T. Morey.......................Ottumwa. Ia.
Robt. Goodwin, Jr...............Redfield. Ia.
H. L. Swift.....................Riverside, Ia.
Madden & Co...................Rushville. Ind.
C. J. Holman..............Sergeant Bluff, Ia.
M. Joeston.....................Sioux City, Ia.
H. F. Zartman.............Sioux Rapids, Ia.
L. E. Bentley.........................Tama, Ia.
Mr. Sutton...................Table Rock, Neb.
H. Brewer & Co., by Chas. Burridge
....Tecumseh, Mich.
Omer Smith, of H. Brewer & Co........
.........................Tecumseh, Mich.
L. E. Chamberlain..................Tiffin, Ia.
M. C. Bridenstine....................Tiffin, Ia.
George H. Kettell.................Tipton, Ia.
Platt Press Brick Co.........Van Meter, Ia.
F. E. Swift.................Washington, Ia.
W. W. Lewis...............Williamsburg, Ia.

STUDENTS STUDY DRAIANAGE.

FROM a very creditable paper on drainage prepared by J. E. Armstrong, a student in farm mechanics in the University of Illinois, we make the following interesting selections:

ALL LANDS NEED DRAINAGE.

All kinds of land need drainage. Level land needs it because the water cannot run off over the surface, and rolling land needs it because the water can run off over the surface. Soils in which the water level comes within 12 or 15 inches of the surface should be tiled. This is particularly the case with flat land. Hilly land should be tiled to prevent the soil from washing down into the low places. Soil in which there is a hard substratum should be tiled, since experiments have proved that the hard layer is broken up and pulverized after

WATER WANTED.

It is estimated that a crop of wheat producing twenty-five bushels to the acre would take in and exhale about five hundred tons of water in its processes of growth, and a crop of corn producing sixty bushels to the acre would take in and exhale about nine hundred and sixty tons of rainfall. Just think what an immense amount of water is required for a growing crop, and it must be supplied from the soil.

A City Gang on a Country Yard.

TILINO RETAINS MOISTURE.

Now, if something can be done to make the soil retain more of its moisture a benefit will result to the growing crop. The moisture in the soil is in the form of films around the soil particles. Then it is quite evident that the greater number of particles there are, the more moisture there will be in the soil. Here is where tiling aids. By draining off the surplus water the soil is kept from running together, thereby keeping it in small, loose particles, which are capable of holding much more water than the same amount of soil run together in a hard mass. For this reason land that is at all wet in the spring should be drained to avoid the evil effects of drought.

WORK OF BACTERIA.

An astonishing amount of water is taken up by the roots, but the plant needs other food besides water. The soil contains much organic matter that must be changed to inorganic before it can be used as food for the plant. This process is carried on by bacteria. But the bacteria cannot liberate plant food unless the air is present, and the air cannot be present if the soil is filled with water. So, unless the surplus water is taken off in some way or other, the air cannot circulate through the soil, the bacteria cannot liberate plant food and the plant must suffer from partial starvation. Tiling is the only remedy.

LOWERS WATER LEVEL.

After tiling, the water level is lowered, and this allows the air to circulate deeper into the earth, thus increasing the depth of the soil.

If land is filled with water in the spring and the water cannot run off, a large amount will be evaporated. This is the only way for the soil to become dry enough to farm. Evaporation is a cooling process, as every one knows who ever put his hand in warm water and let the water evaporate. It is the evaporation or perspiration that in summer keeps the temperature of our bodies down to a point that is fairly comfortable.

WASTE OF HEAT.

Now, if the soil must be dried out by evaporation, it is not difficult to see that a great amount of heat from the sun is practically wasted in evaporating this surplus water, and after that is done it must warm the soil so that the seeds can germinate. Suppose that one inch of water was evaporated from one acre during the early spring. That would weigh about 226,500 pounds, or more than 113 tons. It has been estimated that the energy of heat required to change that amount of water into vapor would be represented by more than thirteen tons of coal. In well-drained land all this heat would be used in warming the soil, and thus would put it in condition for planting much earlier. This lengthens the season and gives more time for the crops to mature.

Other reasons might be given in favor of thorough drainage, but enough has been said already to show of how much importance it is to the farmer who tries to get the maximum yield from his crops.—Drainage Journal.

THE NEW YORK MARKET.

WHAT OF THE SEASON of 1902 and the prospects for the brick manufacturer at the present time? The seventh son of the seventh generation, and those who are endowed with all the foresight which is given with that distinction, may perhaps be able to peer into the future, and thus enable them to conduct their business so that the worry which attends their line of trade would be to a large extent removed.

Being only the sons of brickmakers in many cases, we will have to take the chances as to whether the coming season will be a successful one in the money making line. The outlook for the first three months, as compared with the same length of time a year ago, does not compare very favorably for a large demand. From March 21st to the 28th this year 39 permits were issued for new buildings, to cost $1,413,425; for the same week a year ago, 69 permits for buildings, to cost $2,360,350, nearly one-half less in numbers and cost. The comparison of the numbers for the past three months is far more reassuring for an active year. Last year 684 permits, to cost $20,406,975; this year 396, to cost $19,832,879. A difference in cost of only $574,096, on 288 buildings.

The class of buildings to be erected this year are far more expensive than last year. But this will not run to brick, but to more expensive material in the walls, as well as finish. The injury to some results in a benefit to others, as the fire at Paterson, N. J., last February, will be a great help to the local manufacturer, not to the extent which one would suppose.

The railroads, which run about everywhere, reach brickyards by switches, but not so in Hackensack. There are two yards here which have switches from the road to the river. The one landing-place where the boat can go alongside the dock and discharge cargo directly into the cars, is about a mile to draw them. There is a toll gate to pass and that costs freight to have the vessels carry the freight. At the other yard the switch is just across the river from the yard, and they freight the brick on small scows, the largest carrying 30,000, the others about 20,000, and costing from 30 to 35 cents per thousand freight, delivered on the cars. The other yards have to deliver brick at the railroad by wagon, and have about a mile to draw them. There is a toll gate to pass and that costs 12 cents for a round trip per team. In delivering brick this distance, 1,250 brick are put on each load, so the toll amounts to about 8 cents per thousand.

There is one yard in Haverstraw which can ship by rail to Paterson, and they have contracted for their entire output, which is about 15,000,000, and probably more each season will be taken by builders in Paterson. Present outlook does not seem to be as bright as was expected last fall. There is always something to stand in the way of the tidewater manufacturer to keep him from becoming a millionaire.

—The Sound of the Pump—

Is heard during the day. There is no night gang to keep the pump going steady for twenty-four hours, as there is no great hurry to get started. The weather is far from gilt-edged. It does not take many days for the mud to dry up in the hole, so the men can get in to repair the roads. Last season on one yard they took out all the clay which was in the hole and abandoned it. It cost as much, if not more, than any clay hole in the country to free it from water. For sixty years there have been two yards using the clay. For about half that time ten or more million each year have been made, and for the balance of the time about nine million. It has taken one month, night and day, steady pumping to free the hole of surface water and leakage from springs. Of course, when it reached a certain height the pressure held the bottom leak down. During the time that the yard was running, when the engineer would come down in the morning at 3 o'clock to get up steam, he would start the pump and it would take until 9 o'clock to get out the water which had accumulated during the night. It was not because the pump was so small that it took so long. There were two pumps, one ten-inch and the other six, and some years they used six.

—The Evolution of the Clay Bank.—

The stripping of the bank and the pumping of the water out of the clay hole has cost the manufacturer some cents per thousand more each year. Thirty years ago along the Hudson (that is, in Haverstraw) the tin pump, with the man to do the pumping, was in general use. They would sink down two or three feet and when it rained there would be water in the hole. The man and pump would soon get it out. As the hole became larger the pit shovelers or bank men would leave about the width of a shovel of clay as a partition and then start another hole, and the one which was abandoned would be filled with screenings from the sand bank.

With the increased output and the top clay being all removed, they had to go deeper, and a rig with a horse to furnish the power was used. It was too slow a way of getting out the water, and a steam pump was installed, and from that time they have increased in size. There was no judgment used by the men in the bank. They would not be careful when they were down ten or more feet, but because they had a good bench of clay, it was all right, and they would give no thought of future trouble. The first intimation of trouble would be one of the pit shovelers would cut through the dividing wall, and they would have to hustle to get the horse and cart out, and then they would have to open another hole to get clay. The engineer would swear, as it was his job after the pit was out to do the pumping, and it would take him each day until 2 and 3 o'clock to get the water out, and on rainy days, when the yard would not run, he would put in a solid half day at the job, with no extra pay.

The boss would complain of the cost of getting the water out, but did not set a limit in the bank as to the depth for them to go. He would probably take a look once or twice a week at the bank, and see what a nice bench of clay there was and not say a word. The men who filled the pit were only interested so far as to get the pit filled as soon as they could.

—The "Stitch in Time."—

When the time comes in the spring to get things ready to make brick there is always a certain amount of work to be done that could and should have been attended to at the end of the brickmaking season. On an open yard there are battens for both sides of the hack. As the green brick are wheeled in, the battens and saddles are left on the yard till all the hacks are stripped, then they are carried under the shed and piled up, except enough to batten up the yard side of the shed. The river side on some yards is left open, or wood is drawn in and piled along the eaves. On some yards both sides of the shed is battened up. Very often, when the battens are put up, they are not nailed as they should be, or a hack plant put between the posts to give added support to the batten. At the first good northwester or southeaster one-quarter or half of them will be blown down. When they are nailed to the chestnut post, the boards on which the nails are will be split or so damaged that they will require another to replace them. In the spring when they take them down, a man gets a shovel, goes under the shed and pries them off. As they are too high, and nailed temporarily, a number of them need repair simply from the way in which they are handled. The rest of the battens must be taken from the pile and looked over and a new board put in or a piece nailed on, or one or more legs put on. Some of the yards have this work done during the winter. It would seem that any one who has work of this kind done in the winter, when it can be done just as well when the weather is warmer, has money to throw away. In the first place, a kiln shed is the coldest place to be found. If a man is overhauling the battens he has to get them down off the pile along the eaves, and then lug them over to the kiln ground and place them on the benches; then off he goes to the fire, which he keeps going, to warm his hands. He is paid a dollar and a quarter a day for repairing, and how many do you suppose he will do in a day? The time to do this work is when the battens are laying on the yard. A man with a hammer, saw and nails can turn the battens over, look at both sides and he has the level yard for them to lay on. The weather is not so cold that he has to put in more time trying to keep warm than it takes to do the work. Then, too, the battens need only to be carried off the yard and piled up, all ready to be used, and the saddles the same.

Each year the machines need repairs, some years more than others. In the winter, when snow is on the ground, men come from the shops to do this work. The little fire is started alongside the machine, for, as iron is a cold thing to handle, the man or men from the shop (getting three and four dollars a day) must warm their fingers. During the eight or ten hours which they are working an hour or two at least is lost in trying to get their hands in condition to work. Is there any money in that? Some seem to think so. During the past winter, some of the coldest days, there were two men on one of the yards overhauling the machinery. Good, satisfactory work of that sort cannot be done when one is cold.

—Wasteful Ways at the Kiln Shed.—

When the last kiln is out, monthly wages stop, as a rule. When a barge is loaded, 20 cents per thousand is paid to the men for loading. For a boat which holds 150,000 it costs just fifty dollars, to be divided pro rata among the men. There is always more or less waste, as popped brick or arch, some swelled and some pale. All are left on the kiln ground, and from the time the yard stopped molding until the next spring there is quite a pile of rubbish laying under the shed. In the spring the boss sets a man to remove it, and it takes some days. When they load a boat it would take ten men but a few minutes to wheel it off and dump it outside the shed. When you pass through sheds where this is done, everything is in good order; but a majority of the yards are slip-shod, and on some of them the accumulation lays from one year to the next. So in many things a saving could be made, but it does not seem to be of a kind which appeals to the boss as being large enough to need looking after. It is the cutting of the corners, or making these small savings, which leaves money in the pocket of the brickmaker.

—The New York Market—

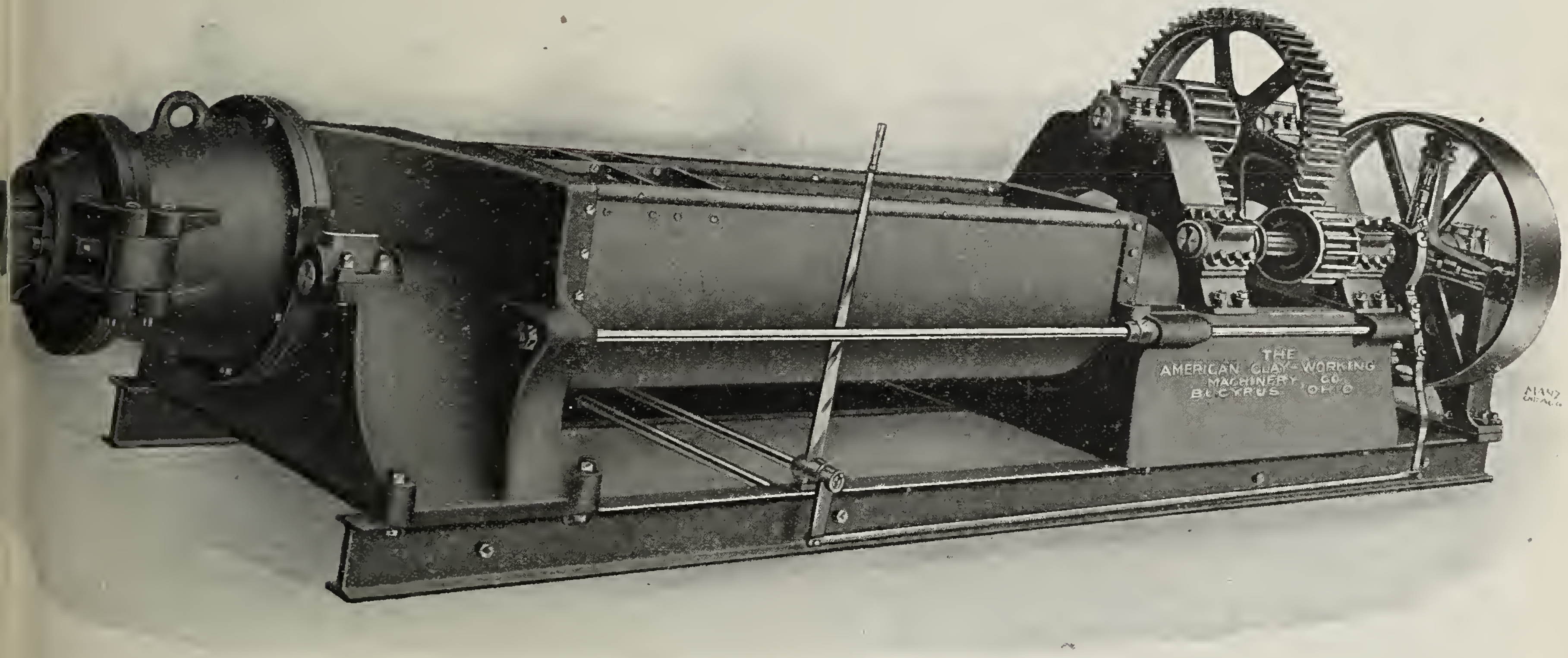
Moves along with about the usual spring demand. The weather has not been of a kind to help along the call for brick, but they can get all they want at any time. As usual, there were some in a hurry to ship as soon as navigation opened, in the hope that they would be able to get ahead, not taking into consideration that the sustaining arm of the association was doing business at the old stand. If the dealer was inclined to buy his cargo, well and good, or his boat might be one that would lay in the market for forty-two days, as some did last season. The rates are, as last reported, $5.25 and $6.25, simply because the dealers cannot force them down.

Hackensack. A. N. OLDTIMER.

BIFURCATED MACHINE.

THE CLAYWORKER who visits the shops of the American Clayworking Machinery Co. becomes convinced that it is not only the largest concern in the world manufacturing clayworking machinery, but that it is the most progressive and employs the latest and most modern shop practices and methods with the most modern equipment. They employ the best talent obtainable and systematize their line so that every branch and department receives special care and attention.

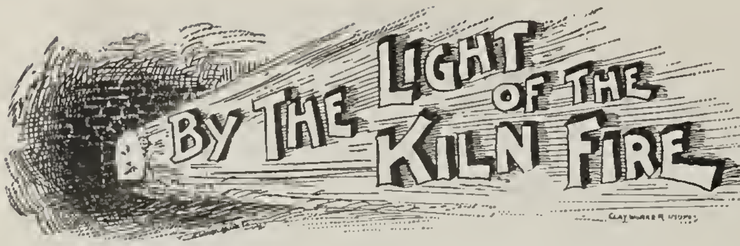
Ever ready to adopt possible improvements or bring out new machinery, they are deserving of the large and increasing business they receive. The accompanying cut shows one of their latest products in new machinery, and there is no doubt the trade will appreciate their new combined machine, which has been designated as No. 23. It will appeal to the observing clayworker not alone on account of its symmetrical design, but for its strength, convenience and capability. It is of the bifurcated type, but differs from all other combination machines in that the mixing cylinder and expressing cylinder are side by side, instead of one being above the other. By this construction the clay is forced by pressure from the mixing cylinder into the expressing cylinder. In all other styles of combined machines the clay falls by gravity from the mixing cylinder through a throat to the expressing cylinder. This new method is a vast improvement, as it prevents the choking of the clay in the opening between the two cylinders and makes it possible to work either stiff or soft clay without its barreling up on the wipers, and a greater variety of clays can be worked than on any other combined machine built.



The American Clay-Working Machinery Co.'s New Bifurcated Brick Machine.

By placing the cylinders side by side four feet of height is saved, which permits of a lower building and makes a saving in cost in this and in the shorter elevators required. It also places the operator on the same floor as the machine and cutter, doing away with the elevated platform which has heretofore been necessary, which is an important point.

All parts have been designed with a high factor of safety and particular attention has been paid to accessibility of all parts. The machine is mounted on substantial I beams and is built in three sizes, which range in capacity from 35,000 to 100,000 brick in ten hours. The gearing is particularly strong and well placed. The bearings are long and all of them are out of the mud. The end thrust is amply provided for and the oiling devices are perfect. This machine is equipped with friction clutch pulley and weighs as shown twenty-five thousand pounds. A full description will be furnished on application.


BY THE LIGHT OF THE KILN FIRE

APPEARANCES ARE OFTTIMES DECEPTIVE.

THE OLD MAN LIMPED in and balanced himself on a rickety wheelbarrow, just near enough to bother the burner whenever the outside arch needed tending. He filled his pipe in silence, tamped it down hard with his finger, and sat with match in hand, lost in profound thought, for fully a minute. Then, with a sigh that told of a mind released from the thrall, he struck the match and lit his pipe. He sighed again, and then his thoughts found vent between the long, contemplative jets of smoke.

"I see they perpose to shut the door ag'in furriners ag'in. And mebbe they'll do it, now thet Congress has come to after the Pres'dent's message and Adm'ral Miles 'nd Gin'ral Dewey's had their say. Course they ought to shut the door ag'in disreputable furrin immigrants. Ought ter done it long ago. If I was high mogul I'd slam the door kerslap in the face of every ugly mug 'nd plug-ugly that come here lookin' fer a chance to peddle green goods 'nd bunco 'nd anarchy, 'nd I'd do it so short 'nd cuttin' that there'd be considibul flat faces in the home-sweet-home-returning criminals. Yes, sirree, I would so. But, land sakes! I'm pestered ter death to know how I could tell all these Arnachists and criminals offhand myself, 'nd plagued if I can tell or calkerlate how our civil-service-party-patronage-job-office immigration clerks is goin' to git right down pat on furrin' pedigrees and phisognimies right away, plagued if I hain't. And when I see the danger that is comin' on this country from that lack of knowledge on our part it actilly skeers me; not only that, but when I see how careless we were in our Nation's younger days, when we went down to the beach regularly every day and drew the furriners to our bosom, regardless, and how every night we laid ourselves down to calm repose with our national front door swingin' wide open, and every blessed back door and window off the hooks, I'm blessed if I don't shiver with the thought of the wonder we wasn't all overrun and blown up with anarchy and ignorance in the feeble days of our simple national childhood. This is a strange and mysterious world, and the bulwarks of our glorious institutions seem to grow weaker the stronger we grow in strength, in numbers, in wealth, in civilization, in education and refinement.

"Way back in the forties we wasn't a wart on a pumpkin compared to what we are to-day as a Nation, and there was Socialists in Germany, Fenians in Ireland, Anarchists in France and Nihilists in Russia, not to mention thieves in England, deathhounds in Italy, thugs in India, and a few free-born outlaws and savages in our Western midst, as it were. But our glorious country wasn't a bit in danger then, and I suppose it's because folks born about my time in this country had more character, more sand, more gump, more individuality, or whatever you may call it, than you folks have now.

"Stands to reason there hain't no other cause for this danger. Generations is followin' Scripter—growin' wiser and weaker—and when a few more of us old bulwarks gits buried under the daisies ye might as well open up yer doors and let Europe come in, fer at the rate yer goin' on growin' weaker and wiser there won't be enough solid fight in the whole gang to bait an Anarchist bomb with. But for the present I'm ag'in lettin' in the plug-uglies of furrin lands. That is, onless they come in as contraband of war, so to speak, such as Phillipinos, Cubans and the like. I don't object to furrin Anarchists so long as they don't want to come in. If we go and bring them in, even if we have to blow 'em up or stick 'em, I'll take 'em to my bosom as friend and brother, pervided they wear my make of white shirt and carry my perticklar brand of spittin' terbacker.

"Way back in '48 and '49 we had a turrible mess of Irish drove over here. Some said they come cause they was drunk and disorderly and lazy over home, and wouldn't work and wouldn't pay their rent. And some said as how they were robbed by landlords and government suckers, and come here to git a fair show. Anyway, they come in shoals, and you can just bet we got scart. We didn't like 'em, not a bit. Why, they was the most ornery lookin', ugly and ignorant crowd ever came, and nat'rally our women folks was nigh onto epilepsy whenever the name Irishman was mentioned.

"When they come to our town—a drove of them—every door was barred and the dogs was untied, while every man got down his dad's old Springfield for emergency sake.

"Two men and a woman came to our house. They was a miserable lookin' crowd. I wasn't to be skeered, so I went to the door. One of the men, a big, broad-shouldered savage, spoke up and says in flat Irish brogue: 'Is this a Christian counthry? We landed, my sister and her husband there, a hundhred mile back, from a sthranded ship. We were wet to the skin. We had no money. We had no friends. We tried to get shelter. In all of this hundred mile back but three people took us in, two German families and one naygur. We huddled together in the rain, last night, in the shelter of a barn, and nobody dare blame us whin I tell yez we all cried like childher. We come of honest people, and we heard that this was a land of liberty. We didn't come here to beg, nor to call on the parish for help. We came to work, to earn and to live. Sir, we want a chance. This poor girl will die if she does not git rest and nourishment at once. If you are a Christian or anything but a black heathen you'll open your heart.'

"Well, they was a scabby lookin' lot. They looked to me as if murder was their daily occupation and robbery their nightly recreation. But I took 'em in. I'd swear they was Anarchists, but I set 'em to work in the brickyard, and the girl, after a day or two, took hold of the housework. Work? Well, I guess! Good? Well! See that big schoolhouse down near city square? That was the gift of one Irishman to the town. He was the spokesman that day they come to me. See that big woolen mill down to Pentucket? T'other Irishman's at the head of that. Yes! We must shut the door on plug-uglies! But, good heavens! Who we goin' ter get to be jedge? Only the good God Almighty hisself, I reckon. And if He'll do the job, and I guess He will, this country is safe for awhile."

THE DREAMER.

A GREAT RAILWAY.

The Chicago, Milwaukee & St. Paul Ry. is running Electric Lighted Trains of Compartment Cars, Standard Sleeping Cars, Buffet Library Smoking Cars, Dining Cars and Coaches, between Chicago, Milwaukee, St. Paul and Minneapolis.

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A TALK ON MACHINES.

THE MANUFACTURER OF SOFT MUD brick, after several seasons' experience with a machine of an inferior grade (it was one of that kind possessing that characteristic trait, always found in that variety, of breaking down at almost regular intervals), has become quite discouraged, and asks for some light on a truly good, serviceable machine, the kind that all progressive and energetic manufacturers should possess. Now it is an acknowledged fact that progressive manufacturers are invariably successful ones, and it is noticeable that they are ever keenly alert for modern and improved devices that will promote their business interests, and the implement that plays the most important part on the brick manufacturing stage is the brick machine. Too much attention and careful inspection cannot be given in selecting your machines. It can truthfully be said that many manufacturers are very negligent in this respect, and it is with such that disappointing machines find an owner. Season after season they will not fail to force the owner to voice a deep sigh when he contemplates the loss of brick and of time, and a still deeper sigh when he settles a bill that contains a long list for repairs.

The manufacturer who has tired of bearing this self-imposed burden and wishes to enjoy the success his progressive brother manufacturers enjoy must, first of all, provide himself with reliable machines, for it is in the machines he can measure his success; they, more than anything else, dictate how the loss and gain account shall stand when the season closes. He must regard time as being too valuable to be wasted. The time consumed, even though it be in shreds and patches, in repairing the inferior machine, constitutes time lost, brick lost, money lost. With a good machine it is the reverse—time used, brick made and money accumulated. Such machine is ready with the morning's dawn to begin its daily task, and to perform it uninterruptedly and faithfully until the day's close; not only to-day, but to-morrow, and each day in the week, and so continue throughout the season.

There are many machines made that possess such sterling qualities, though of different styles and patterns. To make a choice or to designate the superior one would, indeed, be difficult. The manufacturers of each have exerted every endeavor to turn out the perfect implement and the acknowledged leader, yet year after year they will move forward, shoulder to shoulder, in advancement and improvement, and come to the end so nearly abreast that it would require a nice application of the merit gauge to give them a difference of superiority. One might ask, which one of these machines shall I purchase? The answer is, look to its construction, which must prove beyond doubt that it cannot fail to be faithful in its work; that it will not break unless under extraordinary circumstances.

The square iron machine is, perhaps, preferable in several ways. It is much stronger than the wooden tub machine; it will not bulge, warp, spread, swell or rot; is more easily kept clean, and, finally, with the aid of a little oil during the season it is not in use, the elements, no matter how severe, have little or no effect upon it.

Easy and immediate access to the grinders and clod cutters should be a feature, as it enables, without delay, the prompt removal of a stone or other obstacles which, unobserved, has found its way into the tub. As to grinders, the machine should have double grinding shafts, moving in opposite directions. To the manufacturer who does not possess a pug mill are the double grinders of particular importance, as all tough and lumpy portions of clay that escaped being tempered in the pit are effectually reduced. Another advantage the double grinder has is the fact that the clay cannot swim in the tub, as it invariably does in the single grinder machine.

The press box should be so arranged that the wipers in their revolutions will fill the end compartments of the mold as full, true and even as those in the center. If you would have every brick in the mold to possess full, square corners and sharp edges, it is necessary that the wipers do not slight the end compartments of the mold.

—The Press.—

To the press falls the work of giving the brick their market value. After the wipers have thoroughly performed their duty, just so truly and accurately must the press work. It is absolutely necessary that the press distribute an equal and even amount of energy on each compartment of the mold. Then and not till then will the brick, in drying, shrink all alike in shape and size. Should all the energy of the press be directed to the middle compartments of the mold, it necessarily follows that the brick in the end compartments will be found wanting in corners and edges, and, in drying, shrivel away to a very unsatisfactory size.

There are many brick manufacturers who, from a small and modest beginning, were capable of rising to eminence, making a deep impression, not only upon their brother manufacturers, but upon the community as well. Their success is not a mystery; they simply read their fortunes in their machines. They made good, sound, salable brick with striking regularity, losing no time or brick, suffering no breakdowns, but going along in the steady march of profitable manufacture, and this was possible because of the good machines they had in commission.

DOROTHY DALE.

AN IMMENSE CATALOGUE.

Undoubtedly the largest clay machinery catalogue published is that of the American Clay-Working Machinery Co., Bucyrus, O. It is not alone immense in size, but is in many ways a model trade publication. The copy before us is bound in heavy paper, with an illuminated title page that is remarkable both in design and color effect. The accompanying illustration gives but a faint idea of the design, the chief features of which are two auburn-haired winged sylphs. Between them they are supporting the globe in an ethereal background of blue. Above the globe is a laurel wreath, encircling a white keystone, upon which is emblazoned their trade legend, "Built right, run right." Upon the globe, embossed in gold letters, are the words, "The world's best clayworking machinery." All this artistically arranged for color effect—we count seven colors in the composition—makes a picture that cannot fail to attract the eye. The book numbers two hundred and sixty pages and weighs twenty-five ounces, two ounces more than the January Clay-Worker, which will convey to our readers an idea of its bulk. In it is illustrated almost every modern device for making brick, tile, pottery, etc. Also a series of beautifully drawn hollow block designs, ornamental brick, etc., all of which can be produced by machinery of their make. Notwithstanding the book represents an investment of several thousand dollars, we presume a copy will be forwarded to any clayworker who will write the American Clay-Working Machinery Co. for it.

CUBA NEW AND OLD.

Brick Pavements and Brick Structures of Interest—Color Effect in Architecture—How the Natives Make Brick.

COMPARATIVELY speaking, Cuba is old. Columbus founded the city of Santiago, so it is said, on his second voyage from the Old World, and more sightly spots for a city than this are rare on this round globe of ours. Built on the side of a hill, surrounded by mountains, lying at the head of an almost land-locked harbor, six miles from the ocean, it presents to the newcomer, and always to the lover of the beautiful, a wondrous charm in the quaint architecture and barbaric color effects, its old, red, moss-patched Spanish tiled roofs, its blue, or red, or pink, or green walls, with a dash of white here and there, all set against the varied greens of the hills, always green and of all shades, all together mark out a picture of rare beauty.

On landing, after crossing the Telfordised Alameda, one steps on a modern asphalt pavement, to all appearances put down to stay, and, after that, to a red brick pavement, built of brick made either in Catskill, N. Y., or at Perkiomen Junction, Pa. This walking on the asphalt or brick street is spoken of advisedly, for it is the "proper caper" to use the middle of the street instead of the sidewalk, since the latter varies in the main from nothing to four feet in width. Only occasionally it spreads out to four feet, and at one of these places, adjoining the market, this sidewalk is paved with pyro-granite brick from South River, N. J., laid on the flat. There is but little brick pavement, but quite a considerable asphalt, much to the discontent of the natives and old residenters, who bitterly complain of the extreme heat radiation from asphalt, and with much justice. While the temperature here never rises to an extreme point, 91 degrees F. in the shade being maximum, and this is almost always tempered by refreshing breezes, on the asphalted streets there seems to be a suffocating, deadly heat arising, not acceptable in any marked degree anywhere in the tropics. Such conditions do not exist in the crude, rough, old stone, Spanish paved streets nor in the natural dirt roads. Then, too, the moist atmosphere induces a certain slippery surfacing to the asphalt, much to the annoyance of drivers, whose horses slip, slide and fall; hence asphalt is simply hated. It is clean and is kept clean, but the popular verdict is that it is not the pavement for this country. Brick have not had a sufficiently extensive test yet to prove superiority, but if clays or shales should be found on the island adapted to the manufacture of paving brick, it certainly will have its trial, and a fair trial, too. This is so well understood that parties well posted on the requirements, and with capital and backing abundant for any possible contingency, now have an experimental plant under installation, and are working in a most thorough way at different salient points on the island to prove possibilities.

As a native industry, brickmaking—clayworking, rather—is almost, if not quite, alone. To be sure, there is agriculture, sugar cane and tobacco raising, for Cuba is known to the world mainly by these two products, with revolutions incidentally, then its timber and mines, but for manufacturing, pure and simple, brick stands alone, and has for three hundred years or more. The Cathedral here is built of home-made brick, much better in texture and burn than those made today, which Cathedral is said to be upwards of three hundred years old. The size of the brick is approximately 2x12x6 inches, and the same size is in use to-day. Now, however, crude, rough, irregular, warped and soft, all go, and in the building are invariably plastered over with stucco, which, in turn, receives its coat of paint or colored wash of such color as may suit the aesthetic taste of owner or painter. Color effect! There's nothing like it in the heavens above or the earth beneath or the waters under the earth. In two or three instances this stucco is painted and lined to imitate front brick. It can readily be imagined what conditions exist when the stucco peels off, as it frequently does—and, still, it all has its artistic side. Very naturally, it may be expected that when suitable face brick are made here, and by "suitable" is not meant the trim, true, pretty looking face brick that look as though they had come from a planing machine, but a fairly regular, well-burned brick, then the day of stucco may pass; but, after all, there will be instances where complaints will be registered because such brick are too smooth and regular to hold the stucco.

It may be inferred that the processes in vogue are of the simplest sort. There is the tempering pit, the hand mold, the dry shed and the kilns, none evidencing much ingenuity unless it be the kiln, the Spanish horno, pronounced orno, for in Spanish the letter "h" finds its cockney equivalent, and is always silent. This kiln is of beehive form and up-draft, eight or ten feet in diameter, with a capacity of from seven to ten thousand brick. The one fire box, down below, is the full diameter of the kiln, arched over, having four-inch slits extending from one side to the other and eight and a half or nine inches apart. The floor, about one foot above the crown of this arch, is flat, and on this the brick are set on edge, very open, four on one, and are burned with wood in about three days—that is to say, they are said to be burned. Naturally, however, practically 70 per cent. are nothing more than hard baked clay, with not even the red brought out. Understanding this, it need excite no surprise when the proprietor claims the full 100 per cent. as the result of each burn. Everything goes, bats, lammies and clinkers, but when engineers specify and require size, quality and conditions, they simply are "not in it," like the loving mother who was compelled to chastise her four-year-old son one morning. The boy resented the treatment and persistently refused to speak to his mother all day, until night came, with bedtime and prayers. The boy knelt down at his mother's knee and repeated the dear old "Now I lay me," etc., with "God bless papa—and—and—Aunt Lilly, and all dear friends and relations, and the pup and pussy and—and—" looking up defiantly at his mother, "Amen! and you're not in it!" So with mediaeval brickmaking in Cuba after awhile.
BELCHER.

SUCCESS AT THURBER.

The phenomenal success of the Green Hunter Brick Co., at Thurber, Tex., is attributed in part to the Grath down-draft kilns in which they burn their brick, as the following letter bears witness:

Thurber, Tex., March 10, 1902.

Mr. W. P. Grath, President Illinois Supply and Construction Co., St. Louis, Mo.:

Dear Sir—In reply to your inquiry of March 7, concerning your patented down-draft kilns in service here, it gives me pleasure to advise that these kilns are giving us entire satisfaction. We believe that the repairs are no heavier on these kilns than on others, while the brick burnt are more uniform in color and quality than in any other kilns that we have seen.

We are so highly pleased with the eight which have been in use here for the past three or four years that in enlarging our plant we propose duplicating the older kilns.

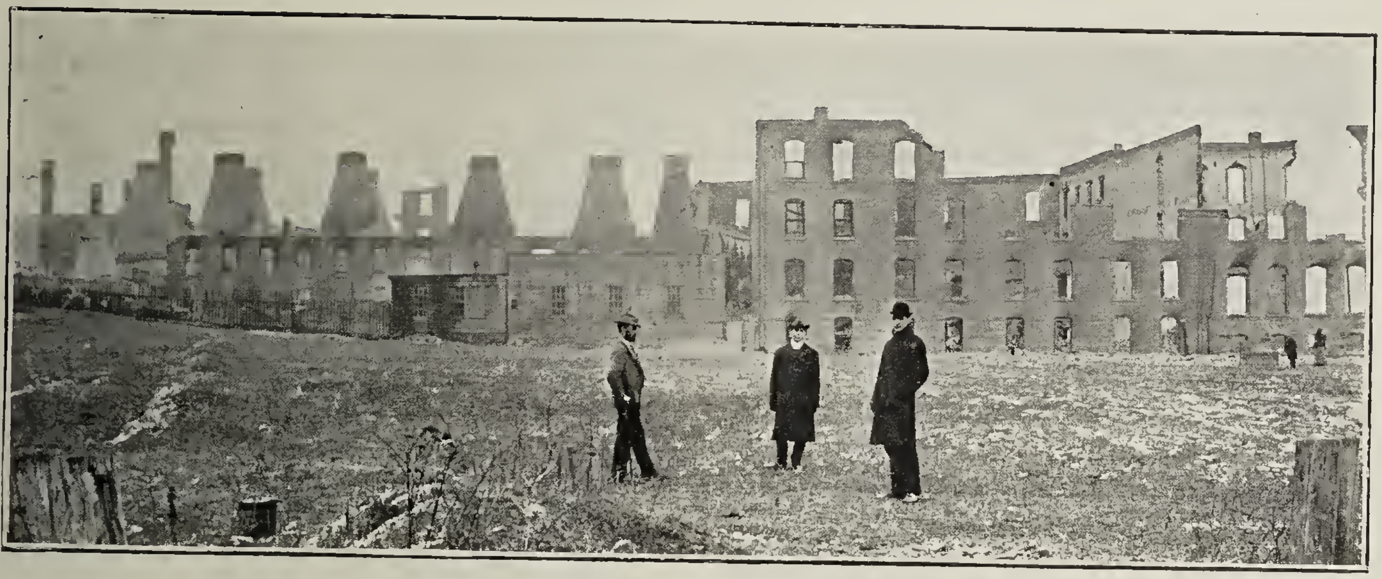
Yours respectfully, W. K. GORDON, General Manager.

For cheap machinery the reader is referred to our "For Sale" columns. We do not advise the purchase of cheap machinery. As a rule, cheap machinery is dear in the end, but for some places second-hand machinery answers a very good purpose. Those wanting experienced help will also find the "Wanted," "For Sale," etc., columns a means of satisfying their needs.

J. B. OWENS' POTTERY, AT ZANESVILLE, O., BURNS.

ONE OF THE most valuable institutions of Zanesville was destroyed recently when the plant of the J. B. Owens Pottery Co., at that place, was burned. At 9:45 Sunday morning fire was discovered in the kiln rooms of the J. B. Owens Pottery Co., and had gained a good headway before being noticed. The engineer at the plant was the first one to discover the fire and he immediately turned in the alarm at the nearest fire station. Within five minutes after the time that the call was sent in the nearest fire deparment was upon the scene. The others, being further away, were longer in arriving on the scene.

From the kiln sheds the flames soon spread to the engine room, and within half an hour after the fire department had been at work on the plant it became evident that all of the eastern portion of the plant was doomed. The buildings were composed of two portions, an eastern section and a western section, which were connected at the second story, the alleyway being used as a siding to load and unload cars. Everything that human strength and skill could do was done to save even these portions of the large factory, but it soon became evident that at least this portion of the plant must go. The wind was every minute growing stronger and soon spread the flames to other portions of the buildings.


J. B. Owens' Pottery at Zanesville, Ohio, After the Fire.

As soon as it became evident that the first portion of the pottery could not be saved workmen began carrying the immense stock of art ware out of the warehouses to a place of safety without.

The fire was fought until it reached the last portions of the buildings, and even then the department did not entirely give up, but worked on and on until the last room was on fire and until it was completely destroyed. When the fire reached the office portion of the buildings the office fittings were removed to a place of safety, but, taking even what was saved of this and the small amount of ware rescued, it was exceedingly small to look at when compared for an instant with the amount that was lost.

All of the hills above the plant and all of the surrounding bluffs were crowded with spectators. It was a glorious sight, and this, together with the constant giving away of the immense floors, which were loaded with ware, which came crashing down, ton after ton, furnished a rare scene.

Mr. Owens places the loss of the company in the neighborhood of $300,000, covered by an insurance of $143,000. In all probability the plant will be rebuilt just as soon as the insurance is adjusted.

ELECTRIC RAILWAYS FOR INDUSTRIAL PURPOSES.

THESE HAVE LONG been recognized as a great help for the different industries, as, for instance, in and around manufacturing plants, for use in mines, for contractors' purposes and for all general uses for which a railroad could be used to advantage.

The electric power is nowadays in most cases easily to be had, as there is hardly a business enterprise without an electric equipment, and the surplus electric power can be used with little or no additional expense, instead of animal or steam power.

The system of building electric railways for industrial purposes has been given great attention by the manufacturers of railroad materials.

Among the firms that have given this special attention, and have realized very good results in equipping this kind of roads, as well as running them economically, is the well-known firm of Arthur Koppel, of New York.

This firm has built many electric roads for industrial purposes, and has also developed portable electric railways, thus making electric railroads available for people who have to use them at different places, and at each place for a comparatively short time.

The Arthur Koppel portable electric railway can be laid down and completely equipped within just as short a time as portable railways generally can be. All the parts composing this equipment are light and easily handled. Every detail is worked out so that there is no difficulty, and even specially constructed and patented cars for stringing the trolley wire enter into the equipment.

These electric railways have been built by Arthur Koppel in many different countries, and for many different purposes, as, for instance, factory roads bringing the raw material into the plant, carrying the different materials around, and finally taking the finished product to the station, for mines, for contractors, for plantations, and even for passenger traffic.

In order to give interested parties who are not well acquainted with this type of railroads an opportunity to get acquainted with these industrial electric railroads, their working and their equipment, the above named firm has put up in their office, at 66 Broad street, an exact model of such an electric railroad in one-tenth actual size. This road is equipped with track, overhead system, electric locomotive and many different types of cars, including coal, flat, plantation, contractors, etc., as well as passenger cars.

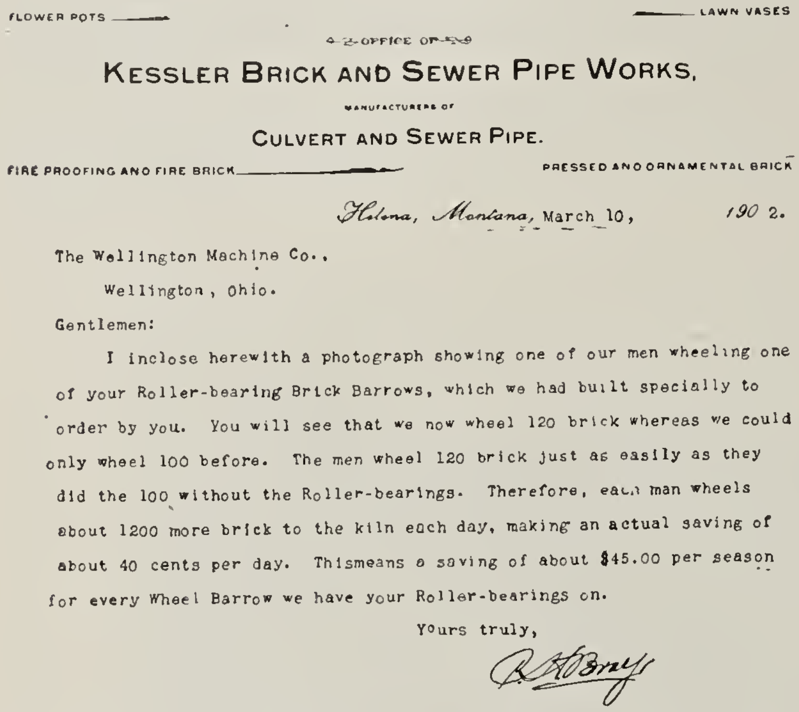
Everything, as stated before, although in one-tenth actual size, shows every detail of the original materials, construction, working, etc.

Anyone who is interested in these electric railroads in general is invited to call and inspect the model, and will be given all the information they require.

This firm has also issued a special catalogue relating to these electric railroads, which will be mailed upon application.

SAVING CENTS MAKES DOLLARS.

The photograph and letter reproduced below tell their story so plainly that no elaboration is necessary, except that it is interesting to note that brick manufacturers are looking for everything that saves labor in the way of machinery and tools, whereas it used to be proverbial how extravagant many of them were in wasting labor through not using the latest improvements.



FLOWER POTS — — LAWN VASES

OFFICE OF

KESSLER BRICK AND SEWER PIPE WORKS,

MANUFACTURERS OF

CULVERT AND SEWER PIPE.

FIRE PROOFING AND FIRE BRICK — PRESSED AND ORNAMENTAL BRICK

Helena, Montana, March 10, 1902.

The Wellington Machine Co.,

Wellington, Ohio.

Gentlemen:

I inclose herewith a photograph showing one of our men wheeling one of your Roller-bearing Brick Barrows, which we had built specially to order by you. You will see that we now wheel 120 brick whereas we could only wheel 100 before. The men wheel 120 brick just as easily as they did the 100 without the Roller-bearings. Therefore, each man wheels about 1200 more brick to the kiln each day, making an actual saving of about 40 cents per day. Thismeans a saving of about $45.00 per season for every Wheel Barrow we have your Roller-bearings on.

Yours truly,

The Wellington Machine Co., who furnish these cuts to us, say we ought to call all brickmakers' attention to this simple way to save enough money this season to more than take them to the next Convention or to the St. Louis Fair next year.

PITTSBURG AND WESTERN PENNSYLVANIA CLAY INDUSTRIES.

THE LIGONIER SILICA BRICK CO., of Pittsburg, have just announced their intention of greatly enlarging their plant at Kingston, on the Ligonier Valley road. An addition of four new kilns is to be made, and the company will engage in the manufacture of coke oven brick. The coke oven demand for silica brick has grown wonderfully during the past few years, and this company intends to make a bid for this feature of business. The company will also manufacture furnace and glass house brick, as heretofore. Since the purchase of the Kingston plant by the Ligonier Silica Brick Co., John H. Andrews, Jr., has been in general charge of the plant, with headquarters at Kingston, and under his supervision the plant has undergone many important improvements. Ho will be in charge of the additions soon to be made.

The Cumberland Basin Land Co. has purchased 2,622 acres of the famous Mt. Savage fire clay land, and will install a modern fire brick plant at once.

The plant of the Harbison-Walker Co., at Hays Station, near Homestead, has been doing an unusually large amount of work during the past month.

The Duquesne Fireproofing Co., of Pittsburg, has applied for a charter. The incorporators are F. W. McKee, George H. Albertson, E. J. Frauenheim, J. A. Frauenheim and A. J. Duff, all of Pittsburg. The company will erect a plant and manufacture fireproofing.

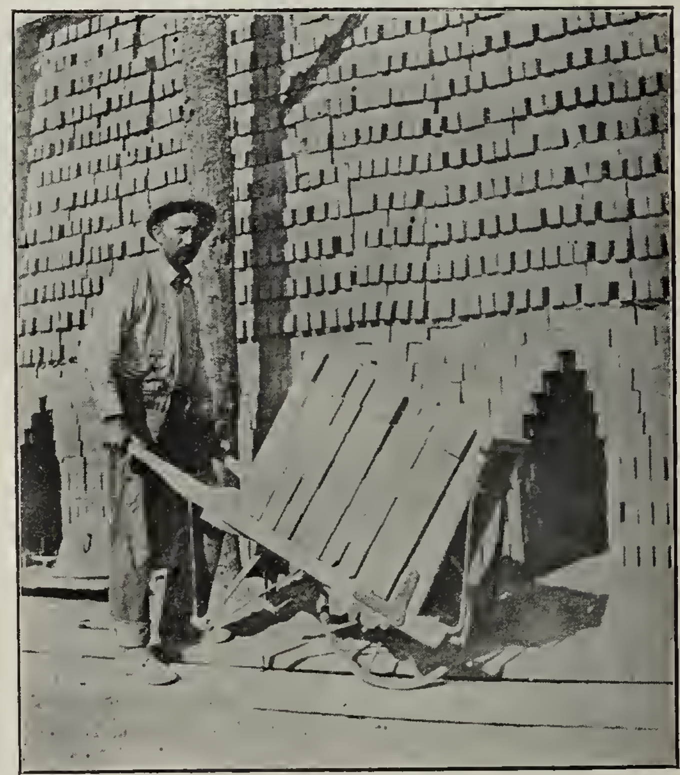
The Kensington Brick Co. has recently improved its plant. This company manufactures building and paving brick. The Bessemer Limestone Co., of Youngstown, O., which is building a brick plant, has placed an order for kilns with T. H. Wilson, of Pittsburg. Mr. Wilson will oversee the erection of the kilns which he has designed. This plant will have a daily capacity of 75,000 brick.

The Keystone Fireproofing Co. has been organized in Pittsburg, with a capital of $100,000, to manufacture fireproofing brick and sewer pipe at West Winfield, in Butler county, Pennsylvania. The syndicate owns a fourteen-hundred-acre site, including valuable clay lands.

The Reese-Hammond Co., of Bolivar, Pa., has begun the work of rebuilding to supply the place of the No. 2 plant, recently destroyed by fire. The new building will be practically fireproof. In the meanwhile, their other plants at Bolivar and those of the company at Corwensville, Pa., and Fairmount, W. Va., are supplying the demands for the well-known products of the company.

The Direct Brick Mold Process Co. has been organized at Johnstown, Pa., by F. H. Seely, Geo. W. Griffith, E. E. Bach and W. A. Stanton. The company proposes to manufacture brick by a new process, in which a large amount of machinery will be done away with.

There has been some decided advances in building materials in Pittsburg during the past few months, but these do not seem to have affected the clay products. Cement is now very low. Portland cement is 10 to 20 cents per barrel lower than a year ago. Common cement and lime are about the same as a year ago. The manager of the Kittanning Brick and Fire Clay Co., one of the leading building brick manufacturers of Pittsburg, in conversation with the writer a few days ago, said: "There has been no change in the price of brick since this time last year. The demand is for high grades. Brickmaking has made great progress in late years, and the best sells best now, the repressed, wire cut, enameled and colonial designs. Builders appear to care little for cost, but are pursuing fads and fancies. They are buying $85 per thousand brick for stables. Superior reproductions of old Dutch and colonial are wanted, without regard to cost."



"Wheeling 120 Brick With Ease."

The well-known Pittsburg brick and cement firm of Reed F. Blair & Co. has removed from the Lewis Building to the new Frick Building.

The United States Fireproofing Corporation, of Pittsburg, is preparing to erect a 200-ton plant near Pittsburg.

The Basic Brick Co., of Johnstown, has voted to increase its capital stock. The Nineveh Fire Brick Co., another Johnstown concern, has completed all departments of its new plant and is now shipping fire brick.

The Vandergrift Lumber Co., of Vandergrift, Pa., has bought the Hyde Park brick works, and will put the plant into operation.

The Herman Fire Brick Co., of Pittsburg, has begun the erection of a plant near Wittmer Station, on the Pittsburg & Western road.

A combination known as the Lumber and Construction Co., of Pittsburg, has purchased the plant of the American Clay Manufacturing Co., including 4,300 feet frontage on Beechwood boulevard, Pittsburg, Pa., and other valuable property adjoining. The plant includes three modernly equipped brick, fireproof, sewer pipe and vitrified conduit manufacturing plants, with a daily output of 100,000 brick. The new syndicate has a capital of $5,000,000. GILBERT.

Pittsburg.

A TALE OF TWO CITIES.

Impressions of Cleveland and Comparisons With Baltimore.

WE HAVE heard much recently about the *smoke nuisance* in our city, and the Legislature has been importuned to abate it.

Imagine a thousand tunnel vents similar to the one at Mt. Royal and North avenues, belching out smoke, and scattered over the business part of the city, and you may have some idea of the appearance of Cleveland, with clouds of smoke hanging over the city.

I confess I would be willing to submit to some of this *smoke nuisance* in order to have these nearly three thousand belching smoky factories in Baltimore, with their busy army of 65,000 employes, turning out manufactured products annually valued at over $125,000,000.

Cleveland has a population of nearly 400,000 inhabitants, being the largest city in Ohio and the seventh city in size in the United States, being next to Baltimore. The population of Baltimore is over 500,000, an increase of about 20 per cent. in ten years.

During the last thirty years Cleveland has advanced ahead of Cincinnati, New Orleans, San Francisco and Buffalo. The population has increased over 46 per cent. during the last *ten years.* From what I saw of the business organizations of Cleveland, I am convinced that this remarkable growth is not due to natural advantages alone, but to energy and *united purpose* of the business men to build up their city.

From the roof of the Williamson Building, some seventeen stories above the street, one may look out for miles upon Lake Erie, with nothing but ice to see. Then turn and endeavor to peer through the smoke to see some of the 60,000 dwellings, besides the many public buildings, that improve the 200 miles of paved streets within an area of over thirty square miles. There we may see the famous Euclid avenue, 80 feet wide, and lined on both sides for miles with beautiful residences, standing back from the street in beautifully kept yards.

A trolley ride on this beautiful avenue will enable one to see J. D. Rockefeller's city and country residences, Lake View Cemetery and the Garfield Memorial.

You may wonder why Cleveland is called *"The Forest City"* until you learn that it possesses one of the *finest public park systems* in America. The total area of these parks is over 1,300 acres, containing over twenty-seven miles of roads and over thirty-two miles of walks.

The Builders' Exchange, with a membership of 260 active business firms, seems to be a leading factor in this wonderful development. The members seem united in their untiring efforts to build up the city for the mutual welfare of all. The Exchange rooms are well located in the business center of the city. Here are exhibitions rooms, committee and private rooms for business, and desk rooms rented to members. The average daily attendance on the floor of the Exchange is one hundred.

The Business Men's Convention League has been very active in inducing various organizations in all parts of the United States to hold conventions in Cleveland. Such energy wisely directed is sure to succeed.

Not long ago an incident occurred in the City Hall here that made me realize the great need of providing *"Ladies' Waiting Rooms" in the public buildings of Baltimore.* Large numbers of women are compelled to go to the City Hall to pay taxes and water rents and to obtain licenses, and sometimes they may be detained for hours standing in line, until they are fairly exhausted. There are also large numbers of school teachers who go to the City Hall to draw their salaries each month. For all of these there is no suitable resting place provided.

The desirability of having such rooms was made more apparent when my attention was called to the *Cleveland Trust Co.*, which has, by the way, more than seven million dollars of deposits, held in the names of depositors in nearly every State in the Union.

In their magnificent apartments in the Garfield Building is a most noteworthy feature, consisting of a *sumptuous suite of rooms arranged for ladies*, and containing suitable reading matter, handsome stationery, a telephone and a convenient lavatory with a matron in constant attendance.

In conclusion, the sole object for making this thousand-mile trip was to study *improved street paving*, a feature for which Cleveland is noted, making it a valuable object lesson.

The principal business streets are paved with *Medina red sandstone blocks*, which should last more than *twenty years* under the most trying circumstances, and costing less than *three dollars per square yard* to lay.

The favorite street pavement for the residence section of the city consists of *vitrified paving blocks*, which cost less than *one dollar and thirty cents per square yard* to lay and is calculated to last over fifteen years under ordinary wear.

Bricks properly laid are considered to be better paving material than either *asphalt blocks, sheet asphalt* or *Telford macadam.* Cleveland is said to have *more vitrified brick streets* than any other city in the United States except Philadelphia, and has made arrangements to pave some *sixty streets, fifteen miles*, this coming year with this material.

But, then, Balitmore will not be prepared for *improved streets* until after we have constructed our *sewerage system.*

Think of Cleveland, a city of about the same area as Baltimore, but having *two hundred miles of paved streets* and *three hundred miles of sewers.*

Surely we must be up and doing if we would not be left far in the rear in this race with our Western sister.

THE STREETS OF CLEVELAND—1901.

The city of Cleveland now possesses 200 miles of improved street pavements, as follows:

Material.	No. of Miles.	Average Cost Per Sq. Yard, Complete.	Average Life, Years.
Dressed Medina stone.......	50	$2.79	20
Common Medina stone......	46	1.98	20
Vitrified bricks	90	1.13	15-25
Asphalt	12	2.25	10
Wood	2	....	..
Vit. brick to be laid in 1902.	15	....	..

THE STREETS OF BALTIMORE—1901.

The city of Baltimore has fifty-three miles of improved street pavements, as follows:

Material.	No. of Miles.	Average Cost Per Sq. Yard, Complete.	Average Life, Years.
Granite blocks	32	$1.99-$2.08	20
Asphalt blocks	10	2.25- 2.57	10
Sheet asphalt	8	2.13	10
Vitrified bricks	2	1.55- 2.12	15-25
Mosaic blocks	1	1.80	20

Baltimore, March 8. A. H. CLARKE.

A GOOD WAY TO KEEP UP WITH THE TIMES.

Editor Clay-Worker:

Inclosed you will please find draft for $2.00 in payment for The Clay-Worker for 1902. We must have the paper to keep up with the times. Last year business was good. Have been shipping most of our ware, but expect to have our hands full supplying our home customers this season. The farmers are just waking up and realizing what tile will do. We have two 20-foot down-draft kilns and two dry sheds, one 150x24 feet and the other 90x24 feet, and will make an addition to the latter. We have three long racks with shelves, or pallets, in each shed, and use the free air for drying. We use a New Departure tile machine, and we like it very well, especially for large tile. Last fall we (Messrs. Johnson & Thompson) bought K. Buland's interest in the factory, and we will continue business by the same name as before.

Best wishes to The Clay-Worker.

LINN GROVE BRICK AND TILE CO.

Linn Grove, Ia., March 8, 1902.

WRITTEN FOR THE CLAY-WORKER.

BUFFALO BRICK AND BUILDING NEWS.

THE SEVERE WINTER weather delayed work some on buildings, but the outlook for the coming spring never was better. A prominent brickmaker told me last month that they could see where fifteen millions of brick would be required, and now the secretary of the Buffalo Brick Association to-day says that contracts have practically been made for from 25,000,000 to 30,000,000 of brick.

The Lackawanna Iron and Steel Co., at Stony Point, just at the southern line of the city limits, has increased its capital stock from $25,000,000 to $40,000,000, and it is preparing to build four hundred brick houses for its employes. They will be connected together in blocks of fifty, and will be model houses for workingmen's families.

The St. Francis Orphan Asylum is to build a brick annex to cost $150,000. The Young Men's Christian Association's ten-story building of brick and steel construction has been started. The contract price is $258,000.

It looks as though there would not be a brick left on any of the yards before new brick can be made and burned. I remember some years ago when we had a brick famine in the spring. New brick were being hauled to a job; the wagon box caught on fire; the driver had to stop at a public watering trough and extinguish the fire.

The Lancaster Brick Co. has sold out all its hollow brick and is getting ready to start up next month. It has a large three-story brick building, with boiler, engine and machine all under one roof, so it can commence earlier than some of the other yards, except Brush Bros.; they are equipped to run the year round, and Brother Brush, with his usual foresight, has been getting prepared for any emergency.

Oh, I tell you things are coming our way. We are going to have a new mile race track, with grand stand, clubhouse and all the appurtenances, to cost about $300,000. The Ely farm, of over one hundred acres, has been purchased and $50,000 has been paid on same. Contracts for buildings have been let and they are to be completed before the 1st day of June.

Week before last, being in the immediate vicinity, I visited the Chittenango Pottery Co.'s plant, at Chittenango, N. Y. They have three long brick buildings and two muffle kilns. Everything looked in apple-pie order. I saw some beautiful specimens of the work done there, some Pan-American and local designs on plates, mugs, vases, etc., that would compare well with any I saw at the Exposition. I found the works temporarily shut down, with no one but the engineer in charge, and as the stage called to take me to the station all too soon, I had time to merely pass through the modeling, storage and packing rooms and take a hasty glance at the ware. I also noticed a brick and tileyard near by, but was told there was hardly demand enough to keep it running full time.

It seems like a veritable building boom had reached this city. There has been nothing like it since 1893. Well, let it come. The boys are all getting ready for it. The yards are all being put in order, and the busy machines will soon be turning out brick, and they are needed, for not much of the old stock was carried over. In fact, one yard was unable to fill orders.

The Lancaster Brick Co. has lost several large orders for drain tile, being all sold out. This company is putting in the new car system advertised in The Clay-Worker by Alex. A. Scott & Co., of Knoxville, Tenn. They claim their covers and storm curtains will give absolute protection from rain and storms, and the saving in labor will soon pay for the expense of changing the plant.

Brother O. W. Weyer writes, on the 8th inst., that he has got his new plant running. It is located out on the W. N. Y. & P. railroad, between Wanakah and Lake View, about thirteen miles south of this city, and is fully equipped with dryers and continuous kiln of very large capacity—some twenty-three chambers, I am told—and will make both paving and common brick of the stiff clay kind. The latter will be something new in the Buffalo market, and it will take some time to get our masons to using them. Still, the outlook for the firm is good, as Henry C. Shaeffer & Bro., mason contractors, the other partners, use about 5,000,000 brick annually.

Edward L. A. Pausch, the sculptor, has made a clay model of our late President, William McKinley. He is the man who took the death mask of the late President when the body was lying at the Millburn house, in this city. A plaster cast will be taken from the model and it will be sent to New York City, where a bronze cast will be taken. The bronze statue is intended for the south entry of the postoffice at Philadelphia, and will be dedicated with appropriate exercises on Decoration Day.

NORTON.

GERMAN CLAYWORKERS' CONVENTION.

THE CONVENTION of the German Society for the Manufacture of Clay Ware, Cement and Lime was held at Berlin, February 24 to 28, and enjoyed an unusually rich technical programme, which we give for the benefit of our readers. This list of papers and topics discussed is certainly sufficient to show that our German fellow-craftsmen in their society have reached a high standard, which does them credit:

"The theory of drying and the determination of the proper drying time for each brick material."

"Capital and technical knowledge," by Otto Bock.

"The economy and safety in regard to fire and accident of electrical plants," by Direnberger.

"The semi-portable steam engine, using superheated steam."

"Elevator constructions," by Scholze.

"Horizontal auger machines of latest design," by Griesemann.

"An American brick press."

"What experience has been had with the Czerng and Matern system of drying?"

"A new brick cutter."

"An appliance for the removal of seams on roofing tile."

"A turn-table for inclined tracks," by Best.

"Report on the examination of the waste gases from the continuous kiln," by Prof. Ramann.

"What practical benefits are derived from geological maps for the finding of clay and lime deposits," by Dr. Fiebelkorn.

"On the formation and plasticity of clays," by Dr. Kosmann.

"The influence of magnesia upon the behavior of clays."

"The value of the German lignites for the brick and clay industry," by Loeser.

"The production of efflorescence in the kiln during burning."

"A new drying system."

"The manufacture of glazed brick and wall tiles," by Dr. Hecht.

"What is known about clay fireproofing?"

"What is meant by the term, 'refractory'?"

"Communications from the society laboratory on pyrometers, fire clays and quartzite," by E. Cramer.

"Crystallized kaolin," by Dr. Fiebelkorn.

William F. Scott, vice president and general manager of the Fernholtz Brick Machinery Co., St. Louis, Mo., writes that they have just booked an order for two four-mold presses and equipment for John Cubbin's Sons, Memphis, Tenn. As the firm has been using Fernholtz presses for seven years, this second order would indicate that they appreciate a good thing.

The Des Moines (Ia.) Clay Co. will commence work shortly on the erection of a building at its plant, to be used exclusively for the manufacture of pottery ware. The company started its plant last fall on the manufacture of vitrified conduits for electrical construction, etc. The pottery plant will be a three-story structure, 40x138 feet, and will have a capacity of about two carloads of finished product a day. It will require eight kilns to take care of its output.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Brittle Brick Trouble.

Editor Clay-Worker:

We have been having some trouble, and I thought perhaps some of your readers could help us out. We use soft mud machines, steam blower dryer and up-draft kilns. Our clay is field clay and bottom part of the clay vein is black clay, very strong and plastic. We have sand on top, which we mix with the strong clay, about 20 per cent. sandy material, but we find after burning that three or four courses on top of arches are very brittle. The balance of the kiln seems to be sound. Our brick shrink about three-fourths of an inch in 9 inches. Now, can anyone tell us what causes this brittleness? Is it too much air in the kiln, or not enough sand? Are the brick too dry when set, or are they molded too wet? At any rate, why do the brick become brittle just at this point in the kiln and nowhere else?

M. T.

Cause of Brittle Brick.

Editor Clay-Worker:

I should say that the cause of the brick being brittle over the arches is on account of the changes in temperature that occur in course of burning, and is very common in this part of an up-draft kiln. With what information I have I should doubt very much whether more sand would remedy this, for the reason that these arch brick have to stand an excessive heat in order to burn the brick higher up in the kiln, and they are exposed more than any other to cold air, that is let in in firing, and more sand generally means more heat in order to get the same results higher up in the kiln, which would leave the arches about as they are now. I should advise keeping the heat more even in the arches, and to use great care not to allow the extreme changes that often occur in this type of kiln. It would be advisable to try a few arches with a little more sand, and, if it could be done profitably, to manufacture brick for the arches only with more sand; it might prove beneficial, though I realize the inconvenience this would cause. If this brittleness amounts to the loss of those brick in the arches, it would seem to me to be worth a trial.

Very truly yours, H. HAIGH.

Probable Cause and Cure.

Editor Clay-Worker:

It would not be safe to state the cause of the brittleness in these brick, three or four courses on top of the arches, unless we knew more about the conditions and circumstances, and possibly not then, until after having made some experiments. Our judgment is, however, that the brittleness is caused by too much air entering the arches of the kilns. These few courses of brick directly above the arches are undoubtedly the hardest burned brick in the kiln, and, with the exception of the "overhang," are most subject to the variations of temperature during the stages of burning. You can easily determine whether or not you have too much or too little sand in the clay by making a few brick with different amounts of sand, and setting all in the same locality in the kiln. I would first make this experiment. In doing so, make some of the brick with one-half sand, some with one-third, some with one-fourth, some with one-fifth and some with one-sixth. I would also experiment in another kiln with more careful firing, so as to admit as little cold air in the fire holes as possible.

It is barely possible that these brick are cooled too rapidly. We also venture that more than likely other brick in the kiln, especially in the benches, present the same trouble—"brittleness"—but owing to the fact that these few courses directly above the arches are usually the finest brick in the kiln, this difficulty is more noticeable.

I realize that the above is not a very satisfactory answer to the inquiry. Nevertheless, it is sufficient, I presume, to set your inquirer to thinking. If he had stated just the kind of kiln he was using and the kind of furnaces, I could have gotten at the matter possibly in a better way. If he is burning the old style Dutch kiln, which I presume as a matter of course he was using, there is no doubt in my mind but that his trouble lies in the firing of the kiln.

KEYSTONE.

With the Syracusans.

Editor Clay-Worker:

Business called me temporarily to the city of Syracuse, and, as always is the case, if I have any spare time, look up some of the craft and exchange ideas with them. I called at 611 Kirk Building and had a very pleasant chat with J. Frank Plumb, vice president of the Onondaga Vitrified Brick Co. They manufacture all kinds of brick, vitrified, paving, building, hollow and pressed brick, fireproofing and drain tile. The works are not running at present, owing to a scarcity of coal. This fuel is almost impossible to get, although the president of the company, W. K. Niver, is interested in a coal mine. There are five yards, and the annual sales amount to about twenty millions, common brick being $7.

They have no association, but an effort is being made to organize one. There are several small obstacles in the way—one a difference in the size of the brick; another is, some manufacture by the stiff mud process and others by the soft clay process, the latter being larger than the former, but not so hard. I suggested their making a uniform size, so that all could deliver to the same building, and explained how the difficulties had been overcome by other associations.

Mr. Plumb is secretary and treasurer of the National Web Tile Sewer Co., with office in the same building. He informed me they were awarded the gold medal at the Pan-American Exposition.

I start to visit C. L. Merrick's yard, but was carried way out of my way by the street car conductor, and as the weather was not very pleasant and the yard not running, had to postpone my visit this time.

I find Syracuse a thriving city of about 110,000 inhabitants. Some of the streets are paved with pavers made by the New York Brick and Paving Co., and they wear well. The city is well-lighted; good electric car service, running in all directions and to suburban towns; streets fairly clean for the season of the year; good water, brought from Skaneateles Lake, a distance of twelve miles.

The immense plant of the Solvay works is right at the city line, and a new plant is coming here to make one hundred typewriters per day.

KNICKERBOCKER.

A Remarkable Contest Between a Pike and a Shark.

Editor Clay-Worker:

This is a fish story, and, in its results, beats any other of the veracious versions heretofore given by the many followers of Isaac Walton. The readers of The Clay-Worker may wonder what such a subject has to do in its pages. However, when they read this article through they will find that both the relator and one of the principal actors are closely connected with the N. B. M. A., and know what the members like to hear outside of the clay business.

From time immemorial the shark has been known as one of the most aggressive and powerful denizens of the deep sea. Therefore, when we state the actual fact of a pike fastening on to a seven-foot shark, it will seem incredible. Nevertheless this occurred on the 15th of March of this year, at Sea Breeze, Fla., and was seen by many Northern people of truth and veracity. The struggle lasted a long time, and was witnessed by a large crowd of spectators from the 800-feet-long pier, just finished, from the pavilion to the sea, beyond the breakers, on the narrow peninsula on the east coast of Daytona.

When the first onslaught occurred it was on the side of the shark. The spectators, of course, were greatly interested in the unequal combat, with their sympathy on the side of Mr. Pike, who, in a short time, seemed to have the upper hand in the fight. When the superior strength of the shark seemed to outwear the strength of his antagonist the spectators came to the rescue, and, to end the uneven struggle, three well-directed bullets were fired into the shark from the pier. This somewhat quieted him, so that Mr. Pike got a good hold on him, and both were brought to shore. No weighing apparatus being on hand, the shark was only measured and found to be seven feet in length. His conqueror's weight, however, was later ascertained, as, when brought to land with the shark, he was seen to be of immense proportions—for a pike. Owing to his remarkable victory over the shark, an unequal foe, he was well taken care of and his life preserved, and can be seen now in the basement of the annex to the White House, close to the shore at Sea Breeze. Before he was taken to his present domicile his weight was found to be 230 pounds and length just six feet. When examined as to the injuries received in the combat, it was found that the top of his head was entirely bare of scales and some other portions of his anatomy lacerated. Otherwise he was not materially injured, and has proven a very lively specimen of the pike family ever since. He seems to take very kindly to the artesian waters of the inland. The food, of which he takes large quantities, is the same as served to the guests of the White House, and there are very few articles he rejects. The natives here would like to keep him, as they draw a nice little sum from him every week, but arrangements are being made so that as soon as the weather gets settled in the North he will be taken there.

Fearing that this truthful story may become too long, I will close by making the simple statement that the Mr. Pike referred to hails from Chenoa, Ill., had a line 200 feet long and half an inch thick, with a big hook on the end of it, with a few pounds of meat and a fifteen-inch live fish on it for bait, when the shark made the attack. It is needless to state further that Pike is now a celebrity all over the peninsula and has formed a partnership with the undersigned in the shark business. However, he says this will not detract from the kiln business any of his well-known energy in that direction, but is prepared to furnish the best kiln to the best brick men in the country now, as before. Both of us regret, however, that our health called us here and prevented our attending the last Convention of the N. B. M. A. F. E. FREY.

Sea Breeze, Fla., March 22, 1902.

From Brick to Lumber.

Editor Clay-Worker.

Inclosed find $5 for my subscription to The Clay-Worker and dues for membership in the N. B. M. A., which I part with freely and feel great satisfaction in doing so. I am very sorry I was not able to attend the Convention at Cleveland this year and feel the loss exceedingly. Myself and son, with others, have bought a large lumber and manufacturing business in the city here. We are to have active charge, and for this reason we might be persuaded by a cash consideration to relinquish the brick interest, but would still be interested in your valuable paper and also the remembrance of the pleasant Association meetings will always be a green spot in my memory.

Yours very truly,

Springfield, Mass., February 17, 1902. T. D. POTTER.

A Prosperous Illinois Brick Company.

Publishers Clay-Worker:

We have been compelled to make several improvements this winter, as we have already orders booked for 2,500,000 brick, mostly pavers, and are now making 25,000 daily. We fired our first kiln of 250,000 to-day. We sold over 5,000,000 last year, and the outlook is better this year than ever. Wishing all our brethren the same prosperity, we remain

Canton, Ill., April 4. M. HECKARD & SONS.

Succeeded Where Others Had Failed Because He Reads the Clay-Worker.

Editor Clay-Worker:

I missed my January Clay-Worker. What is wrong? I am 100 miles from a railroad, just on the border line of Mexico and Texas, and am making brick for the Tignor & Colquit Mining Co. I have made about 500,000 for other parties here for smelting furnaces to reduce the quicksilver from similar ores that have been recently discovered in this heretofore unknown country. I am making them as Solomon did. Mexicans make up the mud with hoes. Each man molds his own brick. I receive them on the yard and pay them $2.00 per thousand for molding. I burn in Harris kilns, that, is, square clamps built of 12x20 adobes, with fire boxes on the outside. Mr. Robert Scott, of San Jose, Cal., who is the builder of all the furnaces which have been built here, and who has been building quicksilver furnaces in California for thirty years, says that ours are without exception the best hand-made brick that he has ever used. He wanted to know how I came to make a success here, where others failed, and I told him that I read The Clay-Worker. H. M. DRYDEN.

Terlingua, Tex., Feb. 28, 1902.

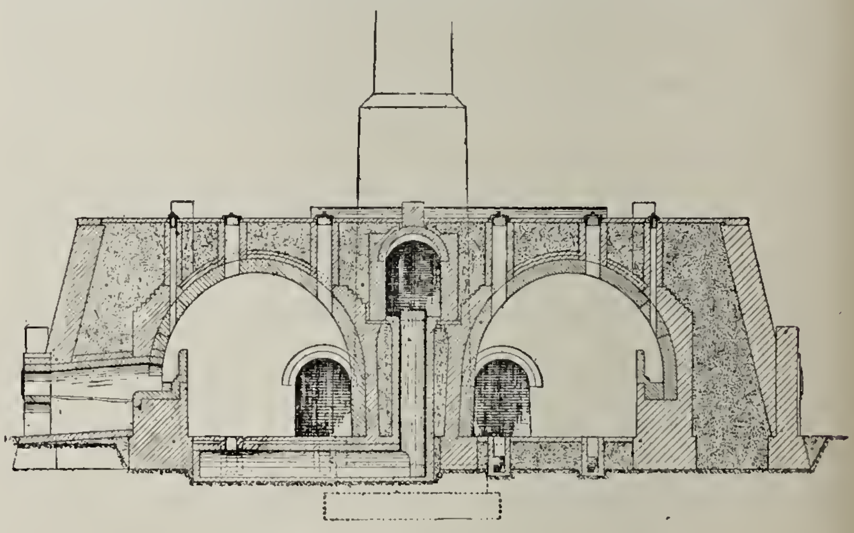
AN IMPROVED CONTINUOUS KILN.

THIS IS peculiarly an age of hustling activity—an era of money making—and in order to meet the keen competition which is found in nearly every line of business, the manufacturer finds it necessary to be constantly on the outlook for the improvements by which he can reduce the cost of production, and he who sees and avails himself of such opportunities is naturally the one who is most successful.

The most important part of any brick, clay, lime and cement plant is the kiln, and it should not be forgotten that only in adopting the very best system will the clayworker be able to compete with future demands for first-class wares at eventually lower prices.

In the original continuous kilns, when first placed on the market in European countries, the brickmaker's dream of profits were in a measure realized, and by this time, considering the steadily growing prices for fuel, the American brickmaker should not hesitate in adopting the same for once and all. Much has been done in this line and several German experts (Fred Hoffmann, Martin, Hottop et al.) have devoted over half a lifetime in solving a good many questions about the burning of brick, etc., in the continuous kiln, and among these progressive concerns that have forged rapidly to the front as constructors and builders of kilns of various systems are Messrs. Wuerz & Kottenhagen, St. Louis, Mo., and who are German experts in the design of continuous kilns.

Messrs. Wuerz & Kottenhagen have had a good many years of experience in the erection of kilns for brick, pottery, lime and cement plants, and hundreds of kilns erected by them in European countries, in which are two of the largest in existence, are still giving the best of satisfaction in producing a high percentage of first-class wares with a minimum expenditure of fuel. These gentlemen themselves are patentees of several continuous kilns and furnaces, and also have the sole agency and building rights for the world-famous Hoffmann continuous kilns. This enables them to suit any requirements, and they will execute any order placed with them promptly and on short notice.



The accompanying cut represents their latest patented continuous combination kiln, in which they have solved the twentieth century question of our clayworking industry. This kiln is constructed and built for the burning of a great variety of wares, from common building brick to the finest face brick which are put on the market. The kiln is constructed for the firing of wood or coal, and can be continuously operated with such in three different places, namely, by the way of top feeding in applying the old and well-known strewing feed system for building brick, pavers, etc., or by the placed side-drop shaft grate, firing for first-class wares only; also an outside feeding system is applied in form of grate firing, to burn either wood or coal in same at will.

This kiln will be especially welcomed in States where there is an abundance of wood, and as continuous kilns of the very same system have been built in European countries, and work economically and satisfactorily in every respect, the American brickmaker should not fail to investigate the merits of the same when desiring to erect a good kiln based on the latest improvements.

WRITTEN FOR THE CLAY-WORKER.

PHILADELPHIA BRICKLETS.

THE BRICKMAKERS of this city, generally and specifically, anticipate a busy season. Conversing with T. B. McAvoy, he expressed himself almost jubilantly over the prospects for the coming summer months, qualifying his remarks with this rejoinder: "Mind, I don't say this in relation to our plants, but to the yards generally throughout the city. Large contracts are being given out, and while we shall come in for a share of them, the other yards will be called upon to exert themselves to keep up the supply that will be needed. We made our last big shipment to Savannah, Ga., on Feb. 5. This consisted of 850,000 first-class pavers, and now we are burning and getting ready for the spring calls."

By the way, John McAvoy and his young wife were sojourning at the Berkeley, at Atlantic City, during the week of the terrible fire. Leaving there on the morning of the 3d, he left Mrs. McAvoy sick in bed, and two hours after arriving in Philadelphia was summoned back again to the shore by telephone. His wife, meanwhile, had been rescued by friends and carried to another hotel outside the radius of the fire belt. After assuring himself of his wife's safety, John made his way to the Berkeley Hotel, which was then in flames, and endeavored to save their belongings, but without avail. Beyond a sealskin jacket, a silk hat and two vests, everything was destroyed, except John's philosophy and good humor.

Over in Kensington Alec McAvoy shut down the last two weeks in January and the first two in February to make necessary repairs to the dryer. He is now running again in full blast, with good orders booked for several large factories, among them the Carl Grubnon, the Browlays, Foster's and the Peter Wall & Son, which will soak up some four or five million hard and stretcher; also a large operation of three-story dwelling houses for C. D. Shaw & Sons, the well-known operators.

William H. Conway happily expresses himself as having had a right good time at the Convention in Cleveland. In fact, he declares it to have been "the brightest and best Convention he ever attended."

I hear from a good, reliable source that the Perkiomens brick plant, at Oaks, Pa., has been sold to some gentlemen from Reading, Pa. This is a first-rate plant, with a 300-foot continuous kiln, with splendid facilities for shipping at the junction of two railroads, the Reading and the Pennsylvania.

The E. H. Collom plant, at East Washington street, near Chestnut Hill, was shut down for a couple of weeks in January and a week in February, after a successful year, having delivered close upon ten millions. Mr. Collom also reports the outlook as being very bright and promising, having already booked several large operations which call for an immediate delivery of three or four millions. Here is another hard-working member of the brickmaking fraternity who would welcome a friendly invitation to get away from his many arduous duties, and be rejuvenated and regaled with the solid concrete sense of liberty and pleasures of a Convention.

Murrell Dobbins has been burning all the winter at both plants—Kinkora, N. J., and Twenty-third and Passyunk avenues. He opens the season with a consignment of one and a half millions for a large operation at Twenty-sixth and Christian streets, also two exclusive operations over in Camden, N. J.

From the Bureau of Buildings the reports governing the forthcoming operations show an extraordinary increase in the number of dwelling houses to be erected during the month of April. Ground will be broken for no less than 850 two and three-story dwelling houses, exclusive of eighty buildings under the head of municipal, school and fire engine houses, churches, warehouses, factories, apartment houses and office buildings. In all, eleven million dollars' worth of building materials will be needed, and this is the thermometer on which the brick men gauge the standard of their future work. In all, the year opens with every promise of there being sufficient demand to keep Mr. Brickman too busy to find time for grumbling.

A new addition and improvement has been made at the plant of the Conkling & Armstrong Terra Cotta Co., at Wissahickon and Juanita streets, for better facilitating the turning out of the deep cornices now in vogue in the better architectural lines. This is in the nature of a new cutting machine and a running machine known as a horse and templet, capable of taking a cornice piece to the length of fifteen feet, with a depth of twenty inches, formerly moved by hand, slowly and sluggishly, and the main cause of the strike among the terra cotta molders, who, with the combined efforts of ten pairs of hands, found the work extremely slow and laborious and minus the fine finished effect. At this date the templet is moved by the machine, being fed and guided by two men, who are thus enabled to turn out the work in half the time.

W. P. L.

NOTES FROM TIDEWATER, VA.

THE SUMMER YARDS all started up earlier than usual this year. They are nearly all in full blast now, March 28. Mr. John Sailes, formerly of Lawrenceville, Va., and manager of the Lawrenceville Brick and Tile Works, has moved to Chase City, Va., and will be general manager for Mr. E. H. Potts' brick plant. He writes under date of March 28 that he is in the market for a 40-horse-power engine and boiler to run a new "Hummer" stiff mud machine of the J. D. Fate & Co. make.

Mr. C. B. Chase, of Alexandria, Va., formerly manager of one of the leading brick plants in this section, wrote recently, saying he had severed his connection with his company and was open for an engagement for this season, and said he preferred Tidewater as his field. Mr. Chase is an experienced brickmaker in soft, stiff mud and dry press, also fine repressed and ornamental brick.

The Nansemond River Brick and Tile Co. has just placed an order with the Chambers Bros. Co. for a new machine with a sixty thousand daily capacity, also for a 100-horse-power Corliss engine. They recently put in a battery of three boilers, and will add to their dry kilns at both plants. They also have under construction four new brick houses at their plant, to be occupied by their laborers.

There is a new brick plant being built at Hollands, Va. The machinery is all on the grounds, and work is being pushed as rapidly as possible.

It is rumored that the Hampton Roads Brick Co. will change hands and that a new syndicate will operate it this year, yet nothing definite has been done.

Mr. J. D. Armstrong, of Port Norfolk, Va., will start a new soft mud summer yard, near Shingle Creek, this spring. He will install a J. D. Fate & Co. soft mud machine and dry in racks.

Mr. Long, who recently purchased the A. C. Lawson plant, at Shingle Creek, is preparing for a very busy season, with a capacity of about 20,000 per day. He is located on the Southern Railway and makes a very fine brick.

The D. C. Harrell Co. started up last week, with a daily capacity of about 20,000 brick, having just put in a new boiler and other new machinery. Mr. C. O. Harrell is manager.

Mr. Chas. Parker, of Franklin, Va., says he had all he could do last year, and expects to do a larger business this year than ever before. He is going to move his plant to Suffolk this fall and enlarge it. He will locate in West Boston, near the plant of the Suffolk Clay Co.

The S. A. Davis plant, at Suffolk, seems to be insolvent, and, from present indications, will not be operated this season. The machinery is being offered for sale at the present time.

H. L. J.

ST. LOUIS BRICK AND BUILDING NEWS.

THE CLAYWORKING industries are commencing their regular spring awakening, and a big business is anticipated within the next thirty days. The brickyards are now all at work getting out material. Some started on March 1, while others, owing to a delay in repairs, did not start until last week.

Prices still continue the same as they have been all winter. They are: Merchantable brick, $7.25; ordinary brick, $7.75; strictly hard, $8.25; red pressed brick, $17.50, and sidewalk and paving brick, $8.50.

At a meeting of the directors of the St. Charles Brick Co., held a few days ago, the following officers were re-elected: V. D. Dierker, president; J. P. Pfaff, vice president; C. F. W. Hafer, secretary; Joseph Robine, manager.

The Hydraulic Press Brick Co., of this city, has purchased about fifty acres of land at Emerson Station, on the Creve Coeur Lake branch of the Missouri Pacific Railroad, for $15,600.

There has been a temporary suspension of work at the yards of the St. Louis Press Brick Works, at Glen Carbon, Ill., owing to the fact that the company and the Brickmakers' Union has not agreed upon a scale of wages for the year, the former contract having expired on Feb. 1.

The St. Louis Clay Burning Co., with a capital of $150,000, all paid, was incorporated March 3. The incorporators are: Young H. Bond, 650 shares; Charles G. Chaddock, 240 shares; Carl Barck, 190 shares; Benj. M. Hypes, 190 shares; Joseph R. Lemen, 160 shares, and Geo. C. Crandall, 160 shares.

The North Alton brick plant resumed work with a full force March 10, after a suspension of work while repairs were being made. The plant has made some radical improvements and the output will be greater than heretofore.

The Turner Building, on Eighth street, near Ohio street, which was bought by the owners of the Chemical Building, the sky-scraper on the northeast corner of Eighth and Ohio streets, in order to increase the capacity of that building for office room, is being torn down. It was built in the most substantial style twenty years ago. The lower walls are three feet thick, of hard brick, and at the fourth floor they are two feet thick. The brick are as solid to-day as when they were laid. The ordinary soft brick will crumble when a building is wrecked, but nearly all of those used in the Turner Building can be saved. The floors throughout are thirteen inches thick, constructed in the shape of brick arches, between heavy iron girders, and topped with concrete. They are so solid that it is almost as difficult to remove them as to quarry through natural rock. The brick in the building, and, in fact, the whole building, will be put up in the West End for a family hotel.

The Joplin Vitrified Brick Manufacturing Co., of Joplin, Mo., with a capital of $30,000, all paid, has been incorporated. The incorporators are T. W. Cunningham, F. O. Bartlett, Gilbert Barbee and others.

The new office and works of the Fernholtz Brick Machinery Co., at Boyle avenue and Old Manchester road, is about completed, but the firm will not be able to move from their old quarters, at Twelfth and Poplar streets, for several weeks yet, owing to the rush of business they are having. Their business this year has been greater than ever before in the history of the firm. They are considerably behind on orders, and until they can catch up it will be impossible for the plant to be moved. Mr. Scott has just returned from a trip through the South.

The Anthony Ittner Brick Co., of Illinois, a few days ago filed evidence of a corporation with a capital of $100,000, of which $50,000 is to be employed in Missouri, with the office at St. Louis.

The Belleville Brick Co., of Belleville, Ill., has been incorporated by John A. Day, Lina E. Day and Edward Abend, with a capital stock of $60,000.

The Illinois Brick and Tile Co., of South Litchfield, Ill., has been incorporated to manufacture brick, also tile and clay products, with a capital stock of $20,000. The incorporators are: David Davis, Blanche K. Davis and Regina Davis.

A splendid bed of shale, 22 feet in extent, has been developed in a shaft a short distance northwest of Macon, Mo. It is said to be of a purer quality than that used in the brick plants in surrounding cities. As there is a great abundance in remarkable proximity to extensive coal fields, it is a desirable location for a plant which will likely be built in the near future.

Henry H. Schweer, one of the oldest brickmakers in the country, died here two weeks ago. He came to St. Louis in 1843, and shortly thereafter engaged in the brick business, in which he continued up to the time of his death.

The first bit of modeling clay was thrown against the easel a few days ago in the studio of William Barth at the World's Fair site. The model was that of the sketch which had been made the day before in the downtown studio of Barth & Staak. It is a part of the decorative frieze between the plasters of the Textiles building.

Clay for the modeling of the casts has been brought to the site from the shops at Cheltenham. This clay has been softened and formed into cubes, in preparation for the work of the modelers. Brick glue furnaces are being constructed in the stall shop of Smith & Eastman, to be used in making the molds for the stall work. The furnace supports a water bath, in which the six big glue pots rest. The water bath prevents the temperature from becoming too high and burning the glue.

The St. Louis smoke inspector is considering whether the smoke from the seven brick kilns of the Hydraulic Pressed Brick Co., in the neighborhood of Manchester avenue, near the World's Fair grounds, can be abated. The smoke law exempts those who can show that smoke cannot be abated, and the brick manufacturers claim that with their peculiar furnaces there is no way of getting rid of the obnoxious fumes. The smoke inspector is now in correspondence with a number of experts on this particular subject.

The Commissioner of Public Buildings has just issued his report for the month of March, which shows an increase of but fifty-one permits and a gain of only $175,715 in building improvements for March, as compared with March, 1901.

The following is an editorial taken from the Sedalia (Mo.) Democrat, which may be of interest to someone contemplating going into the brick industry:

"The Democrat believes those clay beds west of the city should be tested. To this end, let samples of both brick clay and the potter's clay be shipped to some first-class establishments in the East that will test them and tell us the practical results. The extent of the deposit has been tested. When the quality has also been proven by actual test we will have data to work from. The Business Men's Club could well afford to send a carload of this clay East for experiment."

Sinking a deep well at Moberly, Mo., has shown that the finest strata of fire brick clay to be found anywhere is within easy reach. James Sandison is now sinking a shaft 8 by 16 feet, and will put it down to a depth of 120 feet. The vein of fire clay is 16 feet thick and affords an almost inexhaustible supply of the best material for fire brick. The shaft is now down 50 feet and most of that depth has been dug through the same shale as is used to make the hardest street paving brick.

A SAINT.

THE WIDEST STREETS.

Editor Clay-Worker:

In looking over the January number of your valuable publication I find on page 56 the statement that the streets of Cleveland are "the widest of any city in the world, Superior street being 132 feet in width."

This is an error, as Washington, D. C., has sixteen streets, or avenues, each 160 feet wide, and many others 120 and 130 feet in width. Fifty-four per cent. of the entire area of the National Capital is occupied by its streets, avenues and alleys, a larger proportion than that of any other city in the world. The street area of a few of the principal cities is given, as follows:

Washington, D. C.	54 per cent.
Vienna	35 per cent.
New York City	35 per cent.
Philadelphia, Pa.	29 per cent.
Boston, Mass.	26 per cent.
Berlin	26 per cent.
Paris	25 per cent.

The National Capital was planned on a magnificent scale, and when Congress can be induced to carry out the plans and complete it as designed, it will be the most magnificent city in the world, such as the American people are entitled to have. It will be many years, however, before the work is completed.

Washington, D. C., March 22, 1902. W. C. DODGE.

POTTERY NEWS.

OVER A DISPUTE in making a fancy plate the employes quit work at the plant of the Keswick China Co., at Fallston, Pa. The difficulty was settled later on, however, and the plant is now running steadily.

Word has been received in this city that the Wabash Railroad has bought additional right of way, and the railroad is now an assured fact for this city and Wellsville, O. This has been an important question in the pottery business of late, as it will no doubt mean quite a reduction in freight rates..

S. A. Weller, proprietor of Zanesville's (O.) two largest potteries, has purchased Zanesville real estate to the amount of $46,500, and will erect at once a magnificent theater, which he expects to have ready for the 1902-3 season. The opera house will have a seating capacity of 2,000 people, and will be one of the finest in that vicinity.

The Hudson Porcelain Co. has been incorporated at Trenton, N. J., by Wm. Burgess and Wm. Taylor.

At the annual meeting of the Warwick China Co., Wheeling, W. Va., Thomas Carr was elected president, W. M. List vice president and O. P. McKee secretary.

The J. B. Owens Pottery Co., whose plant was recently burned at Zanesville, O., has secured $128,000 in cash, insurance on the plant and contents. The insurance is very light, as the appraisers estimate the plant and contents as having been worth $346,000.

The Universal Sanitary Manufacturing Co., of Newcastle, Pa., are installing a large surface grinder in their works. The Patterson Foundry and Machine Co. have the contract.

Work is progressing rapidly on the new sewer pipe works being erected at Irondale, O. At the start-off the capacity will be six kilns, which, however, will be doubled within the year.

A deal is on whereby the property adjoining the Lytle Sewer Pipe Works at Wellsville, O., will be sold to East Liverpool and Wellsville parties, whose intention is, it is said, to erect at once a large clayworking plant, although what would be the nature of the output could not be learned.

The plant of the Fisher Pottery Co., at Lyons, N. Y., has been sold to W. H. Eagan and others.

The Bell Pottery Co., of Findlay, have purchased 160 acres near Columbus, O., and will erect another pottery some time within the present year.

The new works of the Shenango China Co., at Newcastle, Pa., are now in operation, having started up full in all departments some two weeks ago. The company reports very good progress.

The Barberton Pottery Co., at Barberton, O., have let contracts for thirty brick houses, to be erected at once. These will be used for dwellings for their employes.

Four additional kilns are to be erected at the Geneva Hill Brick Works, at Beaver Falls, Pa. The contracts have been let. Contracts have also been let for eight additional kilns, to be erected at once, at the works of the Beaver Valley Brick and Clay Co., at New Galilee, Pa.

Three additional down-draft kilns are to be erected at once at the Great Western Works of the American Sewer Pipe Co., at Toronto, O.

The rates of insurance have been so high in the past that nearly all of the East Liverpool plants have been forced to install the sprinkler system. The Burford Bros. Pottery Co., the Potters' Co-operative Co. and the Patterson Foundry and Machine Co. are the latest victims.

A strike in the clay shops of factory No. 3 of the Homer Laughlin China Co., of this city, has almost completely shut that plant down for several days past. It is thought, however, that the trouble will be settled within the next few days.

The capacity of the Electric Porcelain Co., of this city, is to be greatly increased at once. Two additional kilns are being built, and an order has been placed with a local concern for several new machines, which will almost double their capacity.

The East End Brick Co., of this city, has started up with greatly increased capacity.

The National Furnace Brick Co., with offices in this city and works at Rogers, O., will start the first of the month. These works were erected last season, but too late for operation. Only a strictly hand-made brick will be made.

The Wheeling Pottery Co., Wheeling, W. Va., suffered greatly by the windstorm which struck the city last week. At this plant the wind from the west struck the roof of the storehouse, which is known as the old plant. A portion of it was hurled down into Chapline street, while the rest was ripped up and pressed about the huge brick stacks, exposing the interior of the building to the mercy of the elements. Much damage was also done at their Wood street plant. Great damage was done by this terrific storm to the Riverside Pottery, one kiln being destroyed.

The Crown Potteries Co., Peoria, Ill., have let the contracts for the erection of two new buildings, and the carpenters are now at work. One of the buildings will be a stock house, one story and a basement; the other will be used by the decorating department, and will be modern in every particular. They expect to be in full operation by May 1, and will have goods ready for the market by July 1. This plant will employ about 400 persons, and will have an annual output of $300,000. The plant is so situated that they will have a harbor built and make shipments by river.

The Sebring Pottery Co., Sebring, O., have plans and specifications out for the erection of a five-kiln plant at Sebring. Work will be commenced by April 15.

The pottery of J. Patterson & Son, Wellsville, O., which was partially destroyed by fire last month, is rapidly being rebuilt. New roofs have already been placed over the kiln sheds and warehouses. The pottery is again in operation and goods are being shipped.

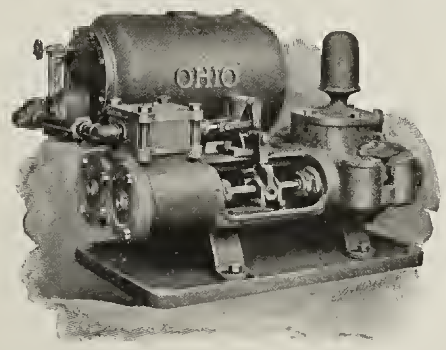
The Steubenville (O.) Pottery Co. are preparing to light their plant with electricity, having in place already 225 incandescent lights.

TOM POTTER.

East Liverpool, O.

THE "OHIO" AUTOMATIC FEED PUMP AND RECEIVER.

WE ILLUSTRATE herewith the "Ohio" Automatic Feed Pump and Receiver, which has been demonstrated to be the most economical and effective means for utilizing the water of condensation from dry kilns and heating systems in brick and clayworking plants. This machine receives and automatically supplies to boilers the water of condensation while in its hottest condition. In addition to the economy of fuel secured by the use of this machine, the boilers are given a pure-feed water supply, the lime and objectionable scale being eliminated. It is not affected by variations of steam pressure, and is absolutely positive and automatic under all conditions of service. It returns the water to the boiler in a steady and continuous flow as it enters the receiver, and will at all times keep the heating pipes in a dry condition, which considerably increases the efficiency of the plant.



As the water flows into the receiver it raises a ball float therein, which opens the valve controlling the supply of steam for operating the pump. As the water is removed from receiver the float lowers, thus closing the valve and gradually stopping the pump. The pump operates only as the water of condensation enters the receiver.

Any further information desired may be obtained by addressing its manufacturers, The Ohio Steam Pump Company, Canton, O., and asking for Circular "D," or see ad. on page 480.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

NINETEENTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

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☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
27 Monument Place.] T. A. RANDALL & CO., Indianapolis.

XXXVII. ARPIL, 1902. No. 4.

CURRENT COMMENT.

Dear Reader, just a hint of Spring: Have you renewed your subscription? If not, now is the appointed time.

* * *

Do not bother to apologize for delay. Just send your check. That of itself will prove your good intentions and fully atone for any seeming neglect.

* * *

Up to date, the most astounding thing of the month, year and century, according to newspaper reports, is the opening of seven miles of subways, built forty feet beneath the middle of Chicago's busiest streets.

* * *

These subways, while wonderful as an engineering feat, are still more wonderful in that they were built clandestinely. The work was begun two years ago without the knowledge of the city officials, so say the local papers, the Mayor and aldermen and citizens in general knowing nothing of what was going on beneath their very feet.

* * *

The main tunnels are twelve feet deep and fourteen wide. The branches are eight feet in width and six feet in height, and, it is claimed, "all built in solid concrete, lighted by electricity and dry as a dancing floor." The work, which it is said has been carried on by an Eastern syndicate, has absorbed ten millions of dollars, not one penny of which had to go to the city official with a "pull." It's wonderful, wonderful.

* * *

Those who have given the subject any attention know that heavy loads may be hauled over brick paved roadways more easily than over any other roadway. While this is known and admitted by road engineers, we are pleased to lay before our readers the demonstration of the fact by so noted an authority as Prof. Ira O. Baker. His paper, on page 434, will bear close study.

* * *

The newest thing in clay that we have heard of is a violin. A German manufactory is said to have patented and to be now making clay violins and mandolins. Of course, they are an improvement on the old-fashioned sort.

* * *

This is moving time at the brickyard, as well as at the home, and the superintendents of summer yards south of the fortieth latitude are moving with all the force they can muster, for the call for brick is urgent and the supply well nigh exhausted in most sections. Barring labor troubles, there is little doubt that this will be the busiest, and, let us hope, the most prosperous, year within the memory of our oldest inhabitant.

* * *

It is to be devoutly hoped that the signs of peace in South Africa may speedily blossom into reality. As soon as the demon of war is appeased that country will become a great market for machinery and manufactures of all kinds. A number of our patrons found it a profitable market before the war, and with the return of peace it will well repay careful cultivation.

GOOD ROADS AND HOW TO GET THEM.

The Report of the N. B. M. A. Committee on Standard Specifications for the Construction of Brick Streets and the paper by W. H. Evers, C. E., on "The Public Improvement of Public Highways," read before the Cleveland Convention, is now ready for distribution in pamphlet form. Under Mr. Evers' direction, many miles of brick pavements have been put down on the roads leading into Cleveland, and have proven very popular to all who use them, especially so with the farmers who haul heavy loads into the city. The demand for the extension of these brick roadways grows as their advantages become better known, and Mr. Evers declares that ultimately every important road in Cuyahoga county will be improved permanently in a similar manner. Mr. Evers tells in his paper how the improvements are made and provided for. The work is prosecuted under a State law, and every county in Ohio can inaugurate just such improvements, if the county officials see fit. It is the business of the advocates of brick paving to see to it that this fact is made clear. One way to do this is to put this pamphlet in the hands of the proper county officials. Its wide distribution will materially advance the cause of good roads. Copy of the pamphlet can be had from the Secretary of the N. B. M. A. for the asking.

FOUNDATIONS FOR PAVEMENTS.

The most important part of a pavement is the part we do not see—the foundation. A brick pavement, a block pavement or one of asphalt on an insufficient foundation is never an entire success. Either one of them is a relative success when placed on a good foundation. Brick pavements have suffered more largely from insufficient foundations than any other pavement on the market. The asphalt people have been intelligent enough and aggressive enough to always insist on a proper foundation, but even at its best the asphalt pavement is a very poor excuse, but it has been comparatively successful, not because of the quality of the surface, but very largely because of the foundation which the engineers have provided for it. The manufacturers of brick paving material have insisted from time to time that they could lay a pavement much cheaper and much better, and have relied on this cheapness by providing an inefficient and cheap foundation, and the result is that even with the best material which has been used for the surface covering that in many sections brick paving has been discredited. If the manufacturers of brick as a paving material had taken the stand some years ago that no foundation other than the best, that of Portland cement or the best American cement, should be used on a tamped foundation, and that the brick should be bedded in cement and filled in with this material, brick paving would have been much more popular in many localities than it is to-day.

BELT DRESSING.

The Wood-Worker thinks there is a moral pretty closely associated with the fact that a man in the Southwest was caught and killed while attempting to "soap" a belt. We don't see the moral. If all belts that are misused should rise up and smite their misusers, a good many establishments would have to close until a new force of hands could be secured. And besides, the belt catches the just and the unjust, apparently without having much prejudice in favor of either kind. If it gets a chance it will swat a man who is treating it right just as hard as it will the man who is doping it. The belt has no morals and doesn't associate with them. The best way to handle a belt is with the "ten-foot pole" that people use so much in simile and so little in fact. Don't get familiar with a belt; it is liable to take advantage of it.

NATIONAL MANUFACTURERS IN CONVENTION.

As we write, the seventh annual convention of the National Manufacturers' Association is being held in the hall of the House of Representatives of Indiana's capital. The association has over a thousand members, but there are less than 200 in attendance. The convention evidently suffers from an excess of prosperity, the members being too busy, most of them, to attend a convention at this season. Had the meeting been held either in midwinter or midsummer there would likely have been a much larger attendance. The work of the association is largely transacted by the executive committee. Nevertheless it would be better to get the members together if it could be done. Naturally, we contrast this meeting with the last N. B. M. A. convention, and find many reasons for feeling complacent. It has been said by those unfriendly to the N. B. M. A. that the attendance is not what it ought to be. Very true, but compared with similar organizations it averages up to a very high level in the number of representative men identified, and in all other features of a strictly educational and social organization it has nothing to lose by such comparisons.

"BRICK LAYING," BY OWEN B. MAGINNIS.

"Brick Laying" is the title of a new book on an old subject, which it treats in a concise and practical manner, that will make it a text-book for apprentices and an aid to those skilled in the work, for every detail of brick laying is described fully. Architects and contractors, as well as brick masons, will find the book both interesting and instructive. The work contains more than one hundred illustrations, showing the various manners of laying brick, systems of bonding, methods of mixing mortar and concretes, the construction of arches, lintels and piers and modern fireproofing. The book, bound in cloth, with gold title, will be mailed to any postoffice in the United States or Canada, postage prepaid, on receipt of price, $2.00. Send orders to T. A. Randall & Co., Indianapolis, Ind.

AMERICAN VS. ENGLISH POTTERY.

In a recent issue of the London Pottery Gazette the following report is made of the English pottery trade: "Although numerous firms, engaged principally in the home trade, are fairly busy, the general condition of trade is very unsatisfactory, and there is nothing like the volume of business being done that one looks for at this season of the year. American orders in particular are very scarce, and this is the more unsatisfactory as no very apparent reason exists for the depression in that direction. It would appear to be a legitimate deduction, from the statistics of recent years, that we have to face a decreasing business with the United States, as, with the improvements in American potting, the longer hours worked by their operatives and the 60 per cent. duty on our goods, the potters of Trenton and East Liverpool are able to undersell us in their own markets. We can do nothing to alter this. We cannot prevent American potters improving their ware or their methods, and we certainly cannot persuade or compel the British workmen to work as long or as hard as the Americans. All we can hope for is that the government and people of the United States will get tired of protecting trades which are always ready to boast of their ability to 'lick' creation.

"But we have been hoping for this for a long time, and, although the new President appears to be a man of more independent and enlightened mind than many of his predecessors, we cannot be very sanguine of any reduction of tariff in the immediate future. All we can do is endeavor to get and keep a firmer hold of our colonial and general foreign trade."

From the above one would judge that England has at last to take the "bit" that has so long threatened her. The tariff of 60 per cent. placed on British goods entering our market has given our potteries a protection that is encouraging to that industry. The quality of our ware is fast "pulling up," and in some cases even surpassing that of English manufacture. Our methods of production are much more modern and much cheaper. Our workmen are as good and work longer hours, thereby not only making the potting industry a means of livelihood, but making it a source of profit for those financially interested, and also giving to those employed work which, for steadiness and good wages, is unequaled in the world.

The potting industry of the United States has been "held down" long enough. It is not now a "side dish" or an after-consideration, but is one of our leading industries in this country. We have conquered in other things. Why not in this? Our plants are more up-to-date, our machinery more modern and our workmanship and materials as cheap and as good, and, furthermore, the call is now beginning to be for American goods. Then why should our ware not sell before English goods? If there is any good reason, we fail to see it.

R. L. C.

AN EARLY START IN WISCONSIN.

My Dear Randall:

We start making brick Monday, the 7th, the earliest that brick has ever been made in Northern Wisconsin. Have orders for three months ahead, and good prospects for still more. Barney Ladow was here yesterday and coaxed me into buying a pug mill. It is hard to get away from him. Major Hinkley is all right. His company has the contract for the brick for the new Carnegie Library, on which they will begin work in a very short time. We look for you up here next summer, but we want you to give us a week's notice, so we can have the larder full to overflowing. WM. FINNEGAN,

Green Bay, Wis., April 5.

WRITTEN FOR THE CLAY-WORKER.

A HOTEL REVERIE.

Dedicated to the Brick Machine Salesmen.

If I were home to-night,
I'd set me down in my parlor bright,
I'd call my sweetheart to my side—
The darling of my home, my bride;
The sharer of my woes and joys,
The mother of my girls and boys.
I'd squeeze her little hand so tight,
If I were home to-night.

If I were home to-night,
I'd feast upon her smiles so bright
And gaze in her eyes so chaste;
I'd pass my arm around her waist,
I'd lay her blushing cheek on mine,
And 'round her form my arms entwine;
I'd love my love with all my might,
If I were home to-night.

If I were home to-night,
I'd sit enchanted at the sight;
I'd call her "Honey, darling, dove,"
"Sweetheart mine, My only love;"
I'd kiss her lips, her cheek, her neck,
'Til almost smothered, she would break
In sheer defense my great delight,
If I were home to-night. —T. W. CARMICHAEL.

LITTLE PAT ROACH.

Little Pat Roach, of the cheery laugh,
Sitting down there on the brickyard bank;
Proud as a king of a realm and a half,
Square, on your throne of a wheeling plank;
Hat cocked back on your round, bald head;
Arms akimbo on your bare, brown breast,
Making a pose, your back to the tread,
And the funny lines on your face suppressed.
That was your posture one bright day
When the snap-shot amateur came our way.

Little Pat Roach, of the round, brown arms
That never grow weary of throwing brick;
Little Pat Roach, whose endearing charms
Were active movements and answers quick.
There mid the brick, when the noonday sun
Blistered the paint on the hash-house wall,
Cool as a greyhound, to hack a run,
Your laugh on top and your wit at call.
Big men wearied, but you, alone,
Lightly laughed when the day was done.

Little Pat Roach, of the big brogans
And the mud-stained breeches that topped them out—
The feet within, like your willing hands,
Were strong to move as your heart was stout;
And when it came for a long day's spurt
In the mud, on the bank or the evening hack,
I wonder not that you felt no hurt,
For little you needed to bend your back.
Strong and clever and lithe and low—
That was the build of you years ago.

Little Pat Roach, of the Irish eyes
And the Irish wit and the Irish brogue,
Clear was your heart as New England skies,
But a wag were you and a dreadful rogue.
Oft at the kiln, when the night hung long
And cares hung deep on the burner's mind,
You shortened the hours with a yarn or a song:
Sweet breaths from the home you had left behind.
Little Pat Roach, were you care-free then?
Well, you lightened the cares of your fellow-men.

Little Pat Roach, it is years ago
Since we were mates in the mud, old boy.
Years have come with their share of woe—
None have brought any more of joy
Than those hard days, when our shirts were wet
From the strain of toil and the blazing sun.
Do you think it may come that we may forget
The happy hours when our tasks were done?
You bury your griefs in a flood of wit,
But Little Pat Roach we don't forget.
—THE DREAMER.

TABLE OF CONTENTS.

North Carolina Kaolin Mining 427
Selling Brick for Profit..... 428
Roofing Tile Co. Shares Profit Making 428
The Northwestern Brick Manufacturers Meet 429
The Hanover Pressed Brick Co.... 430
Indiana's Clays and Clay Industries 431
The Clayworker in Madagascar 432
Ohio River Potteries Under Water 433
Improvements at East Liverpool Potteries 433
Traction on Wagon Roads... 431
Obituary 436
Buttonhole Talks 437

THE IOWA CONVENTION.

Report of the Iowa Brick and Tile Association Convention 438
President Wild's Address.... 439
Distribution of Clays of Economic Importance in Iowa 440
Drying Clay Wares by Use of a Suction Fan........... 441
Brickmaking as Seen from the Office Window......... 442
On Certain Phases of Clay Testing 443
The Future Tile Business... 446
Discussion of Lien Laws of Interest to Clayworkers.... 447
Tests of Strength of Hollow Building Blocks 447
Report of Treasurer......... 448
Report of Committee on Resolutions 448
Election of Officers.......... 448
List of Members 449
Students Study Drainage.... 449
Bifurcated Machine 451
By the Light of the Kiln Fire 452
An Immense Catalogue...... 453
A Talk on Machines......... 453
Cuba, New and Old......... 454
Success at Thurber.......... 454
J. B. Owen's Pottery, at Zanesville, O., Burns 455
Saving Cents Makes Dollars 456
German Clayworkers' Convention 458
An Improved Continuous Kiln 460

CORRESPONDENCE:

The New York Market....... 450
Pittsburg and West'rn Penn. Clay Industries 456
A Tale of Two Cities......... 457
A Good Way to Keep Up with the Times 457
Buffalo Brick and Building News 458
Brittle Brick Trouble........ 459
Cause of Brittle Brick....... 459
Probable Cause and Cure for Brittle Brick 459
With the Syracusans 459
A Remarkable Contest Between a Pike and a Shark. 459
From Brick to Lumber....... 460
A Prosperous Illinois Brick Company 460
Succeeded Where Others Had Failed Because He Reads The Clay-Worker... 460
Philadelphia Bricklets 461
Notes from Tidewater, Va... 461
St. Louis Brick and Building Notes 462
Pottery News 463
An Early Start in Wisconsin 465
Iowa Notes 468
Pacific Coast News.......... 470

EDITORIAL:

Current Comment 464
Good Roads and How to Get Them 464
Foundations for Pavements. 464
Belt Dressing 465
National Manufacturers in Convention 465
"Brick Laying," by Maginnis 465
American Vs. English Pottery 465
Editorial Notes and Clippings 472

MISCELLANY:

Little Pat Roach............. 466
A Hotel Reverie.............. 466

Index to Advertisements on Front Inside Cover Page.

WANTED—A capable man to take charge of a new brick and tile plant. Must be thoroughly competent to manage the entire business, of good character, sober and industrious. A splendid chance for a hustler. A permanent position and good salary for the right man. Address
4 1 r WAITING, Care Clay-Worker.

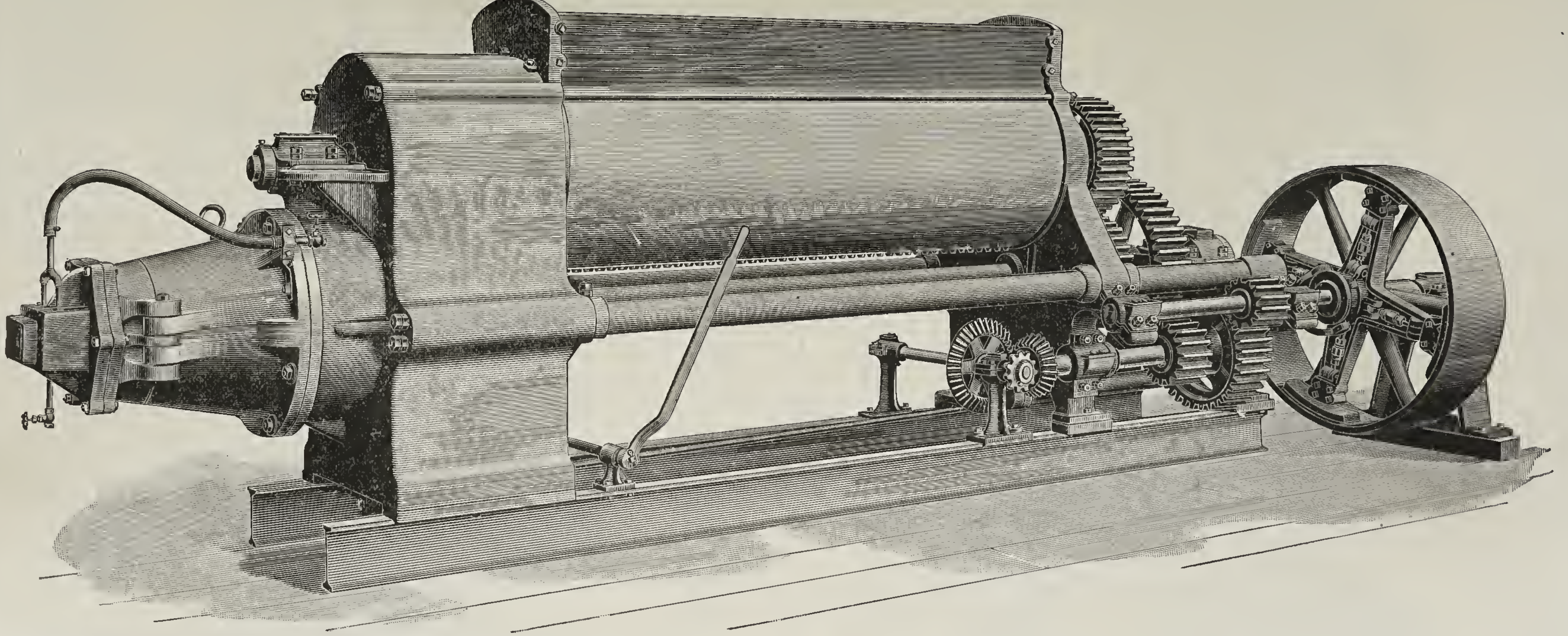
The Kansas City (Mo.) Hydraulic Pressed Brick Co. sustained a heavy loss by fire, which destroyed their immense stock sheds and ruined over 2,000,000 high grade ornamental brick. The greatest damage to the latter was, of course, caused by the water, which discolored them.

Dr. D. A. Williams, a pioneer tile manufacturer, died at his home in Switzer, Ind., recently.

A national industrial exhibition will be held at Osaka, Japan, in 1903. The project is in keeping with the progressive ideas of the Japanese, who have cracked the old shell of centuries and are emerging into a new industrial life. This exhibition will be a splendid opportunity for the display of American products, as Asia will without doubt be largely represented in the crowds of visitors that, for the first time in their lives, will see with their own eyes the latest products of Western invention as compared with those of the East. It would be well for American manufacturers to look this matter up, and thus make the best use of an opening into Asiatic markets.

THE HEAVY BRICK MACHINERY

Is made by Raymond. ✤ It is not as Cheap as some others, but it lasts. ✤ It has Staying Qualities. ✤ You Avoid Expensive Break Downs, and Incidentally Break ups by using it. ✤ ✤ ✤ ✤ ✤



WE DON'T MAKE all the Brick Machinery sold in the U. S., but those who use it say it is the best. We have every reason to believe this is true because that is just what we try to make. We can attribute the unprecedented demand for our machinery to no other reason than the fact that it is strong and heavy and satisfies the trade. Users of our machinery are our friends because they get good value for their money.

The C. W. Raymond Co.

DAYTON, OHIO, U. S. A.

NEW YORK OFFICE: 39 and 41 Cortlandt Street.

WRITTEN FOR THE CLAY-WORKER.

IOWA BRICK AND BUILDING NEWS.

EVERY BRICK and tile plant in northwestern Iowa is a veritable bee hive. Every manager who is asked the question as to how business is gives a wave of his hand and the assurance that he has all he can wiggle under. What few remarks you are able to get out of him impress you with the idea that each and every plant is working for a new record. In almost every instance the plants are devoting their time to the manufacture of brick and building blocks. The spring rush for material to build with is now on and from the new plans being drawn by the architects the indications point to one long continued rush.

The only feature of the situation out of the ordinary was a short-lived strike at the plants located at Lehigh. The operators claim they have been paying 10 cents a day more for labor than at any other point. They concluded to cut down the day price from $1.75 to $1.65. As soon as the men learned of the cut they promptly resolved to strike. They presented their side of the case to the operators with a threat that they would stay out all summer if the matter was not adjusted, and, furthermore, they wanted a nine-hour day instead of a ten-hour day. After ten days of discussion, the operators offered the old price to the men for a ten-hour day and it was accepted. Everything is now running smoothly.

The Lehigh Clay Works report that they are 100 cars of tile behind their orders. They have completed all additions to their plant which were laid out during the close-down period, and are now running at a capacity of 35,000 per day.

The Lehigh Brick and Tile Co., which started up last summer after an idleness of several years, caused by a bad fire, report a very prosperous outlook for the coming season and a liberal number of orders on hand.

The Corey Pressed Brick Co. have a number of large orders on hand for their buff building brick and are running at full capacity. They report a rush of spring business that gives every assurance of a busy season.

The style of the firm of Messrs. Straight & Campbell has been changed to the Lehigh Brick Co. They have their plant in running condition and as soon as they can burn the brick will build several new kilns. They report a number of good orders on hand and feel very much encouraged over the prospects for the coming season. They express no regrets at having located at Lehigh, and feel that they have engaged in a venture which will be successful as well as satisfactory.

Schnurr Bros., proprietors of the Kalo Brick and Tile Co., at Kalo, hold the record in northwestern Iowa for having run a full force all winter. They have not shut down for repairs or alterations, and are burning away full force at the present time. They report plenty of liberal sized orders and are much encouraged over the prospects for the coming season.

The Johnson Brick and Tile Co., who operate a plant at Kalo Junction, and are the youngest of the plants in this vicinity, report having a number of large contracts which will keep them going full force until far into the season. They have made several improvements in their plant, which will enable them to handle their business with greater dispatch.

The Fort Dodge Brick and Tile Co. have their full force of men at work. Among the force are some half dozen or more men who have been at the same work and in practically the same capacity since the plant was first started seventeen years ago. It is, indeed, seldom that a plant has men who do pit work for this length of time and are satisfied to remain in this one capacity for that length of time. They receive a small advance over some of the other employes in similar capacities owing to their experience and term of service, and the company regards them as among their most valued employes.

The Fort Dodge Clay Works have their entire plant in full operation, which includes a new bank of clay which was opened early in the season. During the late fall a railway was laid from the main plant to the new bank and cars are now being operated to bring the clay to the main plant. They anticipate a very heavy season, and Manager Thorson feels confident of a new record this season.

The Bradshaw Brick and Tile Co., of West Fort Dodge, have started on what they anticipate to be a very heavy season's run. Last year they were unable to fill all of the orders for the common sizes of tile and expect this year to run full capacity throughout the season.

The Livermore Brick and Tile Co., which started up last season, report a splendid business in the common sizes of tile, to which product they expect to devote a large share of their time. Manager Reilly reports that it is his opinion that last year's demand for tile will be exceeded the coming season owing to the prosperous condition of the farmers throughout northwestern Iowa, many of whom are bringing comparatively waste lands into a high standard of usefulness by tiling.

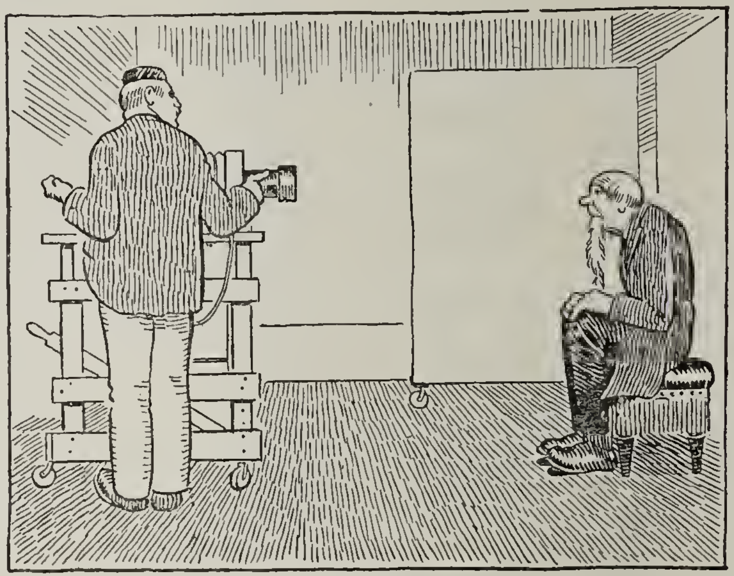
Fort Dodge, April 3. J. E. D.

A TOAST.

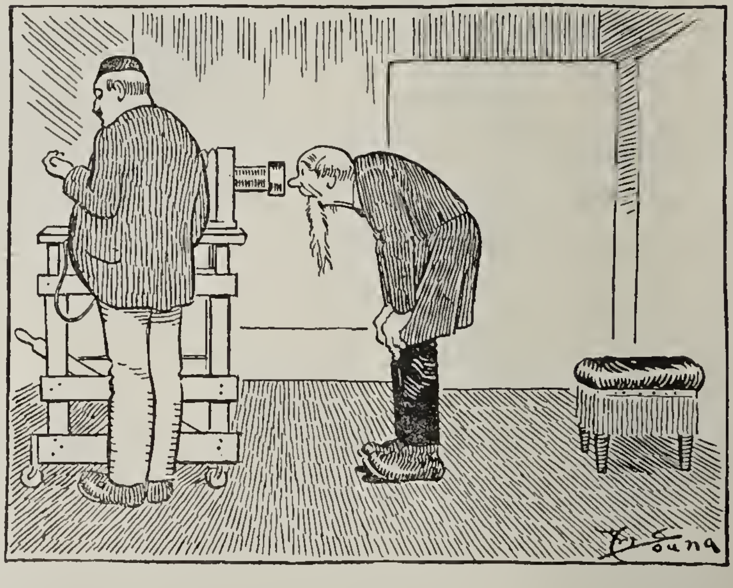
St. Patrick was a gentleman
Who, through strategy and stealth,
Drove all the snakes from Ireland;
Here's a bumper to his health.

But not too many bumpers,
Lest we lose ourselves, and then—
Forget the good St. Patrick
And see the snakes again.

—From Four-Track News for March.

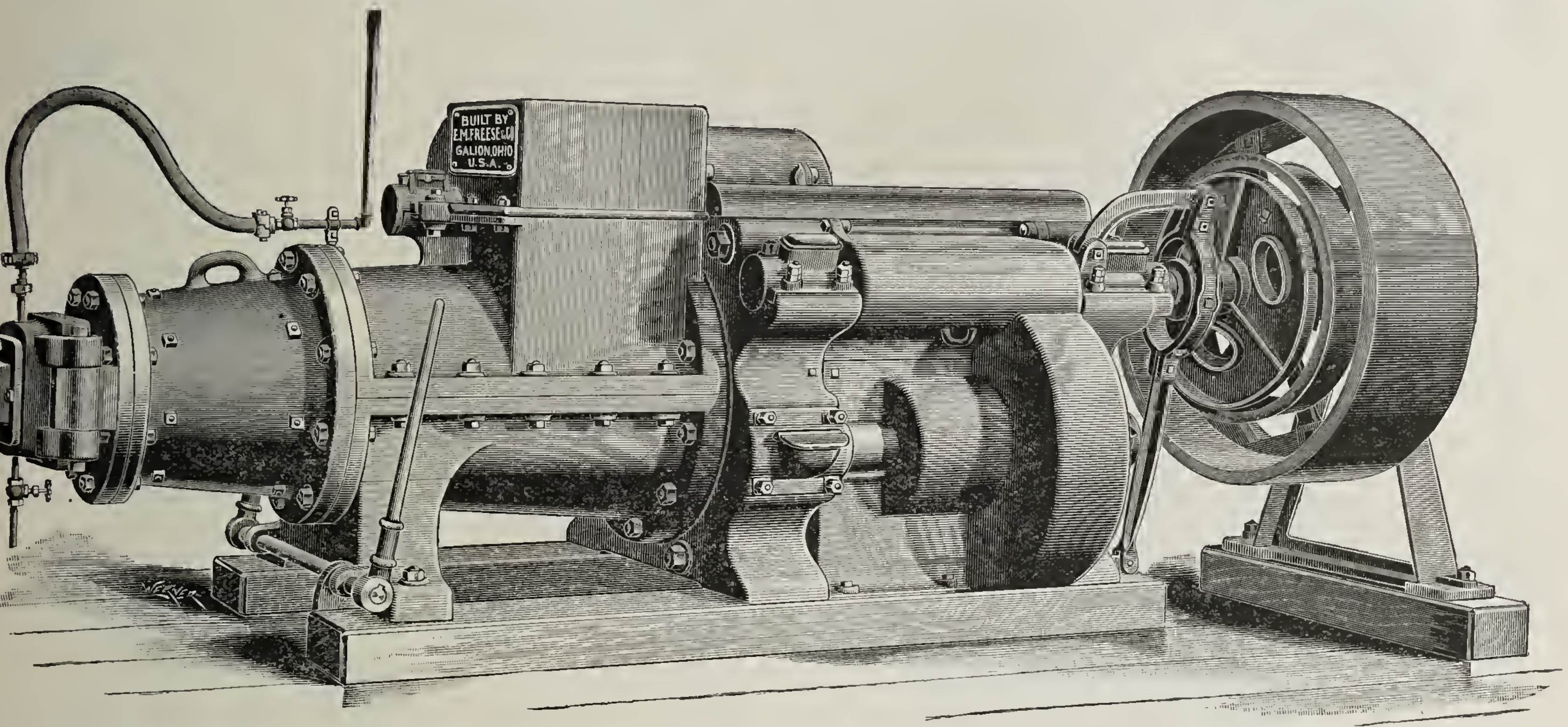


"NOW, LOOK RIGHT IN HERE, PLEASE."



—Life.

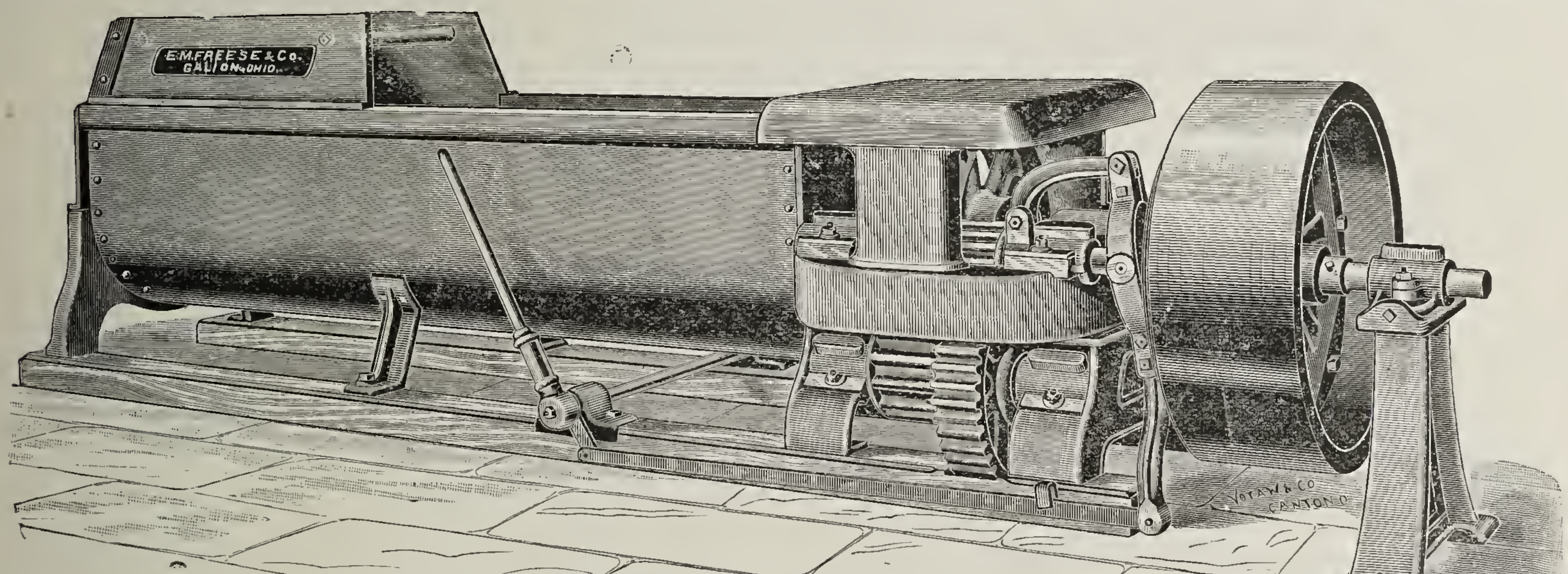
Our Mammoth Brick Machine



THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

* * *

Our Pug=Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.
VOTAW & CO
CANTON O

THESE PUG=MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitted for making a fine quality of brick.

E. M. FREESE & CO., = = Galion, Ohio.

PACIFIC COAST NEWS.

ACCORDING TO THE present outlook, there will be every inducement for builders to use brick during the coming season. Just at present brick is the only building material the price of which is not soaring upward. Lumber prices continue to go higher as the season advances. Brick, however, seems to be in a position where prices will fall unless some new turn takes place. The old combination between the manufacturers has expired, and so far nothing has been done to establish a new one. It is seriously feared, however, that the rise in lumber and other materials may operate as a check on all the smaller class of buildings.

Articles of incorporation of the Richmond Brick Co. were filed in this city in the latter part of March. The company has a capital stock of $100,000, and will begin operations with the following board of directors: Jacob Stern, Julian E. Cary, Sol Wangenheim, A. Hochstein and E. A. Vining.

On March 26 the British bark, Killoran, arrived at this city from Newcastle, England, with 150 tons of fire clay, 20 tons of tiles and 50,000 fire brick on board.

The Public Utilities Committee of the San Francisco Board of Supervisors has recommended the holding of an election for voting on an issue of bonds to the value of $5,600,000 for the construction of a sewer system.

Raine's tile factory, at Winterburg, near Santa Ana, Cal., has just installed an oil burning plant which will be used in its operation. The factory now has a large number of orders on hand, and will run steadily for an indefinite period, turning out about 30,000 tiles a month.

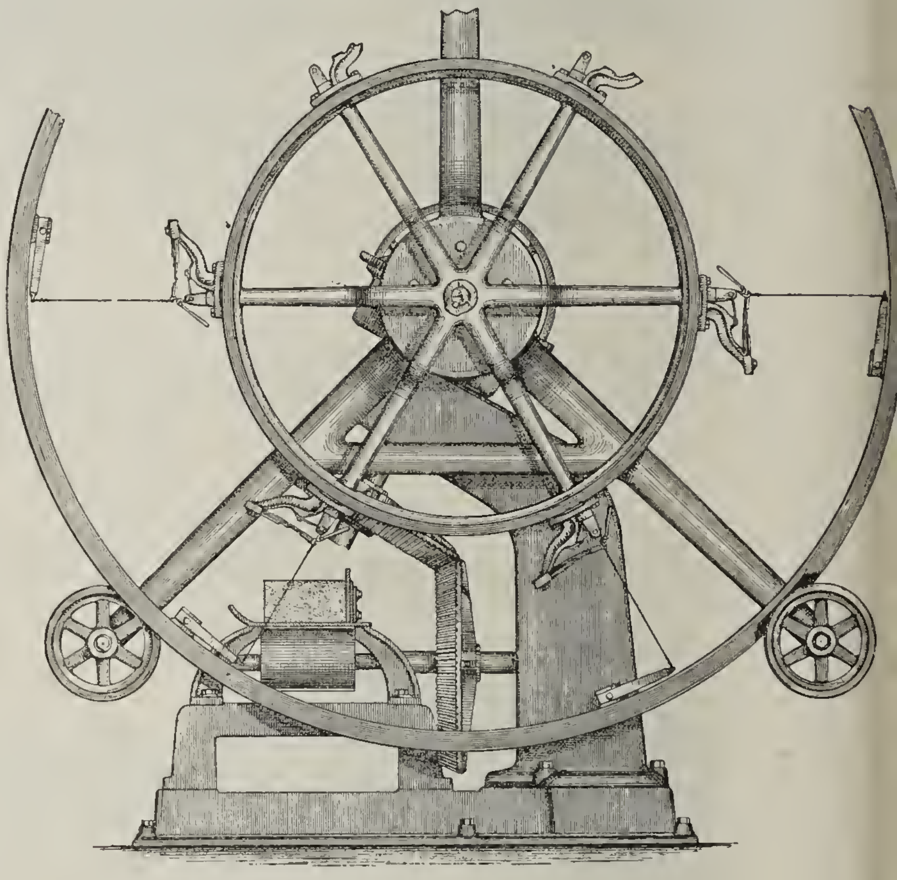
The Pacific Sand and Lime Brick Co., of 137 Montgomery street, San Francisco, one of the new brick manufacturing concerns of the coast, has secured the exclusive right to use the Huennekes process of manufacturing brick on this coast. Factories will be erected at San Francisco, Seattle, Wash., Portland, Ore., Honolulu, H. I., and perhaps at other points. These bricks are manufactured from sand and lime. The officials of the company here state that the bricks are really a sort of artificial stone, and are used without burning. It is claimed that the bricks can be sold at $15 per thousand, a price considerably lower than the local price for pressed brick and somewhat higher than the local price for common brick. It is intended that the new brick shall take the place of pressed brick, and no effort will be made to bring them into competition with common brick. The Pacific Sand and Lime Brick Co. will also manufacture bricks of magnesite, which material is found in abundance in California. The latter bricks will be manufactured for use in lining boilers and furnaces where oil is used as fuel. The leading spirits of the new company are C. H. Atkins, John Daniels, Louis F. Kwiatowski, M. Z. Pancost and T. S. Molloy.

Shannon's old brickyard, at the Squamish, Howe Sound, Vancouver, B. C., is being reopened by Mr. Burnett, who at one time carried on a brickyard on the Westminster road.

The Baden Brick Co. will resume work this month at South San Francisco, Cal.

The Taylor brickyard, on West Olive avenue, Redlands, Cal., has been greatly improved and enlarged by the addition of $7,000 worth of new machinery. One of the largest and best brick machines on the market has been installed, and is now ready for business. It has a capacity of 50,000 bricks a day. Drying racks with a capacity of 200,000 bricks have been erected and the burning will now be done west of the new plant.

The Petrified Brick and Stone Co. is a new concern, which began operations in Great Falls, Mont., on March 11. The process by which the company will manufacture its product is of a chemical nature. Common sand is taken, and, after being sprinkled with a blue-looking solution, is placed in any kind of molds desired. Within a short time it is taken out as hard as stone, without having been either burned or pressed. Any kind of color desired can be worked into the bricks or tile during its making, and the color is guaranteed to stand as long as will the stone into which it is run. At present the company will turn out special work, such as flower bed circles, curbings, building blocks for foundations, etc. Later they will go into the wholesale manufacture of brick and stone of all kinds for building purposes. The process is said to have been discovered by Prof. S. H. Pierce twenty-six years ago, but was not perfected by him until about ten years ago, since which time he has done but little, owing to complications, which are now removed. Walter Gorham is president of the company and Harvey D. Hall is business manager. The company is a co-partnership, and the amount of the capital stock is $5,000.



End View of Chambers' Rotary Cutter—See next page.

Geo. W. Williams & Sons commenced burning their new brick kiln at Clifton, Ariz., about March 12, and will have bricks ready for delivery about April 10. They have two first-class molders, and will turn out from 10,000 to 12,000 bricks daily. The kiln now being burned contains 150,000 bricks.

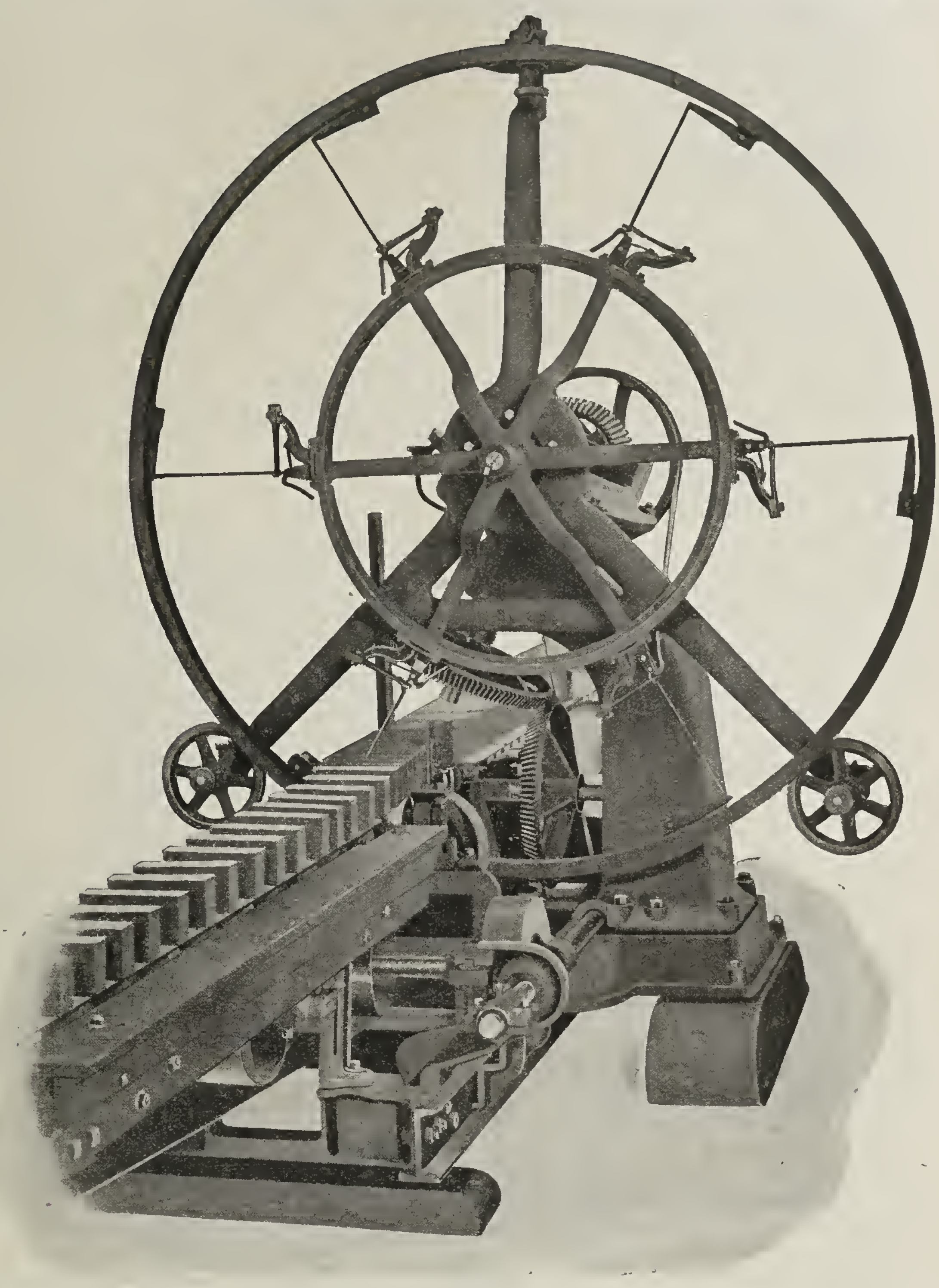
T. W. Petersen, of San Jose, Cal., who was known as the "father of the pressed brick industry" in California, died in St. Luke's Hospital, in San Francisco, on March 10. Nearly all of the modern buildings in San Francisco and of the other large cities of the coast contain some of the products of his yards. He founded his present works in San Jose in 1872, and shortly afterward he branched out with other yards nearer San Francisco. At the time of his death Mr. Petersen owned and operated seven brickyards. He was born in Schleswig-Holstein, Germany, in 1837, and came to the United States in 1857.

The first kiln of brick is now being burned at the new brickyard at Whittier, Cal., by the Whittier Brick Co. It contains 100,000 brick. A second kiln of 250,000 will be burned as soon as possible. The brick will be used in buildings to be erected this spring in Whittier. The company has substituted oil burners for wood.

SUNSET.

San Francisco, Cal., April 5.

The Chambers Automatic Side Cutter



TO MORE clearly show the plan and operation of the Chambers Rotary Side Cutter we invite attention to the accompanying photo engraving from an operating machine and to the line drawing showing particularly the end of the clay bar and the oblique shearing position taken by the wire while cutting the brick.

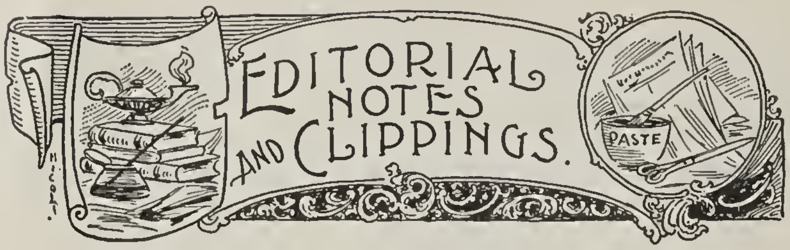
In the machine the pair of cut bevel gears shown are encased in a dirt-tight cover. These gears, with the measuring wheel immediately under the bar of clay, make the necessary connection between the cutting reel and the governing influence of the moving clay bar, so that no matter what speed the bar may travel the revolving cutter instantly and automatically adapts itself.

The bar of clay is supported by steel plates both on the bottom face and at one side, against which the wire is drawn, thus insuring a smooth, sharp cut. The slit through which the wire thus passes is only so wide as required for the thickness of the wire used, and the two vertical side plates are hinged so that they will open outwards if a stone or hard substance is pushed against them by the cutting wire. When the stone is thrown out the plates instantly return to normal position The measuring wheel is of a given diameter for each thickness of brick and the only extra parts needed when changing from one thickness to another is a new measuring wheel. The change from one to another can be accomplished within a half hour. A recent improvement enables us to build this cutter so that paving brick manufacturers may make simultaneously builders and pavers—say two brick of every six cut at each revolution may be 2½ inches thick and the remaining four brick 4 inches thick, or any similar combination desired. The variations in thickness are by gradations of sixteenths of an inch, and the scope of the standard cutter is from brick two inches thick to block of five inches thickness. The large ring is turned with a two inch V groove in its outer edge, and is supported by the two smaller wheels engaging in this groove.

The weight of the large ring is thus entirely supported by the two wheels and the cutting wires subjected to no greater strain than is involved in the cutting of the brick. The looped wires are about twelve inches long only and attached to tempered steel springs which keep the wires taut yet permit a needed flexibility. A wiper, not shown in the illustration, automatically cleans the wires between each cut. The cutter is entirely rotary, the comparatively slow speed of seventeen turns per minute of the cutting wheel producing over one hundred bricks and there are no waste chunks of clay bar between cuts. Its entire success on all kinds of material suitable for making side cut brick has been clearly demonstrated by continued use. For further particulars please address patentees and manufacturers,

Chambers Brothers Company,

Fifty-Second and Media Streets. *PHILADELPHIA, PA.*



EDITORIAL NOTES AND CLIPPINGS.

H. F. Spieler has purchased the brick plant of B. Haines, at Boise, Ida.

Kieffer Bros. are building a new brick and tile factory at Dallas City, Ia.

Joseph Wild has purchased the brickyard of M. G. Foley, at Arlington, Minn.

Volkam & Jencke have moved their brick plant from Oxnard to Montalvo, Cal.

Frank Halbeisen, of Erlin, Ohio, has purchased the tileyard of D. Whiteman, at Vickery, O.

Alder, Col., wants a brickyard. Interested parties should address Philip Conrey, of that place.

Frank C. Sargent has purchased the brickyard at Hinsdale, Mich., and will operate same this season.

W. B. Auxer and L. A. Martel will establish a brick plant at Moorhead, Minn., of 30,000 daily capacity.

Charles L. Hackett, Roanoke, Ind., advises us that he is on the market for a horse-power brick machine.

A brick and tile plant of 20,000 daily capacity has been established at Midland, Mich., by B. F. Bradley.

The Anthony Ittner Brick Co., St. Louis, Mo., has filed articles of incorporation, with $100,000 capital stock.

The Ellwood City Brick and Clay Co. has been organized to manufacture brick and terra cotta at Ellwood City, Pa.

The B. K. Enamel Brick Co. has been incorporated with $60,000 capital stock to manufacture brick at Cleveland, O.

Wallace, N. C., is to have a new brick and tile plant, J. S. Westbrook, W. F. Murphy and A. L. McGowan are interested.

H. S. Belden is putting in new machinery at his plant at Canton, O., in order to enable him to keep up with his orders.

The Clay City (Ind.) Brick and Clay Co. has been incorporated by J. N., J. P. and M. Lafferty, with $10,000 capital stock.

The brick plant formerly operated by the Campbell Brick Co., at Nina, N. Y., has been leased by George Cook and M. J. Stone.

The Green-Hunter Paving Brick Co., Fort Worth, Texas, recently closed a contract for 2,500,000 paving brick for Beaumont, Texas.

The Hutchison-Barns Brick Co. will enlarge their plant at Fairmont, W. Va., increasing their capacity from 12,000 to 50,000 per day.

The Armstrong (Iowa) Brick and Tile Co. has recently been organized by William Stuart, G. W. Umphrey, B. F. Robinson and John Dows.

E. L. Patterson has sold his interest in the Standard Brick Co., Huntsville, Ala., to W. Y. C. Hume, who will operate the plant this season.

Articles of incorporation have been filed by the Avoca (Ia.) Pressed Brick Co. Herman Seiffert, Simon Berne and A. Stoltenberg are interested.

C. L. Tramp, a practical brick and tile manufacturer of Audubon, Iowa, contemplates establishing a brick and tile factory at Sac City, Iowa.

L. U. Nickell advises us that the Fulton (Mo.) Fire Brick Co. has bought all the properties formerly owned by the Fulton Fire Brick and Mining Co. and the Fidelity Fire Brick and Fuel Co., and $25,000 is being expended in improving the property, which will double the capacity. Mr. Nickell will continue as general manager.

M. Kilroy, proprietor of the Genoa (Ill.) Brick Works, writes that he wants to buy a second-hand brick machine. Address him, Box 186, Genoa, Ill.

The Benton (Ark.) Brick Co. has been incorporated by W. R. Casey, John Schmeltzer, J. S. Odom and others. The capital stock is placed at $25,000.

Hanerwas Bros. have bought the Neff brickyards, at Sheffield, Tenn., and are now enlarging them by the addition of new and improved machinery.

The Canton (O.) Hollow Block Co. is running night and day, turning out hollow block and paving block. They will build three new kilns for hollow block.

John Marke, a workman at the Ostrander Brick Works, Perth Amboy, N. J., was caught in the shafting and killed before the machinery could be stopped.

A. J. Zilker is at the head of a company organized at Austin, Texas, to install a $65,000 brick plant, which will be one of the largest in that part of the Lone Star State.

W. N., J. M. and L. B. Humphrey will erect a modern brick works at Mill Creek, Pa. The plant will be operated under the firm name of the Humphrey Brick and Tile Co.

Louis B. Camp and Richard E. Armstrong have secured an option on a large tract of valuable clay land at Akron, Ohio, on which they will erect an immense sewer pipe factory.

The Ferguson Brick and Tile Co., Hartford, Mich., advise us that they want to buy molding sand that will burn a good red. They desire to purchase the sand by the carload.

Frank Tracey is making a number of improvements at his brick plant at Toledo, O. He will put in new machinery, build new sheds, etc., which will more than double his capacity.

The Akron (Ohio) Roofing Tile Co. has been incorporated, with $105,000 capital stock, by Charles E. Howland, H. M. Hollinger, W. B. Collins, Clarence Howland and Harvey Musser.

A. B. Altland, Canton, O., writes that he is in the market for good pans, crushers and hollow building block machines. He prefers second-hand machinery, but it must be in good condition.

Thomas Ward, of Rensselaer, Ind., has purchased the brick and tile works of J. B. Meneley, at Rantoul, Ind. Mr. Ward will move to the latter city and have charge of the operation of the plant.

Ayer & McCarel is the name of a new concern to manufacture clay goods at Brazil, Ind. Mr. Ayer has been in the clayworking industry for many years, and the success of the enterprise is assured.

The Texas Pressed Brick Co., of Mexia, Tex., has been incorporated, with $22,000 capital stock. The incorporators are J. M. Long, Julius Nussbaum, C. J. Kauhl, M. E. Roberts and J. B. Long, of Mexia.

Articles of incorporation have been filed by the Corneer Bros. & Croft Brick Co., of Omaha, Neb. The capital stock is $10,000 and the incorporators are Samuel Corneer, Erhard Corneer and Henry Croft.

The Fifield Bros. are making extensive improvements in their brick plant at Janesville, Wis. Among the improvements is a new kiln. When finished the works will have a kiln capacity of 750,000 brick.

A deal was closed April 10 whereby the stock of the Savage Fire Brick Co., whose main office is at Keystone Junction, Pa., passed into the hands of Johnstown and Pittsburg capitalists for a sum approximating $250,000. Three brick plants, clay mines and 2,000 acres of mineral land figured in the transfer.

[CONTINUED ON PAGE 474.]

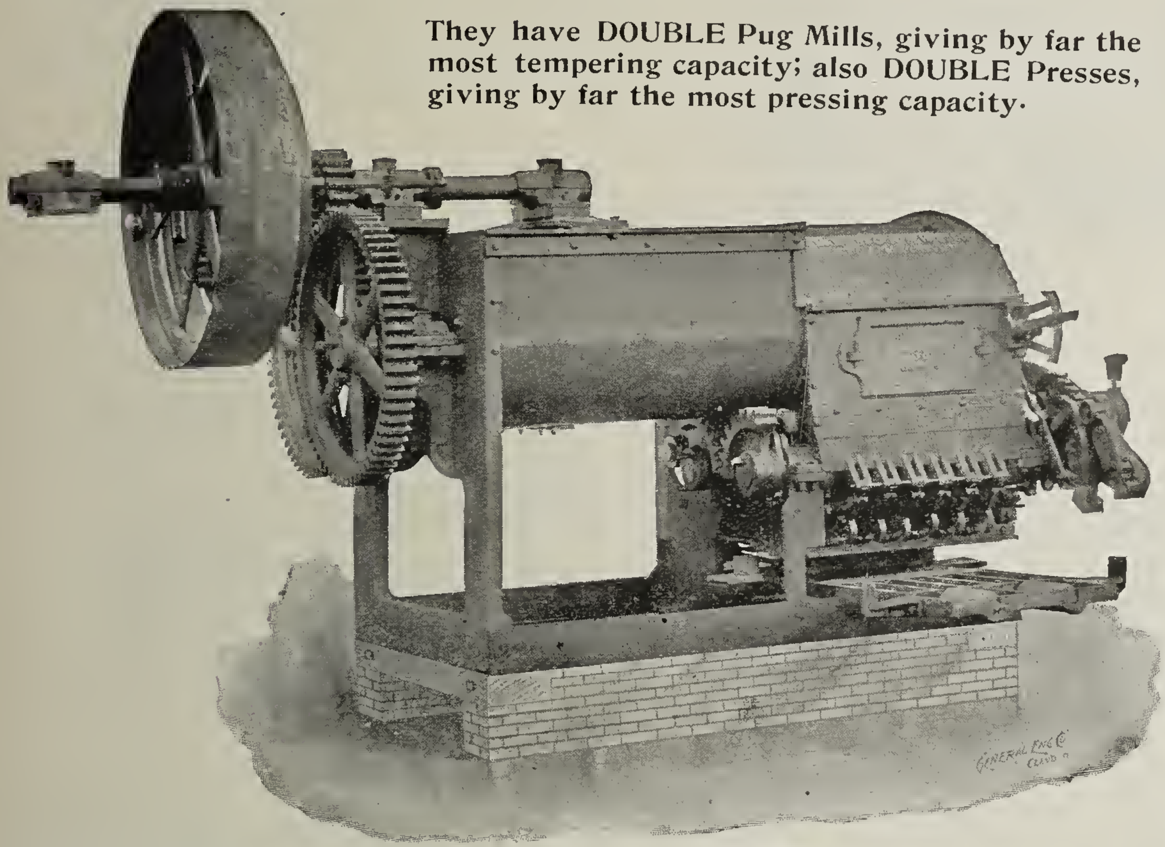
LIGHT HOUSES

Do not have to hire bands or fire cannon to call attention to their shining—**THEY JUST SHINE.**

Thus it is with the two "soft-mud" machines we manufacture (one horizontal and one upright). **Each** is at the head of its respective class, and the number of each in use, (note the figures) **tells the whole story.**

Over 125 "MONARCH" BRICK MACHINES in use.

They have DOUBLE Pug Mills, giving by far the most tempering capacity; also DOUBLE Presses, giving by far the most pressing capacity.



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READ THIS.

A Fresh one Every Month.

◆ ◆ ◆

Denver, Colo., Oct. 21, 1901.
The Wellington Machine Co.,
Wellington, Ohio.

Gentlemen—We have used your "Monarch" Machine for three years, and have found it very satisfactory in every respect. It is simple, positive in action, very easy to repair; and it has needed very little repairing, and it is also powerful.

We also wish to add that it is light running, and requires very little power to operate it.

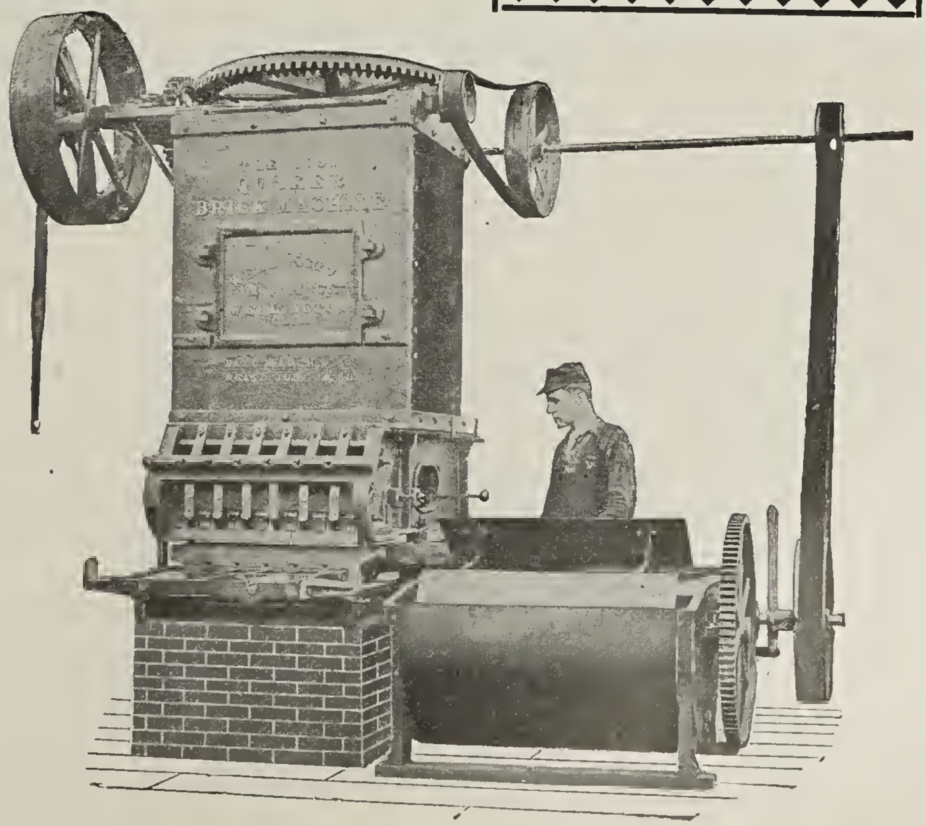
Yours very truly,
Robinson Bros.,
162 S. Sherman Ave.

◆◆◆◆◆◆◆◆◆◆◆◆

OVER 500 "QUAKERS" in use, both Horse and Steam Power, now made entirely of Iron and Steel.

OUR MOULD-SANDER is the BEST, SIMPLEST AND CHEAPEST.

WITH our ROLLER-BEARING BRICK BARROWS you can wheel 20 per cent. more load and do it as easily. Order one subject to approval.



ALL OTHER SUPPLIES. **Send for Catalogue.**

The Wellington Machine Co.,

WELLINGTON, OHIO.

EDITORIAL NOTES AND CLIPPINGS—Continued.

The new directors of the Savage Co. will be Scott Dibert and John H. Waters, of Johnstown; W. S. Ravenscroft, Ridgway; Francis J. Torrance, Pittsburg, and Dr. G. W. Wagoner, Johnstown.

The Perry Brick and Tile Co. is the name of a new corporation at Perry, Iowa. A. C. Zartman is president and M. P. Bonnie secretary of the company. As the name implies, they will manufacture brick and tile.

Hugh O'Brien will establish a steam brick plant at Brewer, Maine. Mr. O'Brien has been operating a soft-mud plant for a long while, but has decided that the demand for building material in his vicinity justifies an up-to-date plant.

Speer Bros., of Pittsburg, Pa., have purchased the immense plant of the Douglas Whisler Brick Co., at Vanport, Pa. The purchase price was $45,000. They will increase the capital stock and make a number of improvements in the plant.

William Porath, Detroit, Mich., advises us that he desires to purchase some second-hand racks and pallets, and also three bottom dump clay cars. Parties interested are requested to address Mr. Porath direct, at 878 Twenty-fifth street, Detroit.

H. Remillard, of the well-known firm of Remillard Brick Co., San Jose, Cal., died at his home in Oakland, after a brief illness. Mr. Remillard moved to California forty years ago, and has been connected with the brick business for many years.

A new company has been organized at Decatur, Mich., known as the George Kruse Brick Co. They will manufacture white brick, and have purchased seventeen acres of clay land. The incorporators are George Kruse, M. S. Carney, W. H. White, E. Cady and others.

The Hutsonville (Ill.) Brick and Tile Co. have been making a number of repairs and improvements at their plant, preparatory to an early start this spring. They have built two additional kilns and enlarged the dryer, which will give them an increased capacity.

A new brick plant is being established at Jerome, Mich. A. O. Jones, formerly of Zanesville, Ohio, has charge of the plant, which is equipped throughout with machinery from the shop of H. Brewer & Co., Tecumseh, Mich., and bids fair to be a success in every way.

The Mound Brick Co. has been chartered to manufacture brick at Beaver Falls, Pa., by H. W. and B. L. Reeves, of Beaver Falls; H. E. McClain, of Rochester, Pa., and William Bald, of Rochester, N. Y., and H. E. McClain, of Pittsburg. A plant will be established at once.

Charles A. Hoshour writes that he has sold his stock in the brick company at Cleburne, Texas, with which he has been connected for several years, and has taken the superintendency of the Oklahoma City Brick Co., Okla. Ter., and will be pleased to receive catalogues of brick machinery and supplies.

W. B. Silliman, of Pulaski, Ala., and A. J. Chatterton, of Lynville, Ala., have formed a partnership under the firm name of Silliman & Chatterton and bought the brick works of H. B. Malone at Athens, Ala. The plant has a capacity of 25,000 brick a day and will be operated to its fullest capacity.

Fire destroyed the small locomotive and engine house of S. C. Cowgill, the tile manufacturer at Summitville, Ind., entailing a loss of $3,000. As the engine was used to haul clay to the factory, Mr. Cowgill will have to shut down the plant until another can be procured. Mr. Cowgill suffered a similar loss several years ago.

The Donner-Roach Land Co., of North Milwaukee, consisting of citizens of Jefferson, Watertown and Waterloo, Wis., held a meeting recently to elect officers. The following officers were elected: President, Lewis M. Smith, of Jefferson; secretary and treasurer, A. J. Roach, Waterloo; directors, W. A. Beurhaus, Watertown; O. J. Kerschensteiner, Jefferson; J. H. Schlueter, Watertown. The company is capitalized at $50,000, and owns valuable brick clay beds. It was decided to engage at once in developing the property, consisting of twenty-one acres in North Milwaukee.

The tile factory at Urbana, Ill., owned by John W. Stipes, was destroyed by fire recently. The factory had not been operated since 1898. The loss is placed at $3,000, on which there is $1,800 insurance.

The Fayette Mfg. Co., of Pittsburg, Pa., will build a large brick plant at Chester, Pa. The company operates a plant at Pittsburg, but thinks it will be better to have a plant in the eastern part of the State to supply the demand in that section, rather than pay freight on brick from the Pittsburg works.

I. M. Hedges, a member of the Excelsior Brick Co., at Haverstraw, N. Y., died at his home in that city, April 9. Although sixty-three years old, Mr. Hedges was actively engaged in business, being president of the First Haverstraw Bank and connected with the Haverstraw Electric Light and Power Co. and the Haverstraw Trap Rock Co.

San Bernardino, Cal., is to have two new brick plants. Taylor Bros., brick manufacturers of Redlands, Cal., have recently purchased the Goodall brickyard, which they are remodeling and fitting up with modern machinery. The other, the San Bernardino Pressed Brick Co., is an entirely new concern, and is rushing the work on the plant to completion as rapidly as possible.

The Frost Manufacturing Co., Chicago, Ill., report among recent sales two nine-foot Frost iron-frame dry pans to the Cherryvale (Kan.) Press Brick Co., four nine-foot dry pans to the Hydraulic Press Brick Co. for their new plant at Kings Highway and Missouri Pacific railway tracks, St. Louis, Mo., and two nine-foot dry pans to the Myers Brick Co., Dallas, Texas.

The Champion Clay Co. is the name of a new concern organized at Wellsville, Ohio, to manufacture stiff-mud brick. Mr. T. H. Silver, who has been engaged in the brick business for a number of years, is at the head of the enterprise. A new plant will be built, and will be equipped with new machinery throughout. The gentlemen interested with Mr. Silver are F. H. Cooper, G. W. Adams and J. Goetz.

Beecher W. Bennett, of Muncie, Ind., has his new brick plant, which he is constructing on the site of the old plant, which was destroyed by fire some months since, about completed. Mr. Bennett is installing modern machinery and appliances, and will have a fireproof plant that will be up-to-date in every particular. The plant will have a daily capacity of 45,000.

J. C. Steele & Sons, manufacturers of the "New South" brick-making machinery, Statesville, N. C., report business good in their line at this season, especially in their larger machines. They are shipping outfits to Lexington, High Point, Concord, Washington, Durham and Denver, N. C., Hollands and Lawrenceville, Va., Fort Valley, Ga., Elloree, Pickens and Batesburg, S. C., and fifty dryer cars to Atlanta, Ga. They state they are working extra time and can't keep up with orders.

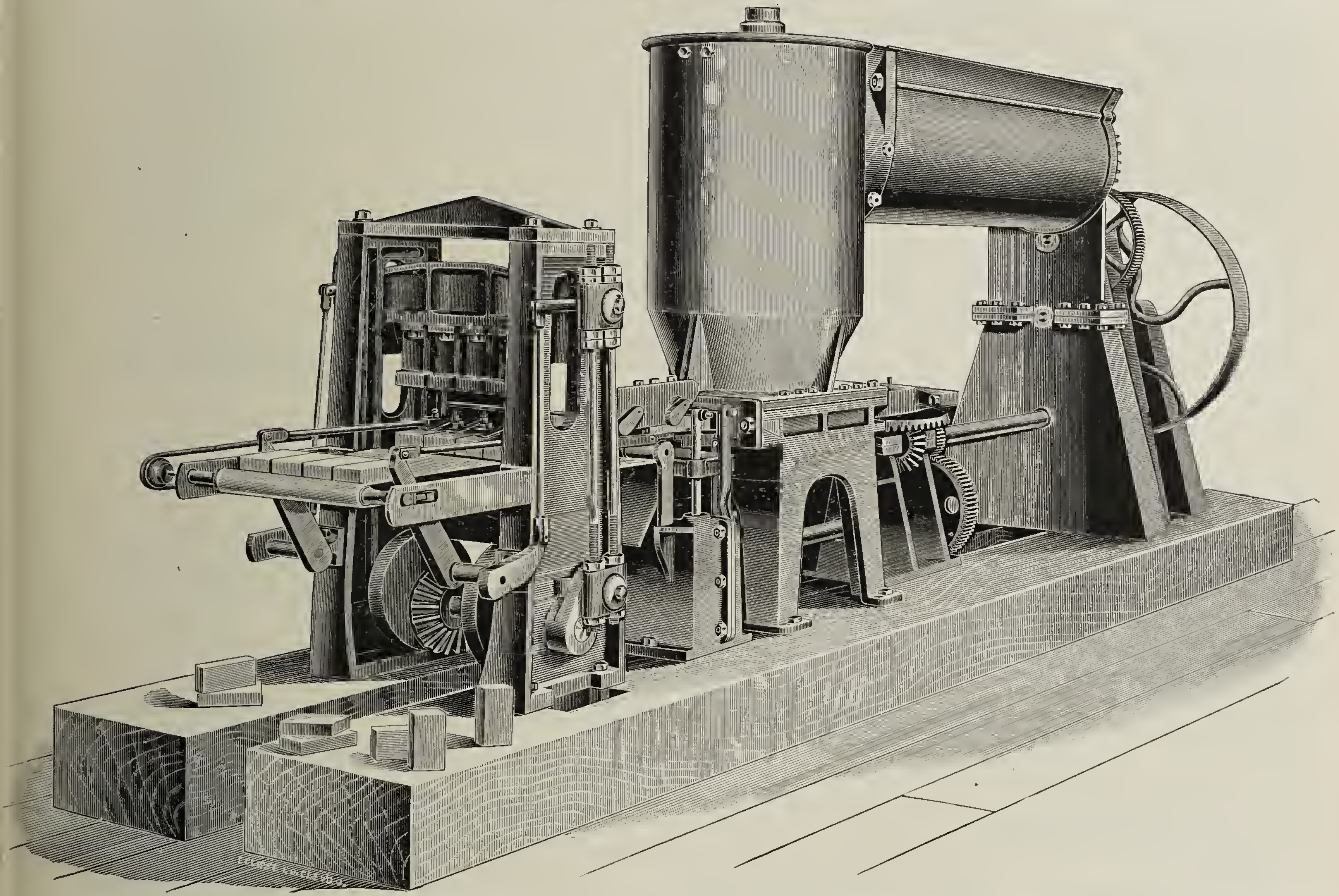
The W. J. Clark Co., of Salem, O., who make the world-wide famous "Salem" elevator buckets, report a continued increase in the output of their works. Though they have had for many years the largest and best equipped plant in this country, or perhaps in the world, for making elevator buckets of all kinds, they have found it necessary recently to add more machinery in order to keep close up to all demands. Buckets of various shapes and sizes for handling clay are an important part of their business.

The Ross-Keller Brick Machine Co., of St. Louis, has been doing a very large business during the past few months. More territory has been covered than at any previous time of the company's existence, with the most satisfactory results. Some of the most recent sales are as follows: One six-mold machine and complete outfit to the Rusk Brick Manufacturing Co., Rusk, Tex.; one six-mold machine and complete outfit to A. J. Zilker & Co., Austin, Tex., and two six-mold machines, with complete outfit, to the Choctaw Pressed Brick Co., South McAllister, I. T. The latter plant will be one of the largest and finest installations in the Southwest. Many other orders are on hand, and the company has work enough in sight to keep the works running full time for many months to come. They recently installed new officers, as follows: President, Jno. V. Camp; vice president, Aaron Woodhull; secretary, Thos. J. Merritt.

"The Dictator"

The only Brick Machine which will Produce "Perfect Repressed Brick Without Lamination."

Strong, Powerful, Simple and Positive.



Capacity from 25,000 to 40,000 Repressed Brick per Day.

THIS MACHINE is guaranteed to automatically produce better repressed Brick both in construction and appearance, at less cost, than any other machine or combination of machinery now on the market. It is especially adapted for making Paving, Fire or Fine Front Brick.

The Battenfeld Mfg. Co.,

Write for Catalogue. *513 Williamson Bldg., CLEVELAND, OHIO.*

DETROIT BRICK AND BUILDING NOTES.

A PERUSAL OF THE work given out during March indicates that Detroit will surely equal, if not surpass, her record-breaking volume of building construction of 1901. Thus far this season business structures are in the lead. It is encouraging to those interested to know that the volume of work given out during March has exceeded that for the corresponding month of last year. A comparison of figures shows that for March, 1901, there were 279 permits for construction, costing $595,800, while for March of this year 349 permits were granted for buildings costing $638,600, a majority of which specified brick.

Architects report they are overworked, and that the great demand for brick will be increased as spring progresses.

The extraordinary demand for building brick in this city the past season and the subsequent raise in price from $5 to $7.50 and $8 per thousand have brought many new faces into the brick manufacturing district, and who are at present busily engaged in erecting plants, that they may begin operations as soon as the season opens. In Detroit this season there will be, all told, and in operation, twenty-six steam plants, with capacities ranging from 3,000,000 to 10,000,000. This number of plants is the largest in the history of her brickmaking industry.

The firm of Schneider Bros., composed of Joseph H. and Frank A., is a new name on the list of manufacturers. They have secured a very desirable location and established a thoroughly equipped plant in every respect, and will be in readiness for operation as soon as the weather permits. Mr. Joseph H. Schneider, the senior member, is well and favorably known by all Detroit brick manufacturers. He is a successful business man, having for many years conducted a flour and feed store. Mr. Frank A. Schneider, the junior partner, is also an energetic, successful business man, and is at present the proprietor of a flourishing hardware store.

The plant of Greusel Bros. has been leased for a term of years, together with the good will of the firm, to Messrs. Dysarz, Hass and Stubbe, who take immediate possession, adopting the pallet rack system. Though successful in other business enterprises, neither Mr. Dysarz or Mr. Hass have had any practical experience in brick manufacture, but in Stephen Stubbe, the junior member, they have associated themselves with a veteran brickmaker, whose long experience, coupled with their business integrity, cannot fail but make the enterprise a successful one.

Scarcity of labor continues to be an annoyance to the manufacturers, with the coming of new plants it is feared labor will be at a premium. Great inducements have been offered the men. Dumpers command $3 per day.

The Pilsener Brewing Co., of Cleveland, have prepared plans for several buildings for their Detroit depot. They include a brick boiler house, pitching house and coal room 50x95 feet, with a brick chimney 12 feet square at base, 6 feet in diameter at the top and 125 feet high. There is also a barn included for the housing of sixty horses. Its dimensions are 106x90 feet, to be built of paving brick and to be two stories high. The total cost of the buildings will reach $60,000.

The H. L. Walker Co. will begin work without delay on their four-story brick warehouse on Larned street, costing $16,000.

Hay & Todd Manufacturing Co., of Ypsilanti, Mich., have invested in Detroit real estate, having purchased a tract on Isabelle, south of Michigan avenue, 130x130, where they will erect a modern factory entirely of brick. It will be two stories with a high basement. Work will commence as early as possible.

Mr. A. C. Tredway is about to start the building of a terrace of fifteen dwellings of stock brick veneer, on Jefferson avenue, at a cost of $30,000.

A very large brick addition to the old McGrath brewery will be added, and such other improvements will be made so as to make two stores, a factory and eight dwellings, costing $10,000.

Prices remain the same, and unless the manufacturers succeed in increasing the supply, it is possible that the price will take another leap. At present the rates are: Common, $7.50; stock, $8 per thousand.

DOROTHY DALE.

Detroit, April 5.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than $1.00.

FOR SALE—500 wood racks, in good condition, for double-deck cars for stiff-mud brick. Apply SOMERS BRICK CO.,
41 d Atlantic City, N. J.

FOR SALE—Four-mold Simpson dry press, in good condition; cheap. Address
DARLINGTON BRICK & MINING CO.,
4 2 d 150 Frankstown Ave., Pittsburg, Pa.

WANTED—Second-hand pallet boards and brick racks. Must be in good condition.
Address SPOT CASH,
41 d Care Clay-Worker.

FOR SALE—SWIFT'S WONDER OF THE AGE, the grateless coking table furnace kilns, lately patented. Thoroughly tested. Write for particulars. F. E. SWIFT,
3 tf d Washington, Iowa, U. S. A.

LEASE.

I will lease to the right party "W. E. Cowington's" tile plant, situated right on the C., L. & N. R. R., at Mason, O., for one year at the following terms:

I will furnish kiln, large tile shed, mill and yards for one-third of all made tile, to be piled up and left on the ground. Power under same roof can be hired cheap, and the whole county is clay.

Call and see or address
J. C. BENNETT,
Agent for W. E. Cowington,
4 3 d Mason, Ohio.

FOR SALE—One large size Chambers brick machine with automatic end-cutting table. Address
R. L. C., 328 Pennsylvania Ave. N. W.,
4 3 cm Washington, D. C.

WANTED—A good brick setter. One having had experience in burning up-draft kilns with coal and outside furnaces preferred. Also brickyard men. Liberal pay for good men. W. W. PARRY,
4 1 125 Rome, N. Y.

WANTED—First-class burner for burning dry press brick. Stating reference, wages, age, etc., please address
LOUISVILLE BRICK CO.,
510 W. Jefferson St., Louisville, Ky.
4 4 dm

WANTED—A party to take working interest in brick plant, two miles from Oak Grove, Pa., where fifteen million brick will be used in construction of shops. Can sell all I can make. Capacity, 30,000 per day. New equipment, complete. Big building boom in spring.
Address LEWIS,
2 3 d Care Clay-Worker.

FOR SALE.

Over 1,000 acres of clay land, with a No. 1 repressed brick plant, situated in eastern Pennsylvania, having three veins of clay and one of coal. This clay is suitable for different shades of buff or mottled brick. Two No. 1 brick presses and 2 100-h. p. boilers. All other machinery in first-class condition. Facilities for shipping on two railroads, with a siding 400 feet long. Will be sold outright if desired, or will be contributed in exchange for stock if capital can be furnished to develop.
Address COURT HOUSE,
4 3 cm Care of Clay-Worker.

WANTED—An experienced man to take partnership in an established fire brick plant in Texas. Ready sale for all products at good prices. Only small capital necessary for right man. Address
3 2 dm BOX 6, care Clay-Worker.

FOR SALE.

Good as new:

Twenty "Iron Clad" dryer cars, soft mud, $8.00 each.

One "Leviathan" belt, 83 ft. x 16 in. x 6 ply, $30.00.

One Iron Tray Sandbarrow, "Arnold" make, $2.50.

One Green Brick Barrow, "Arnold" make, $2.50.

F. o. b. Newport News or Norfolk, Va.
4 1 cw W. H. H., care Clay-Worker.

A SPLENDID OPENING IN TEXAS

For some competent pressed brickmaker, who can command some capital. Clay and magnificent sand in abundance and railroad facilities are first-class. Last year all the fine brickmakers in Texas were behind on their orders, and ordinary brick were bringing $12 per thousand. A tempting opportunity for the right man. Address for particulars
R. BLOUNT, Standard Oil Bldg.,
2 3 cm New York City.

FOR SALE.

One 9-foot Dry Pan, iron frame.
One 4-mold Semi-Dry Press, almost new.
One Arnold Steamer.
One Revolving Screen.
One Miller Hand Press.
One 15-H. P. Portable Engine and Boiler.
One 20-H. P. Ajax Engine.
One 25-H. P. Boiler.
THE T. B. TOWNSEND BRICK & CONTRACTING CO.,
2 tf d Zanesville, Ohio.

WANTED—Young, active superintendent for large paving brick works.
Address F. W. B.,
3 2 d Care Clay-Worker.

FOR SALE—One four-mold Boyd brick press; second-hand; capacity, 20,000 per day. For price and further information address THE CROWN FIRE CLAY CO.,
4 1 d Akron, O.

WANTED—Situation wanted as manager or superintendent of either dry press or plastic brick plant. Competent to erect and operate entire plant, and thoroughly acquainted with all details pertaining to both the operation and management from clay bank to building. A1 reference. Address
4 1 c J. E., care Clay-Worker.

FOR SALE—80-h. p. steam engine, 12x24 cylinder. Also belt driver Deane pump, two cylinders, 5¼-in. diameter, 10-in. stroke.
W. S. McKINNEY & CO.,
15th Floor Marquette Bldg.,
4 1 cm Chicago.

WANTED—A practical all-round brickmaker; one that can handle colored labor to good advantage, with ten or fifteen thousand dollars cash, to take stock in a company that is chartered for $50,000. Good opening for all kinds of brick. The business has been established for twelve years. Good demand for brick; common, $7.50 to $8 per thousand; pressed brick, $8 to $12 per thousand. We have good machinery; capacity, 100,000 per day. The town has a population of 25,000. Climate good. Address
4 3 c W. J., care Clay-Worker.

Books for Brickmakers

"CLAY GLAZES AND ENAMELS," H. R. Griffen	$5.00
"BRICKMAKERS' MANUAL," Morrison and Reep	3.00
"BRICKMAKING AND BURNING," J. W. Crary, Sr.	2.50
"TABLE OF ANALYSES OF CLAYS," Alfred Crossley	1.00
"VITRIFIED PAVING BRICK" H. A. Wheeler, E. M.	1.00
"PRACTICAL FARM DRAINAGE,," J. J. W. Billingsley	1.00

Mailed, postage free, on receipt of price.

T. A. RANDALL & CO.,
PUBLISHERS,
INDIANAPOLIS, IND.

The STARKEY DOWN DRAFT DRYER.

[Pat. January 30, 1894. Other patents pending.]

The many users of this system claim there is no other steam dryer. It has no rival for economy, and **does dry brick in the center** as rapidly as on the surface. If you want a Dryer, write for circular and convince yourself that you have been misled on these points. Address

JOHN STARKEY, Minerva, Ohio.

Twin Mountain Fire Clay Works,

SOLDIER, CARTER COUNTY, KENTUCKY.

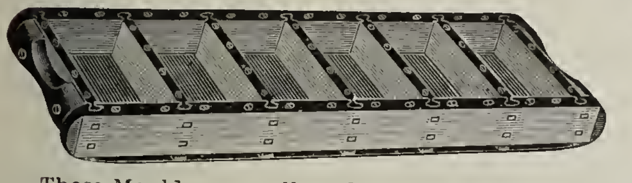
...MINER AND SHIPPER...

Capacity 100 Tons per Day, Superior Quality No. 1 and No. 2 Clay.

ORDERS SOLICITED.
PROMPT DELIVERY.

W. A. Connolley.

S. B. GRAY, Manufacturer of



Brick Moulds,

Of Every Kinds and Description.

Six-Brick Machine Moulds	$1 50
Six-Brick Hand Moulds	2 00
Four-Brick Hand Moulds	1 50
Three-Brick Hand Moulds	1 00

These Moulds are well made of the best materials and are up to anybody's standard. If they are not so send them back.

Telephone 1084.

1510 West Washington St., INDIANAPOLIS.

FOR SALE—Two double Columbian Raymond represses, in first-class condition, and one Raymond hand press, never used. Price low. Address REPRESS,
2 3 c Care Clay-Worker.

WANTED—Situation by energetic, reliable man, thoroughly competent in terra cotta, and for last nine years foreman in roofing tile plant. Desires to better himself. Address H. F., care Clay-Worker.
4 1 c

WANTED—A foreman. Must be capable, and able to manage colored labor and look after the business of a small brick plant. Brickmaking by hand. State wages desired. A good chance for the right man.
Address F. J. CAMPBELL,
4 1 cm Ponchatoula, La.

FOR SALE.

One E. M. Freese & Co. C. Machine.
One 6 B H. Brewer & Co. Machine.
One Brewer No. 1 Stone Separating Clay Crusher.
Address McHOSE BROS.,
3 2 d Grinnell, Iowa.

WANTED—Position by a strictly temperate, energetic young man as foreman or superintendent. Understand all kinds of stiff mud brick machinery; also Chambers automatic side-cut brick machine. The South preferred. Can handle negro labor. Have the best of references. Address
3 2 c WILLIAM, care Clay-Worker.

FOR SALE.

—Paving or Building Brick Plant, at Bucyrus, Ohio.—

Consisting of twelve acres of land, with buildings and good railroad facilities, 1 100-h. p. engine, 2 80-h. p. boilers, 9-ft. dry pan, elevators, winding drum, 8-ft. pug mill, No. 2 Bucyrus Giant brick machine, 16-track Bucyrus steam tunnel dryer, with 170 single deck cars, 25,000 feet 1-in. and 1½-in. pipe, 15 tons T rails, transfer cars and turn-tables, 11 round down-draft kilns, with good bands, fire brick, floor brick, etc., etc.

Will be sold as a whole or in part. Inquire of L. P. BATTEFELD,
Room No. 7, Fair Bldg.,
1 3 c Indianapolis, Ind.

FOR SALE.
A BUSINESS BONANZA.

ONE OF THE best TILE and BRICK factories in Illinois. Product widely advertised for years, and absolutely unrivaled. Everything fully equipped, ready to begin immediately; in first-class shape. Must be sold at once to close an estate. Investors seeking a manufacturing investment will find this a business bonanza. Trade long established. Spotless reputation of highest honor earned. Mill easily adaptable also to making conduit pipes, hollow building blocks, mantel and floor tiles, and every fire clay product. For making building and paving brick this factory is one of the best money makers in the country. For terms and particulars call upon or address
MRS. WM. P. CRAIG,
S. J. BAXTER,
Executors,
3 2 cm Woodson, Ill.

A RARE OPPORTUNITY TO OBTAIN INTEREST IN AN ESTABLISHED BUSINESS.

FOR SALE—All or three-fourths interest in a brick plant; capacity, 6,000,000 a season; 5,000,000 made last season and all sold; good market and finest clay; 125-horse power Corliss engine; two boilers, 125-horse power; brick machines and all necessary buildings and tools of all kinds; racks, pallets and also steam dryer with engine, boiler, pumps, etc., etc. There is a saw mill in connection with the plant to run in winter time, when too cold for brickmaking. Principal owner, whose interest may be purchased, will retire, and the owner of the remaining interest, who is thoroughly conversant with the business and will oversee plant and educate the purchaser to manage the business, if he is not an experienced brickmaker. This is an exceptional opportunity for a young man to become established in a sound, legitimate business in a healthy and delightful climate. For further details, address
3 1 d WOOD, care Clay-Worker.

WANTS, FOR SALES, ETC.

FOR SALE AT A BARGAIN.

The following brick machinery, which is practically new, having been used only a few months:

One "Hercules" extra heavy Soft Mud Brick Machine.
One Horton Mfg. Co. Mold Sander.
One 5-leaf Dumping Table.
One Double Transfer Car.
One Combination Transfer Car and Turntable.
One Raymond Victor Repress.

Address
THE CLINTON COUNTY FIRE BRICK COMPANY,
2 3 cm Mill Hall, Pa.

EXPERIENCED MAN WANTED,
To take charge of and an interest in an established paving brick business. To insure the necessary interest in the business, the party will be required to invest some capital. Present owner and manager has an abundance of capital, but wishes to be relieved of the care of managing the business. The plant is well equipped and doing a paying business, and would not be sold but for the desire on the part of the owner to retire from active business. It is a rare opportunity for a proficient, energetic, reliable man, with some capital, to acquire a valuable plant. For further particulars, address CARNEGIE,
3 1 ? Care Clay-Worker.

FOR SALE—Books for brickmakers. Inexperienced workmen will find them a source of valuable information. Brickmakers' Manual, $3.00—a practical treatise on the everyday details of brickmaking; Clay Glazes and Enamels, $5.00, tells how to glaze and enamel brick and gives valuable recipes; Vitrified Paving Brick, $1.00, tells all about the best materials for and methods of manufacturing paving brick; Tables of Analyses of Clays, $1.00, gives the analyses of many American and European clays. Any or all of these mailed, postage prepaid, on receipt of price. Write for lists of other valuable books for clayworkers.
Address T. A. RANDALL & CO.,
3 tf r Indianapolis, Ind.

For ADVANCEMENT in PRACTICAL ENGINEERING

STUDY HAWKINS' AIDS
Standard & Up-to-date

$11. for a Set
$1. per Month
Catalog free for the asking.

THEO. AUDEL & Co
PUBLISHERS,
63-FIFTH AVE.
New York.

WHY DON'T YOU

Use a Steam Shovel
On your clay bank?
Second-hand Steam Shovels
are one of my specialties.
I can give you a bargain.
Send for a list of them.

WILLIS SHAW, Chicago.
614 N. Y. Life Building.

Evens & Howard Fire Brick Co.

ST. LOUIS, U. S. A.

Sewer and Culvert Pipe. Locomotive Tile.
Furnace and Boiler Tile. Fire Brick and Cupola Blocks.
Flue Lining and Chimney Pipe.
Sanitary Earthenware. All kinds of Fire Clay Products.

The Crown Fire Clay Co.,

Akron, Ohio.

HIGH GRADE FIRE BRICK,

For Lining Kilns, Etc., a Specialty.

Also Hollow Blocks, Flue Linings, Wall Copings, Etc.

When writing for prices, state for what purpose brick are to be used.

——Catalog Free.

Too Many Brickmakers

Use Cheap Brick in Kiln Construction. The Best is the Cheapest no matter what it costs. We can supply your wants in strictly

High Grade Fire Brick,

At MODERATE PRICES.

SEVEN WORKS in two States on THREE COMPETING TRUNK LINES.

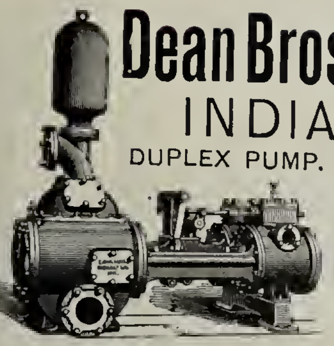
Reese-Hammond Fire Brick Co., General Offices, BOLIVAR, PA.

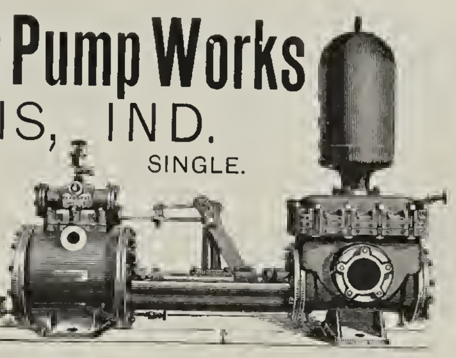
Correspondence Solicited. Annual Capacity 100,000,000.

ORIGINAL
GANDY STITCHED Cotton Duck
BELTING.

Unequalled in strength and durability, especially adapted for heavy work, and for all places where belts are exposed to atmospheric changes, heat, steam, water, oils, alkalies, etc. Every belt bearing our trade-mark "ORIGINAL GANDY" absolutely guaranteed. BEWARE OF IMITATIONS. Manufactured solely by

The GANDY BELTING COMPANY,
Head Offices and Factory: BALTIMORE, Md.
Write for New Catalogue.





Dean Bros.' Steam Pump Works
INDIANAPOLIS, IND.
DUPLEX PUMP.
SINGLE.
PUMPING MACHINERY
FOR ALL PURPOSES.
SEND FOR CATALOGUE
AND PRICES.

Leviathan Belting, Once!
Leviathan Belting Always!

LET US
SUBMIT
EVIDENCE.

Main Belting Company,
1219-39 Carpenter St., Philadelphia.
120 Pearl St., Boston.
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WHY IS IT

That all the leading Paving Brick, Pressed Brick and Sewer Pipe factories are using THE PERFECT CLAY SCREEN? Because it is the ONLY screen. If you are in doubt investigate for yourself. YOU are thinking about getting one now.

WHY DON'T YOU DO IT

and make as good and uniform product as those who are using our screen? WE GUARANTEE THEM. Just allow us an opportunity, and we will show you how it is done. DO NOT WAIT UNTIL NEXT YEAR as there is no time like the present. We want to hear from you.

DUNLAP MFG. CO.,
Bloomington, Ill.

$2.00 THE CLAY-WORKER ONE YEAR, (IN ADVANCE) **$2.00**

NO DRY PRESS BRICK PLANT complete without the Carmichael Clay Steamer.
T. W. CARMICHAEL,
Inventor and Manufacturer,
6 tf d Wellsburg, W. Va.

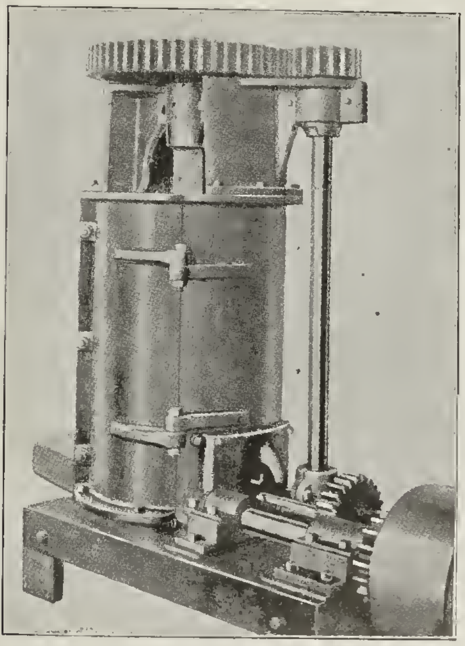
FOR SALE—SECOND-HAND MACHINERY.

One rotary boiler iron dryer 48 inches diameter, 27 feet long, shaft, boxes and gearing complete, price $250.
LUDOWICI ROOFING TILE CO.
12tfd 508 Chamber of Commerce, Chicago, Ill.

FOR SALE.

At your own price, complete outfit for plastic clay, including granulator, rolls, clay elevator, pug-mill, stiff mud machine and cutting table. Also five bottom dump cars, shafting, pulleys and two boilers. Reason for selling, clay is exhausted, farm sold and must clear the land. Machinery is all in good repair and will be sold cheap if taken soon. Address
12 tf d W. D., care Clay-Worker.

TO KEEP OUT OF RUTS
Wonderful, how we can help you to roll along the smooth Highway to Success.
INDIANAPOLIS ENGRAVING AND ELECTROTYPING CO.
25 W. GEORGIA ST. IND'P'L'S., IND.
USE SUPERIOR CUTS



Pug Mills
FOR
Pottery, Tile, Etc.

Tripple geared and very heavy. Write for price and Catalogue.

The PATTERSON FOUNDRY
AND MACHINE CO.,
East Liverpool, Ohio.

OHIO STATE UNIVERSITY

Offers through its College of Engineering, full courses of instruction in Civil, Mechanical, Electrical and Mining Engineering, and in Architecture, Ceramics, Chemistry, Industrial Arts and Manual Training.

ITS DEPARTMENT OF CLAYWORKING AND CERAMICS, established in 1894, was the pioneer of its kind in America, and has been from the first successfully training men to overcome the technical problems of clay manufacture

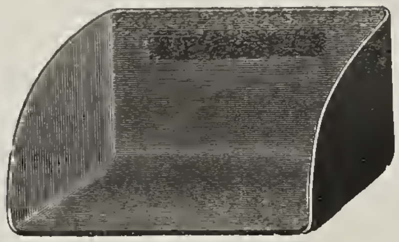
Tuition is free. Laboratory fees are nominal Faculty of over one hundred instructors Equipment very extensive.

For information or catalogue address,

Prof. Edward Orton, Jr.,
Department of Ceramics.
Dr. W. O. Thomson, President.

Well Now, Notice This!

NONE BETTER.



NONE CHEAPER.

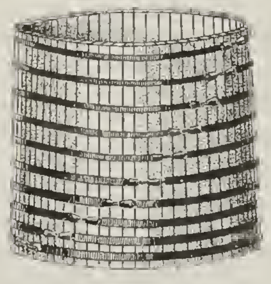
This is another of the many shapes of buckets we make for handling clay. For a long time you have seen in this advertisement a Low Front Salem Bucket. What you see here now is a Shelf Bucket. We make every kind that clayworkers use; all strong and good.

The W. J. CLARK CO.,
Salem, Ohio.

Calculating the Cost

of a new plant, do not neglect to include a

CALDWELL RED
CYPRESS TANK.



It is always tight and you need never fear collapse nor bursting. Our catalogue and price list should be on every brickmaker's desk.

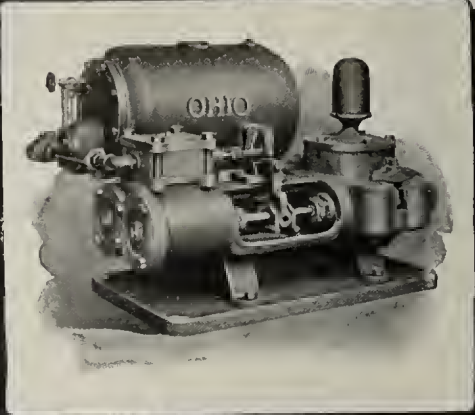
W. E. Caldwell Co.,
2100 Barbee Ave. LOUISVILLE, KY.

"THE FUEL ECONOMIZER"

The profits of any business enterprise —no matter what its character may be—*are dependent upon its operating expense.* There are frequently various expenses which are not reduced to their minimum; but the item demanding first attention is the cost of fuel. This expense is perpetual, and deserves no little consideration.

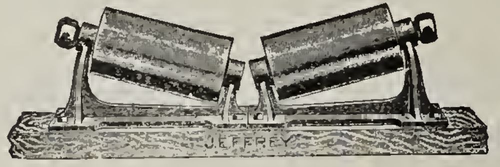
To what use do you apply the condensed steam from your heating system, or are you allowing it to be wasted? *The Ohio Automatic Feed Pump and Receiver* affords the most economical means for utilizing this heat, which frequently is wasted. These machines soon pay for themselves.

Ask for illustrated circular "D."



THE OHIO STEAM PUMP CO. CANTON, O. NEW YORK. CHICAGO.

JEFFREY CHAIN AND RUBBER BELT CONVEYORS.



FOR HANDLING

CLAY, BRICKS, TILES, SAND, COAL, ASHES, ETC.,

Chains, Wheels, Screens, Spiral Conveyors, Cable Conveyors, Rubber Belt Conveyors, Elevator Buckets, Boot, Bolts, Pan Conveyors, Shafting, Hangers, Pulleys, Etc,

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SEND FOR CATALOGUES.

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THE JEFFREY MANUFACTURING CO., Columbus, Ohio. New York, Chicago, Denver.

Brick Pallets.

It is the opinion of the best Manufacturers that the Pallet System is the most economical method for making bricks. White pine lumber is conceded to be the best and most economical material for pallets. We make them. A word to the wise is sufficient. Send postal card for circulars.

Mershon, Schuette, Parker & Co.,
Saginaw. East Side Mich.

Make Your Own

BRICK CUTTING WIRES

AND SAVE MONEY, TIME AND ANNOYANCE. Twist both ends of wires without removing from machine. Every Brickmaker should have a machine of his own. For particulars and prices, address

M. E. GREGORY, - - Corning, N. Y.

The Best Brick Drier

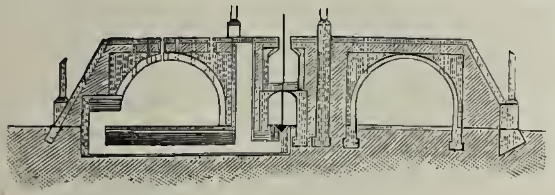
Is the Drier which dries the Brick safely, quickly and thoroughly in the shortest time and with the least cost and labor. This the **Phillip's Fan Dryer** will do. The first cost of construction is moderate and cost of operation is much less than old style dryers. Soft Mud, Stiff Clay or Dry Press Brick dried speedily and economically. The **PHILIP'S DRYER** is no experiment but is now in successful operation in a number of plants in the U. S. and Canada. **Phillip's Inside Fan Heater and Dryer,** proves to also be a "Condenser."

Relief from back pressure guaranteed.

Exhaust steam alone ample for heat supply.

If you are interested in the drying problem don't fail to write for circulars.

S. G. PHILLIPS, Agent and Patentee, **126 Church St. Rahway, N. J.**



Wuerz-Kottenhagen,

ST. LOUIS, MO.

Architects and Patentees.

Specialties CONTINUOUS KILNS

For Brick, Clayware, Lime, Cement, etc. Kilns are built to suit all requirements and locations.

Hundereds of kilns have been built by us in European countries, giving now the best of satisfaction and produce the highest percentage of first-class wares with a minimum expenditure of fuel.

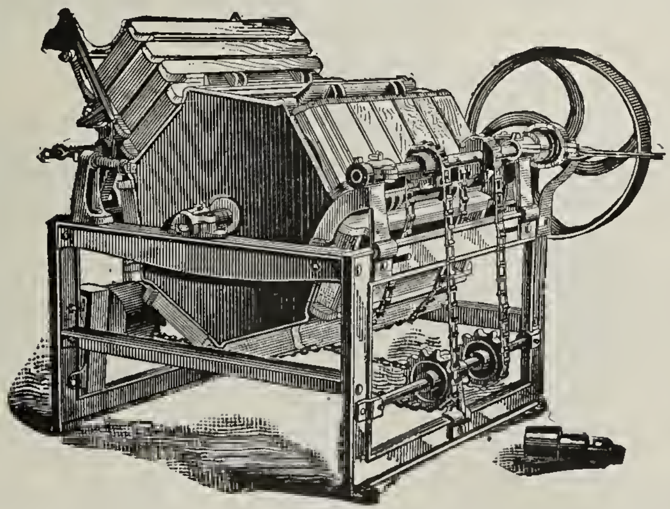
Our kilns are of superior architecture, cheap in construction, easy to understand and operate, and perfectly free from any nuisance. Waste heat utililized for drying and various other purposes.

CHAMPION Brick Mould SANDING MACHINES.

No expensive belts, aprons or gearing to wear out. Simple, strong and serviceable. It is the heaviest and strongest sander on the market. It weighs about 1,300 pounds.

My machine, with the molds riding upon the cylinder, keeps the molds out of the sand and so does not mix clay and dirt in the sand. It does its work quicker and cleaner, with less wear and tear, and leaves less sand on the bricks than any other machine made and at the same time uses less sand and runs with less power.

A. H. NEWTON,
Manager and Sole Agent,
HAVERSTRAW, N. Y.



We own and control nine U. S. Letters Patents Nos. 284,115; 290,847; 301,087; 385,790; 322,455; 372,698, 327,711; 407,030 and re-issue No. 10,976, and all sanding machines employing either the cylinder or feed rack infringe one or more of these patents.

The United States Courts have in several cases sustained the validity of these patents and issued injunctions against infringers. Buck is now out of the market; several suits have been commenced against users of the Martin sander, all of which have been succesful. A suit is now pending against the Brockway Brothers Co., of Fishkill, for the use of the Horton Sander.

Our machines are the best and the title to them is perfect. All persons are warned not to purchase such machines from any other manufacturer, as suit will be commenced at once for damages and injunction against all infringers.

DAVIS'S

Brick, Tiles and Terra Cotta.

Third Edition.
Revised, Improved and Enlarged.

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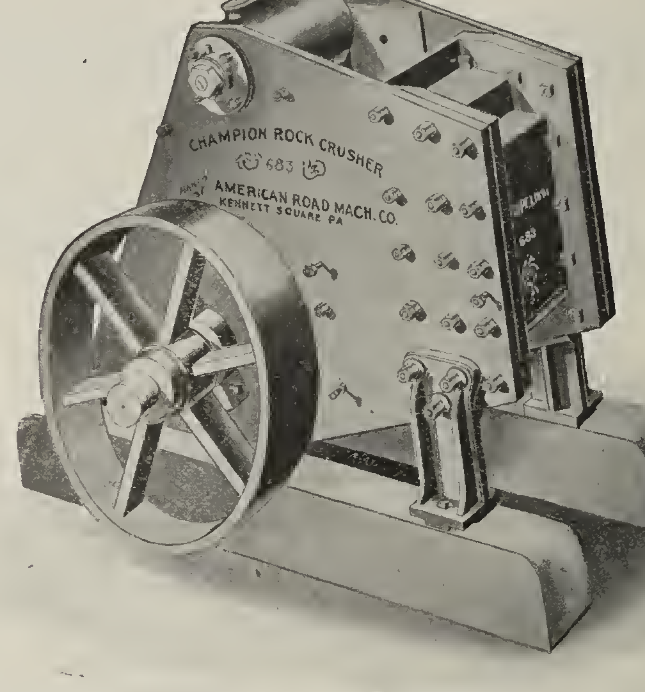

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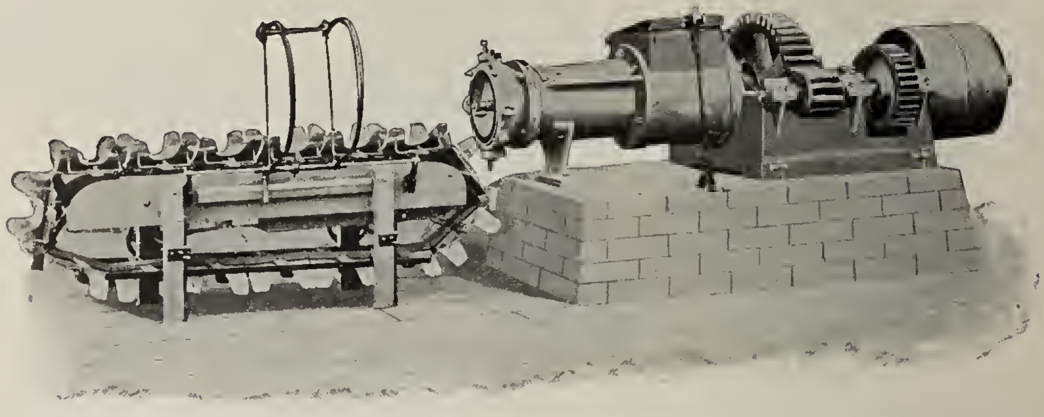

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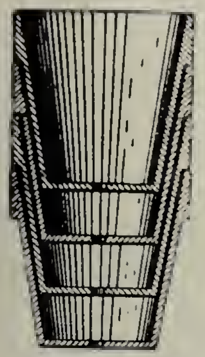

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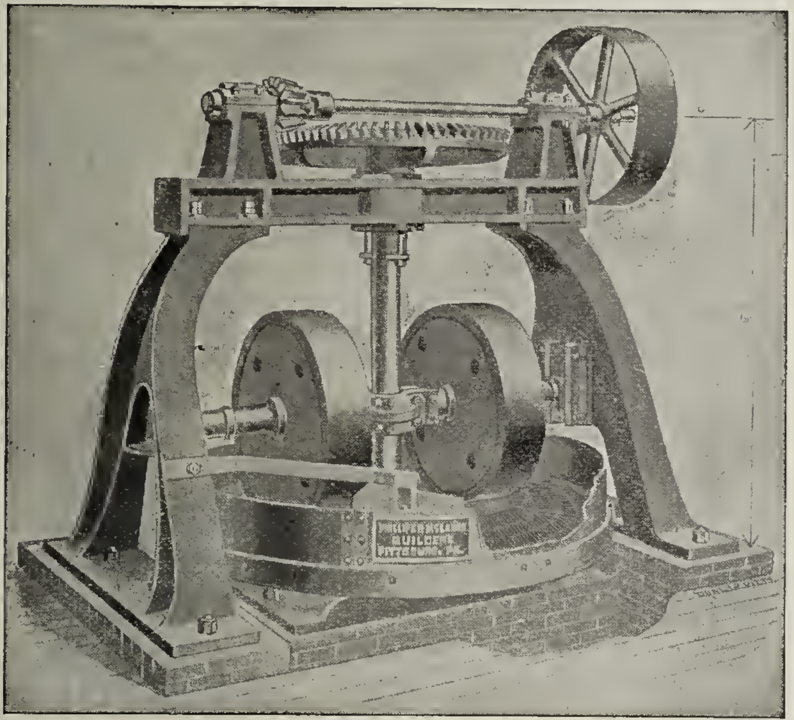

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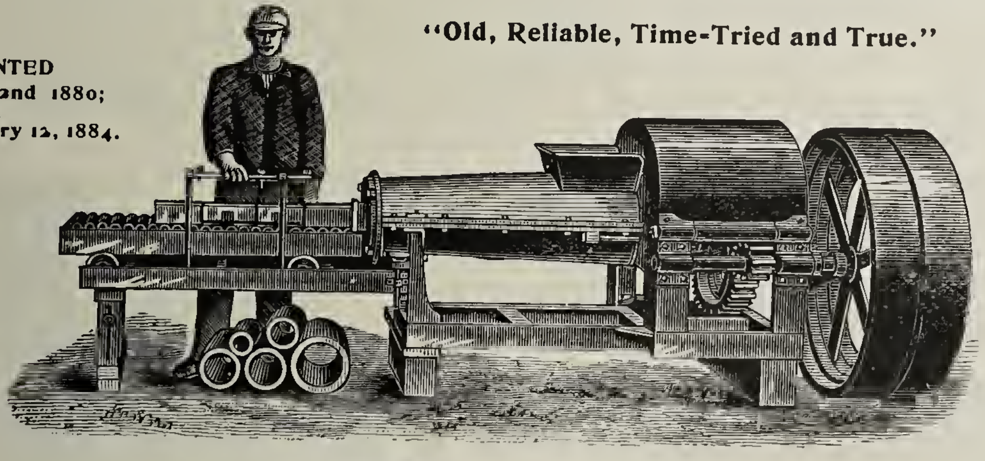

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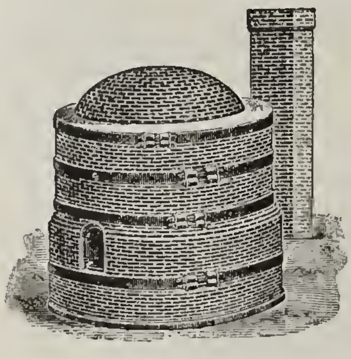

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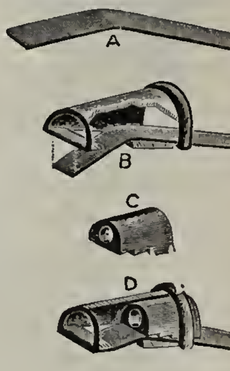

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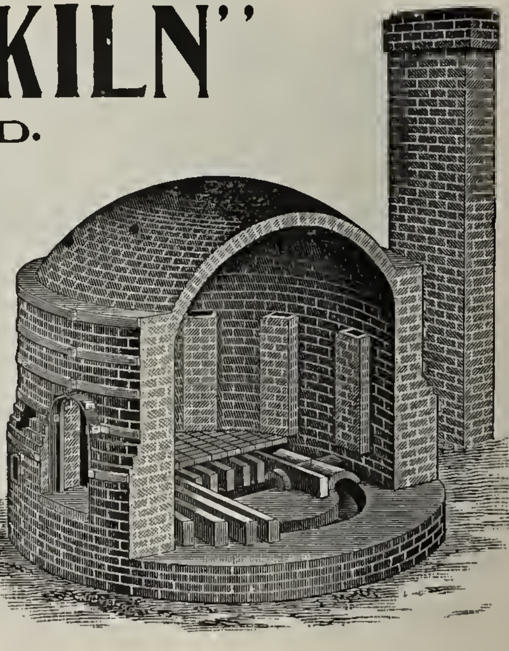

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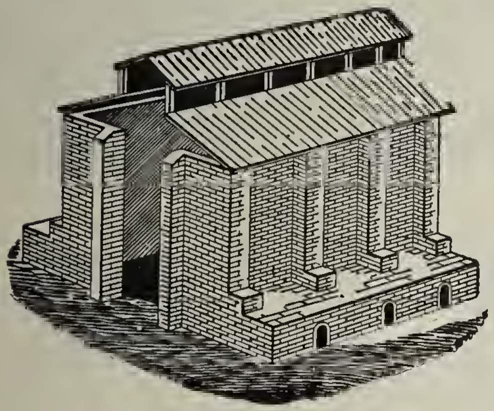

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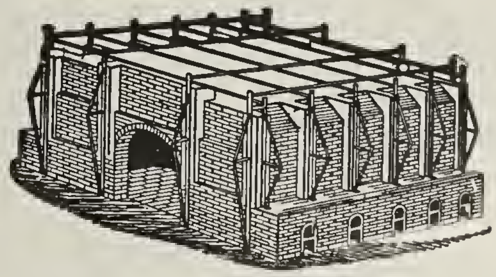

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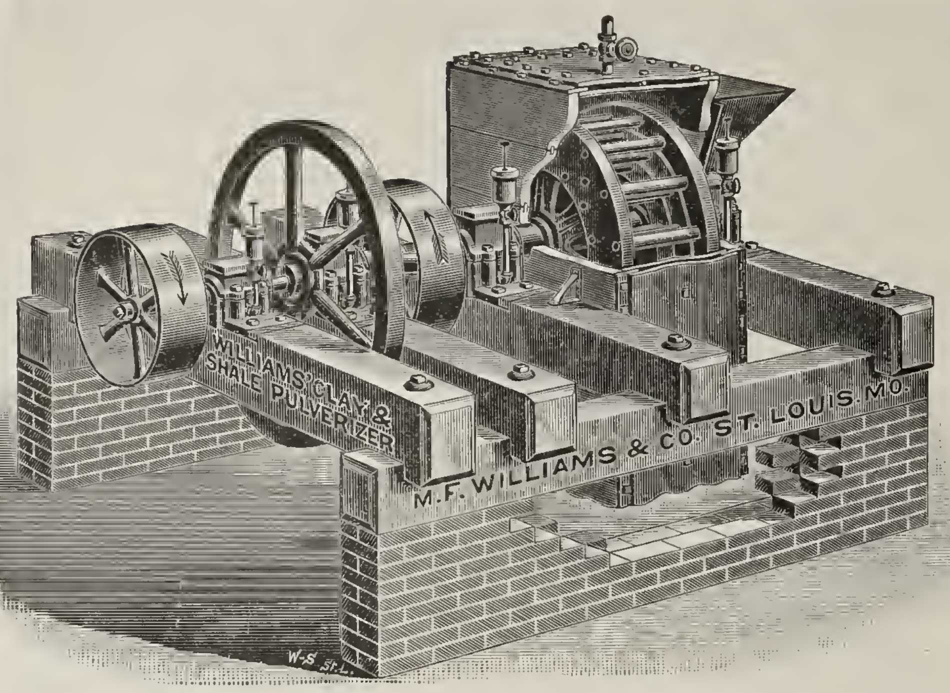
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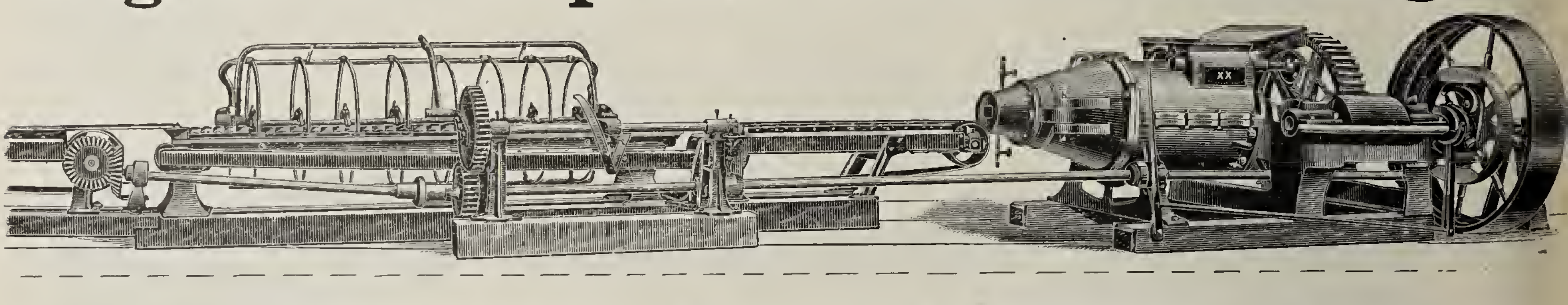

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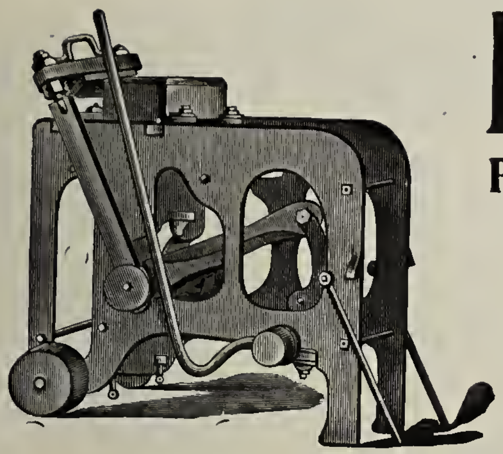

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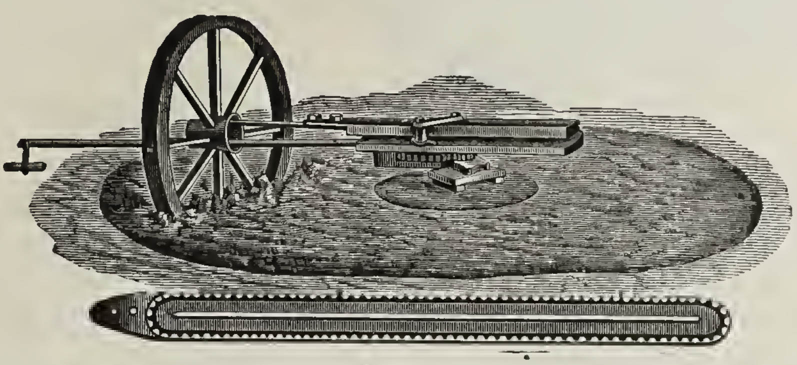

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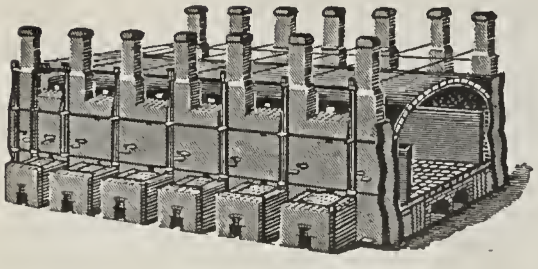

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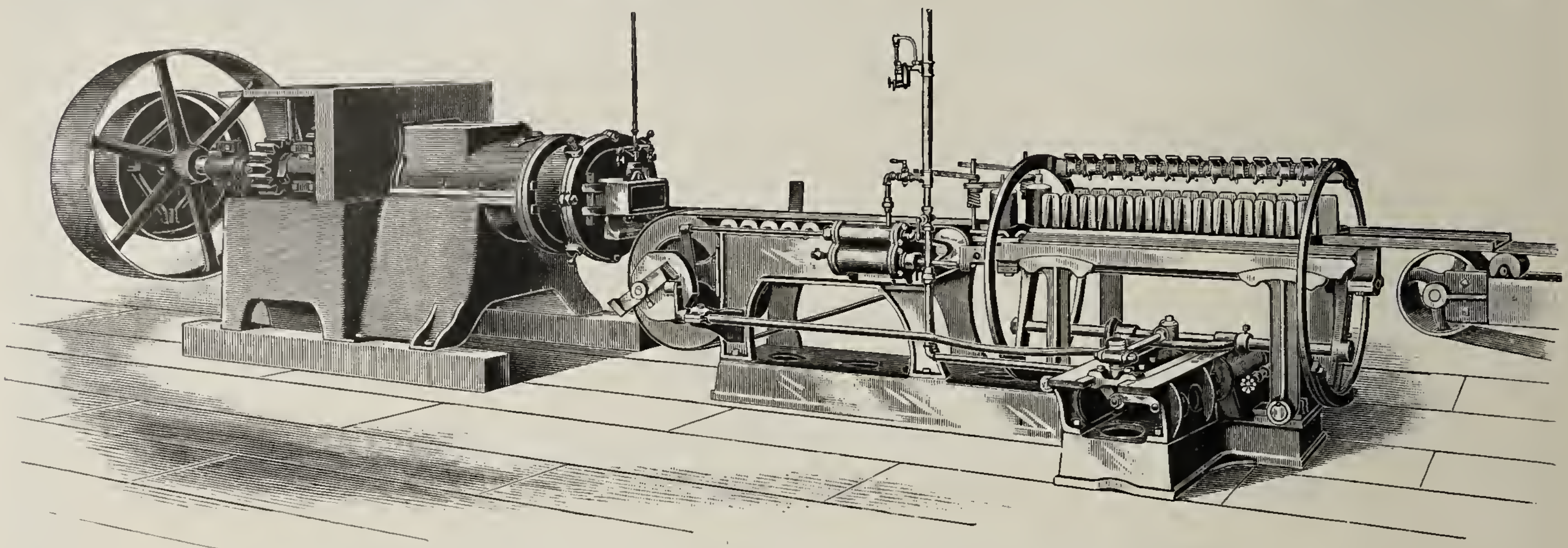

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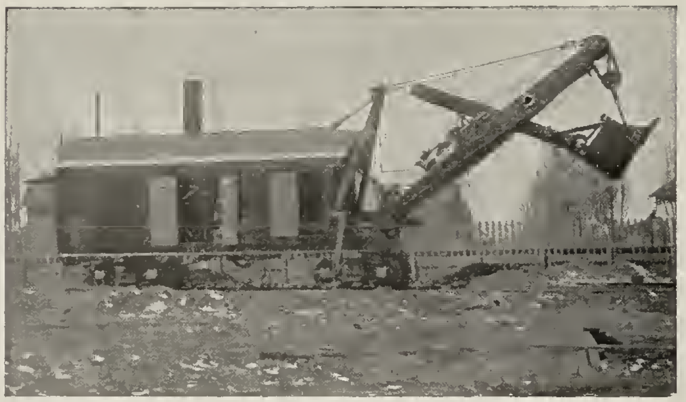

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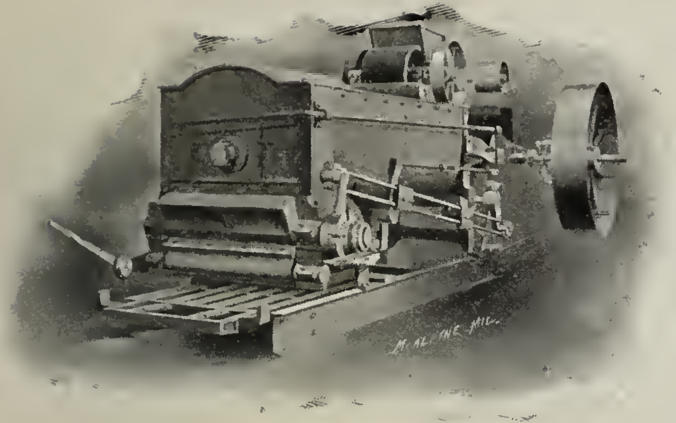

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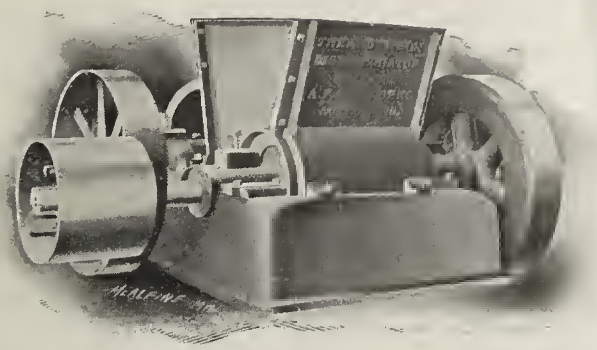

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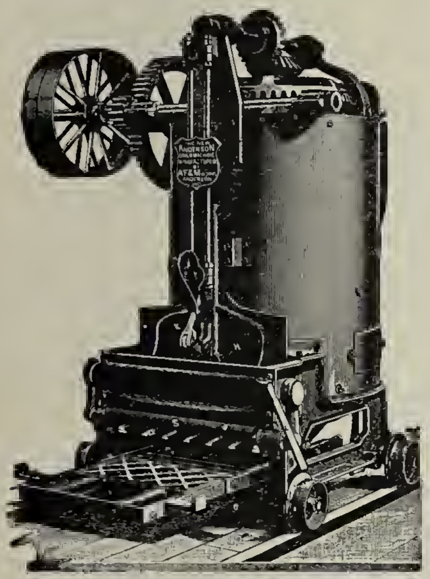

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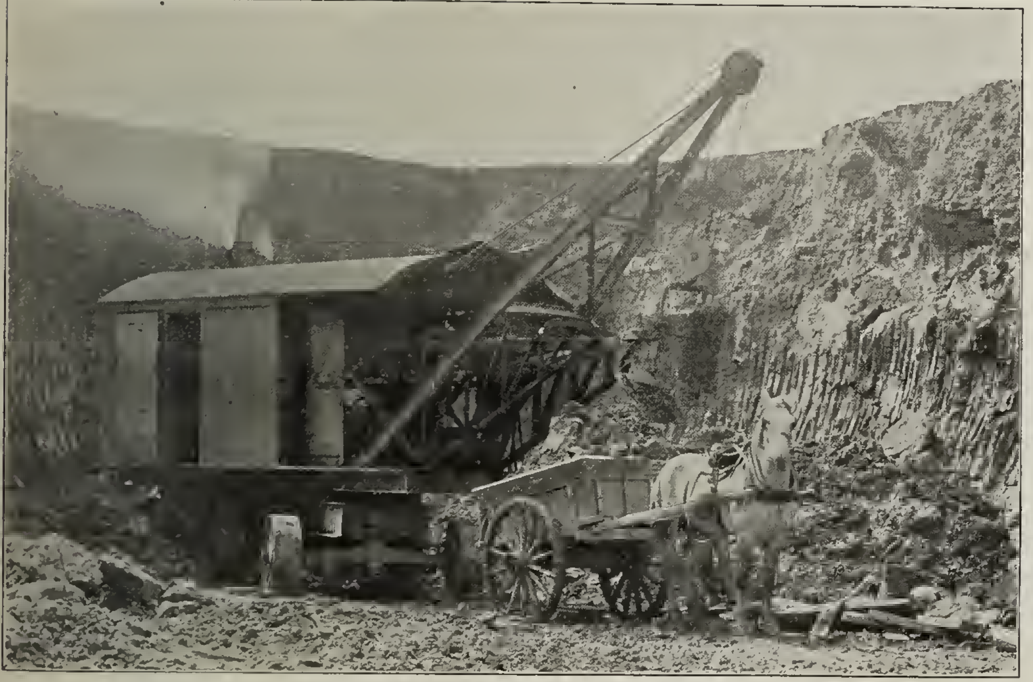

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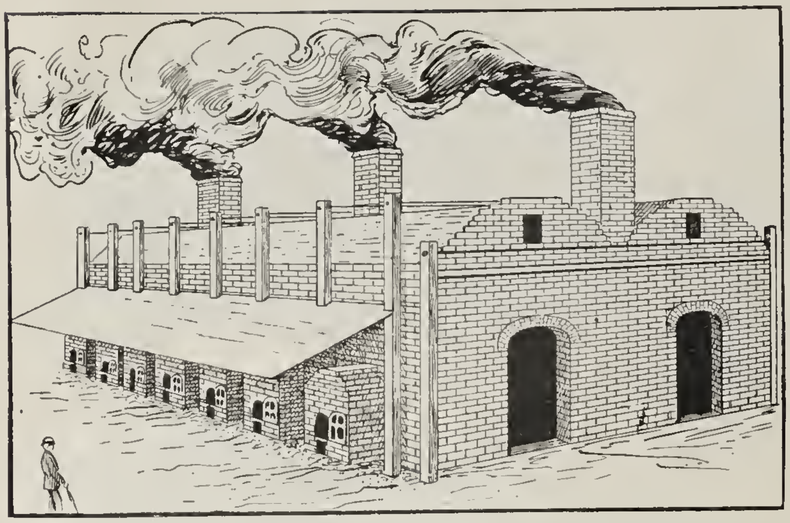

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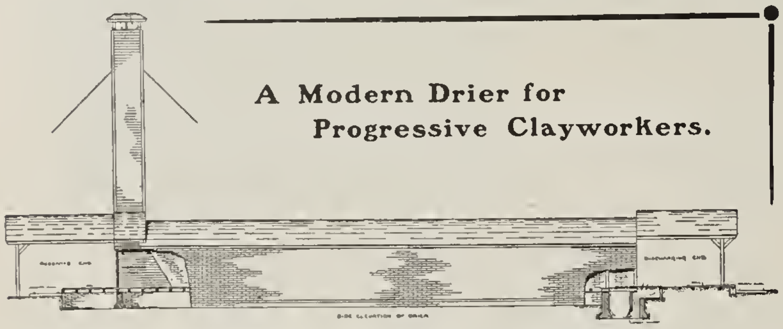

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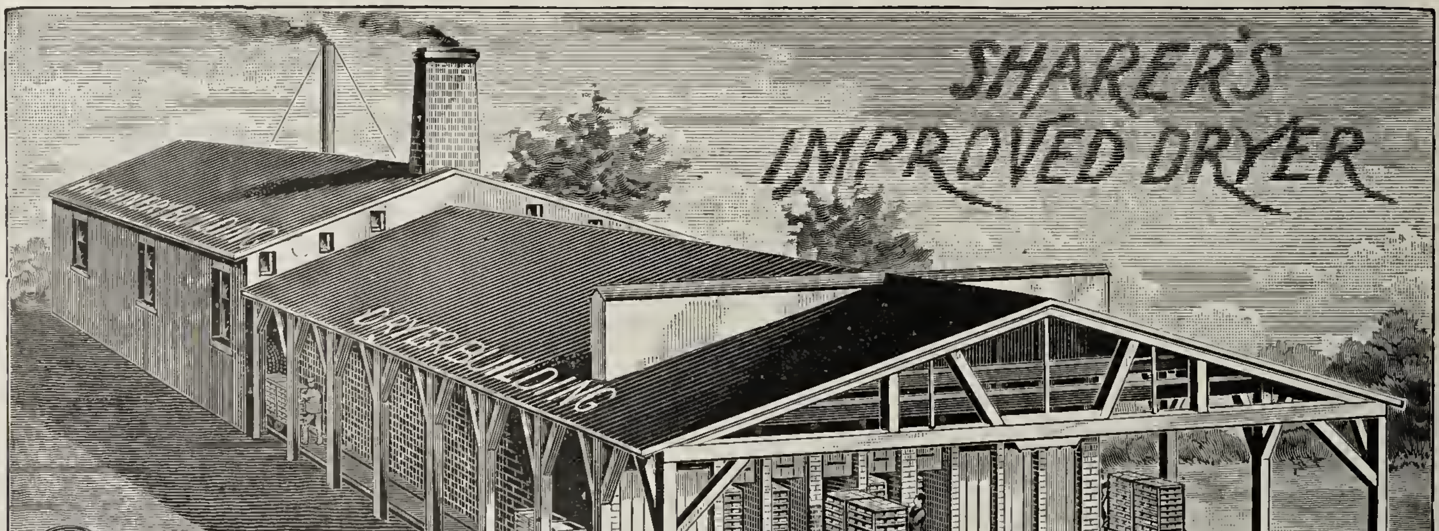
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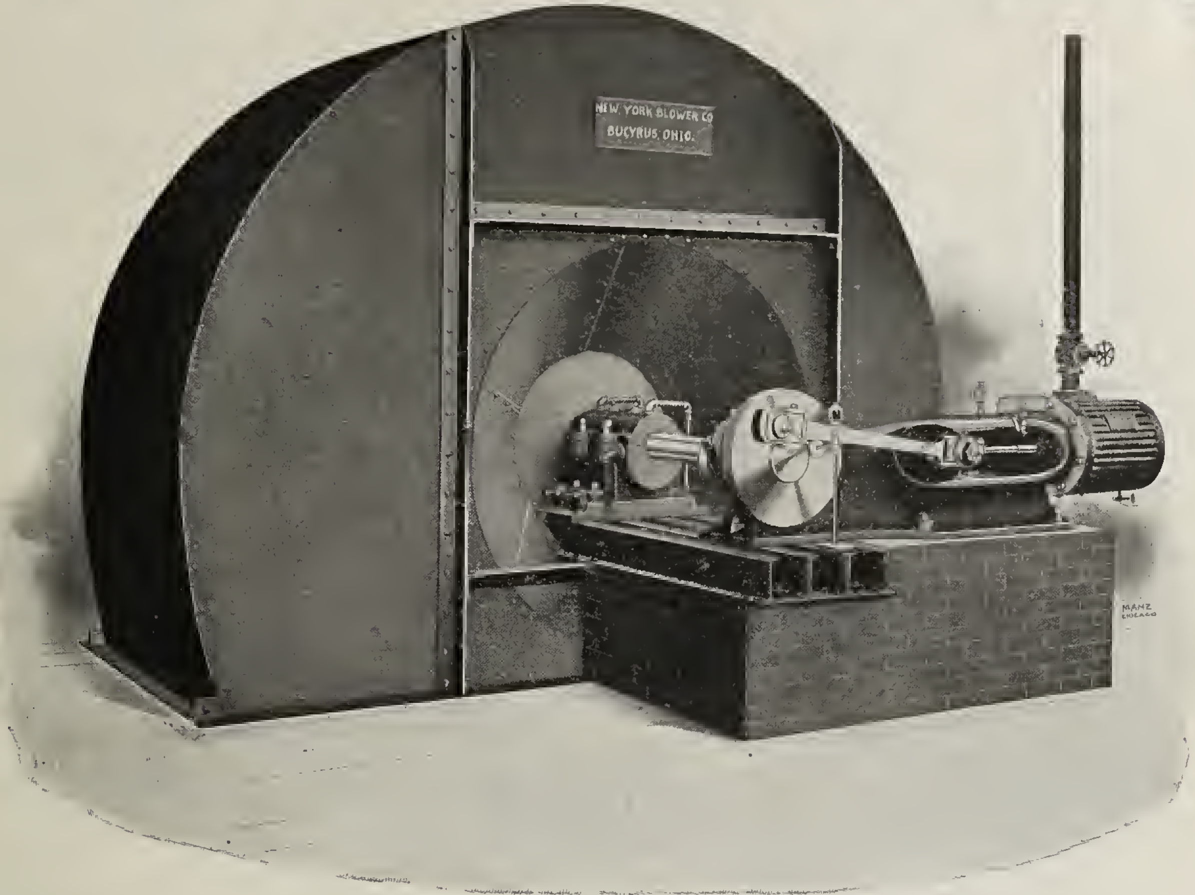

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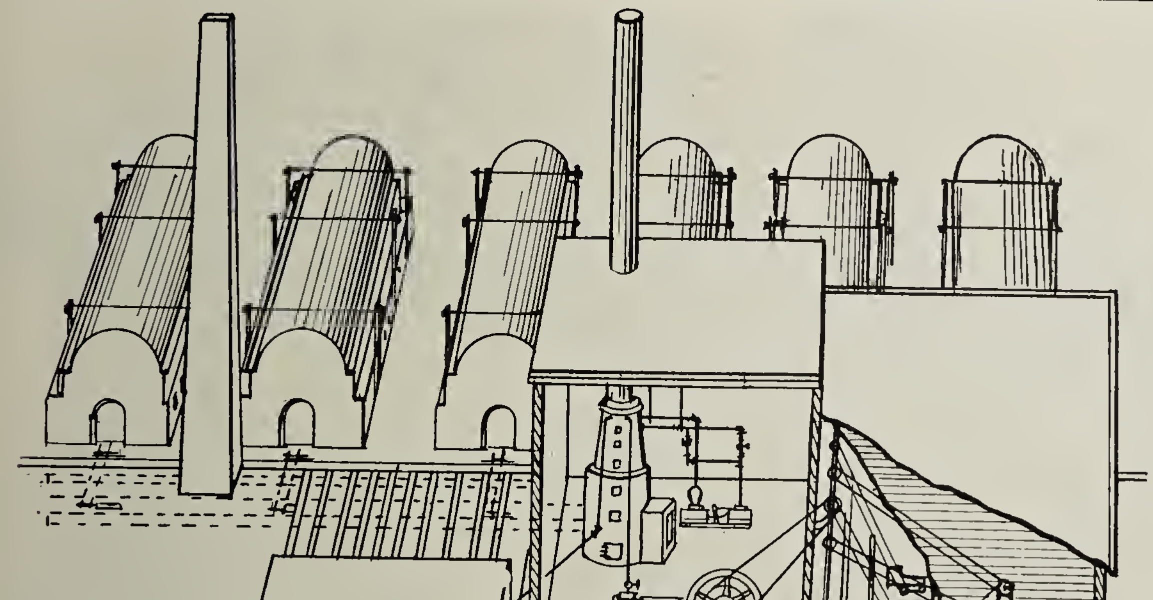

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Will save you both, when you can run your machinery and dry your brick free of Cost.

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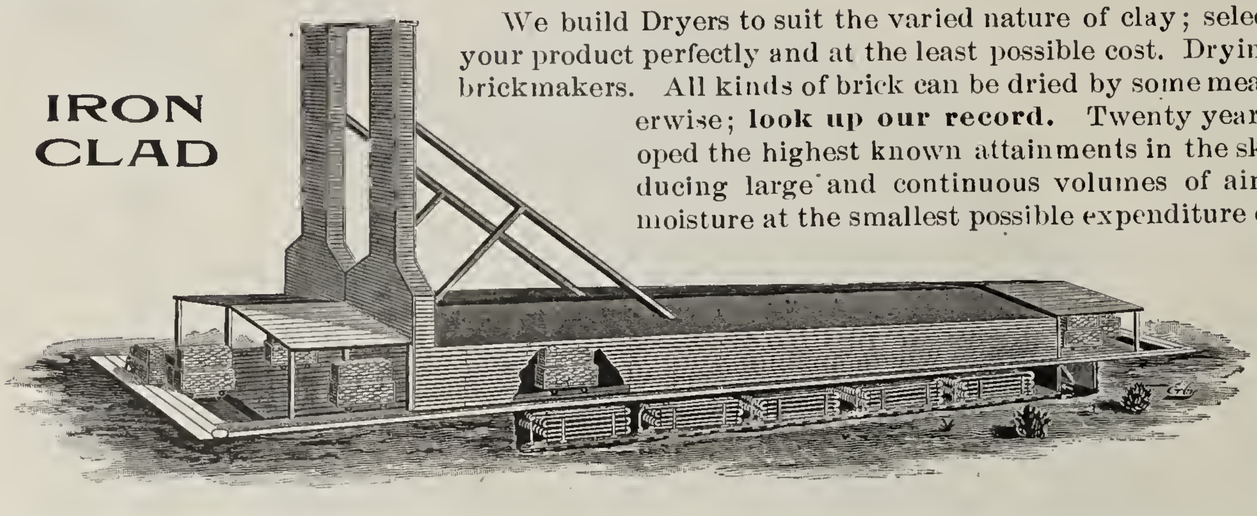

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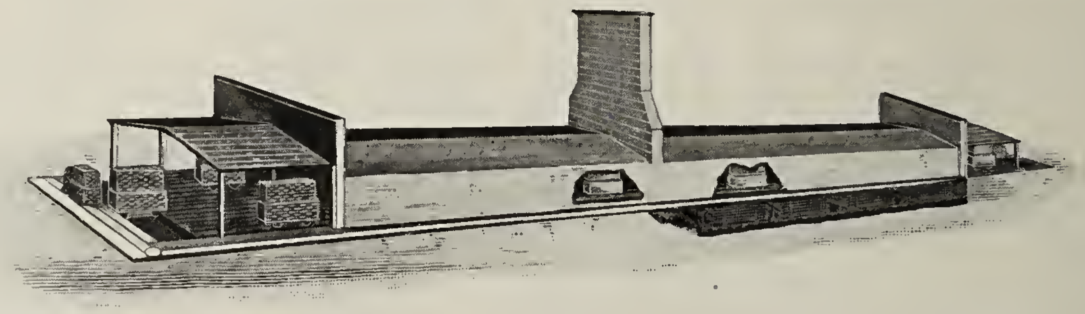
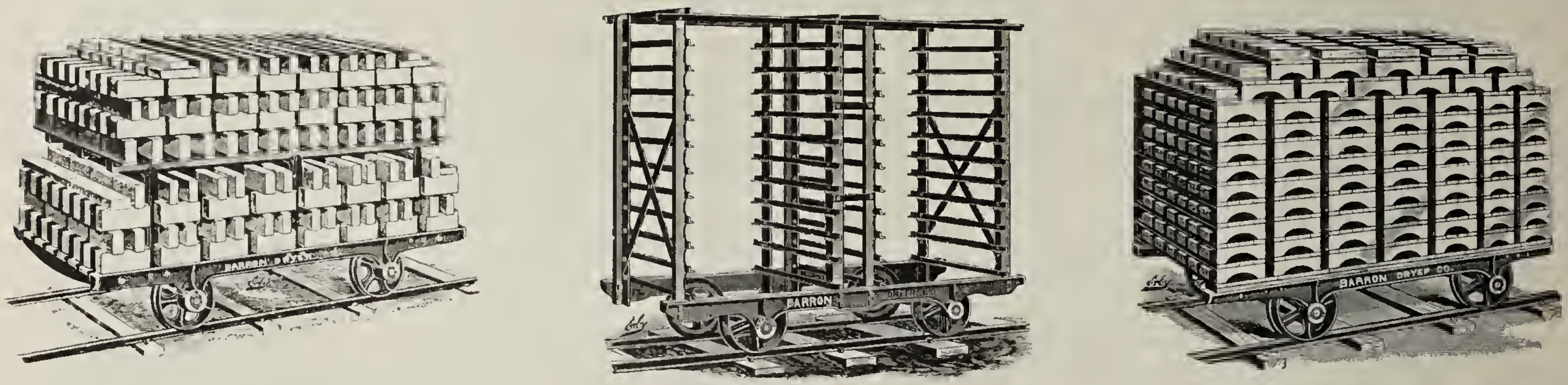


The Barron Tender Clay Dryer for Tender Clays.



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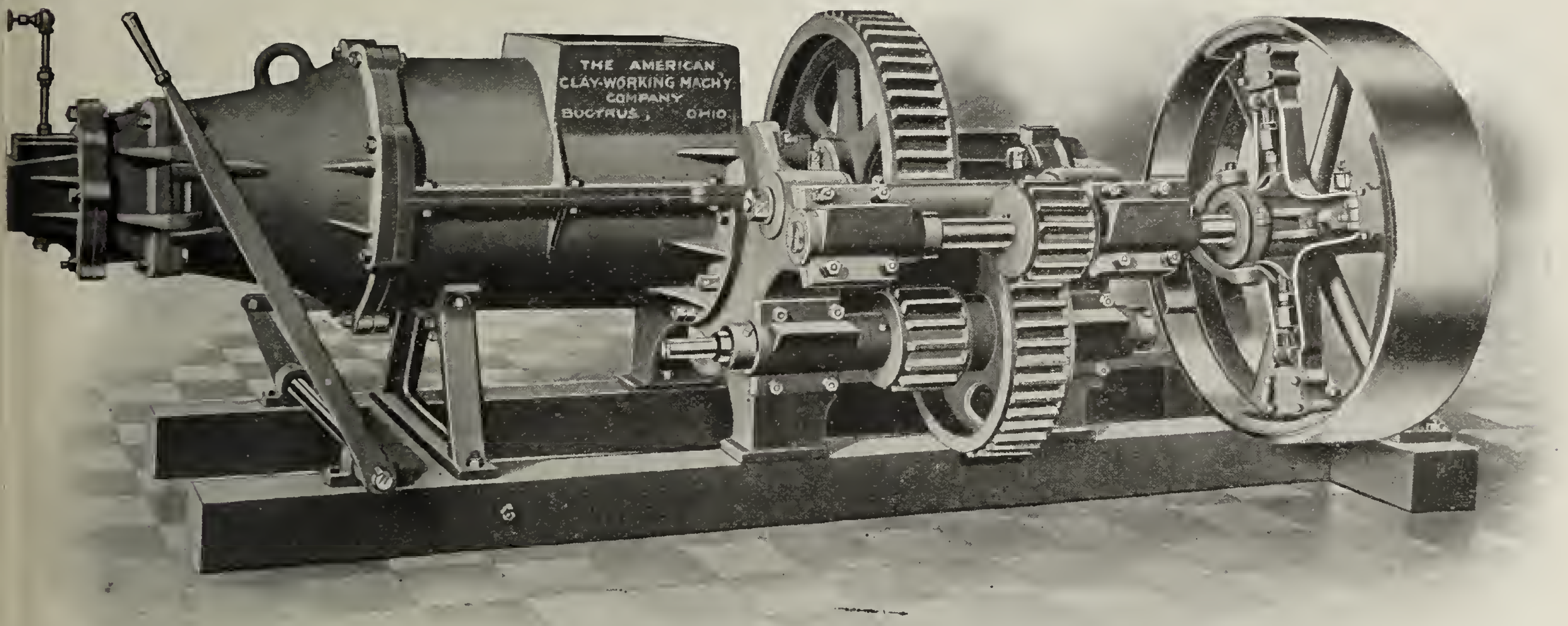

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[See Ad. on Page 506.]

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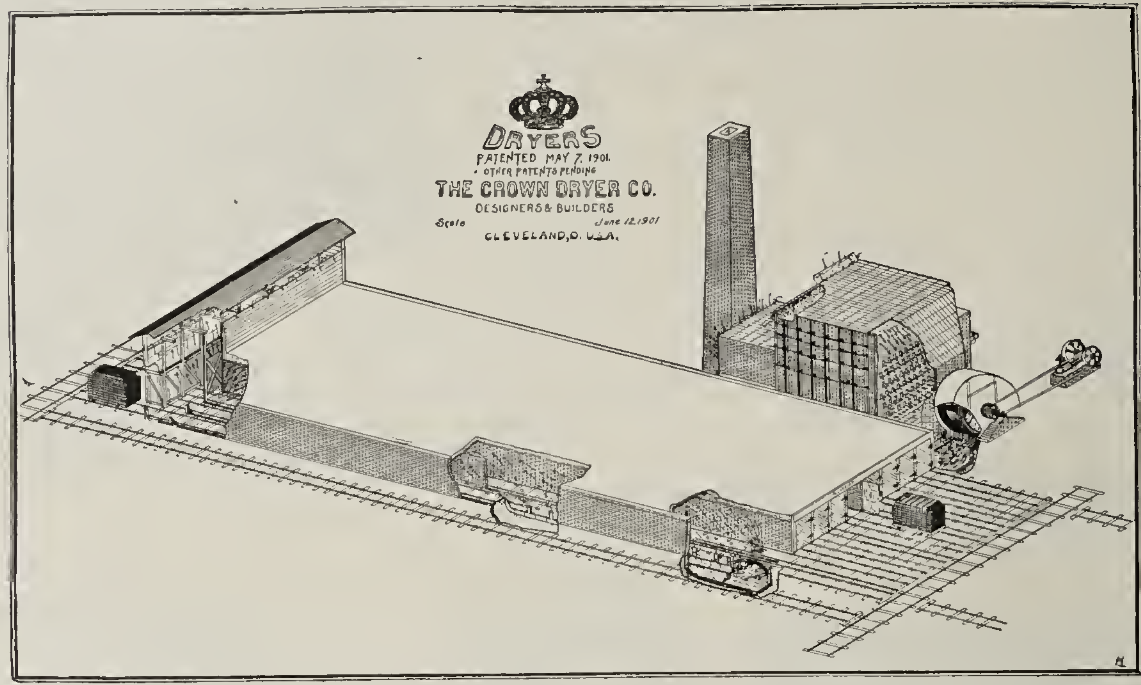

This illustrates the CROWN SYSTEM of Drying.

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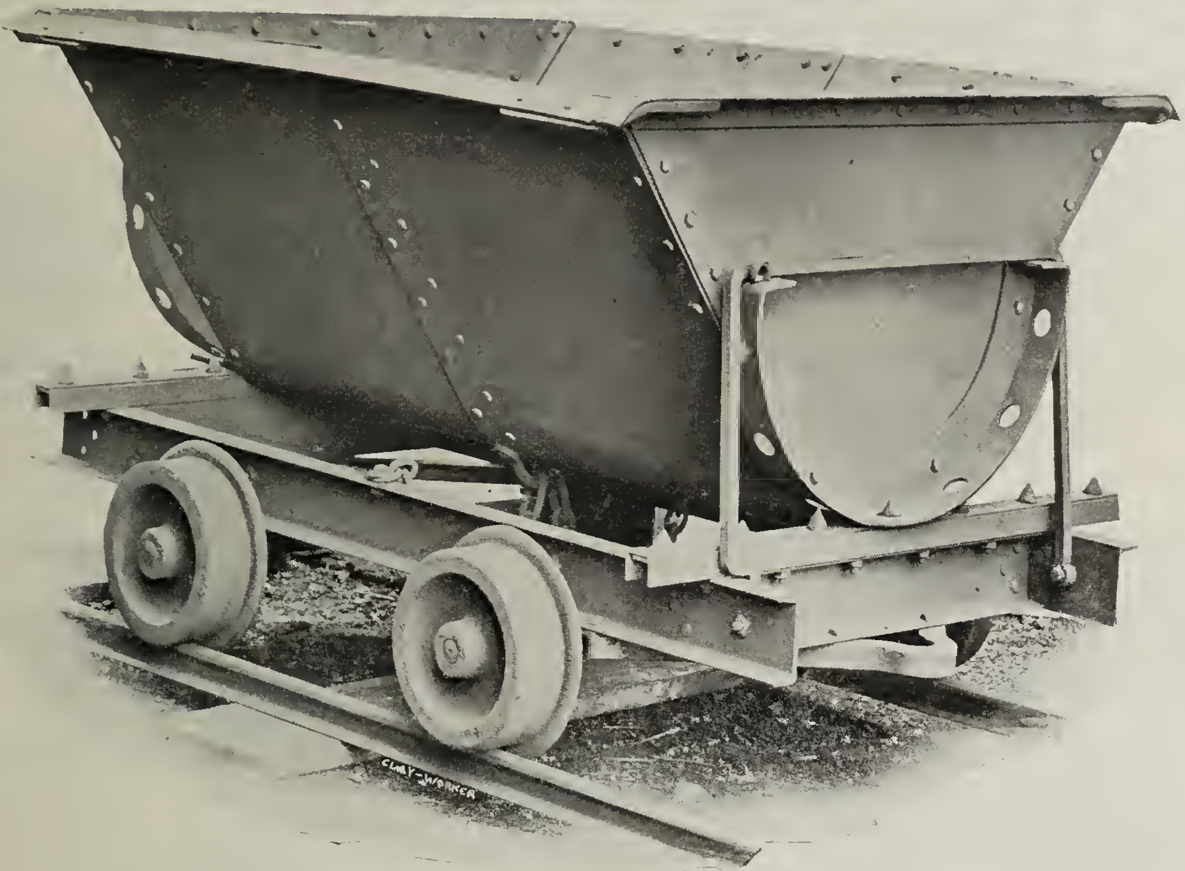

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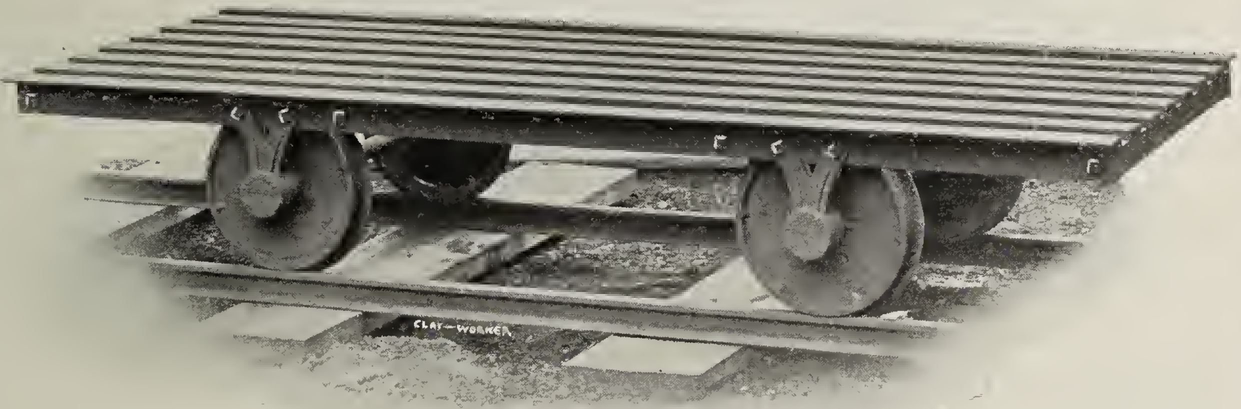

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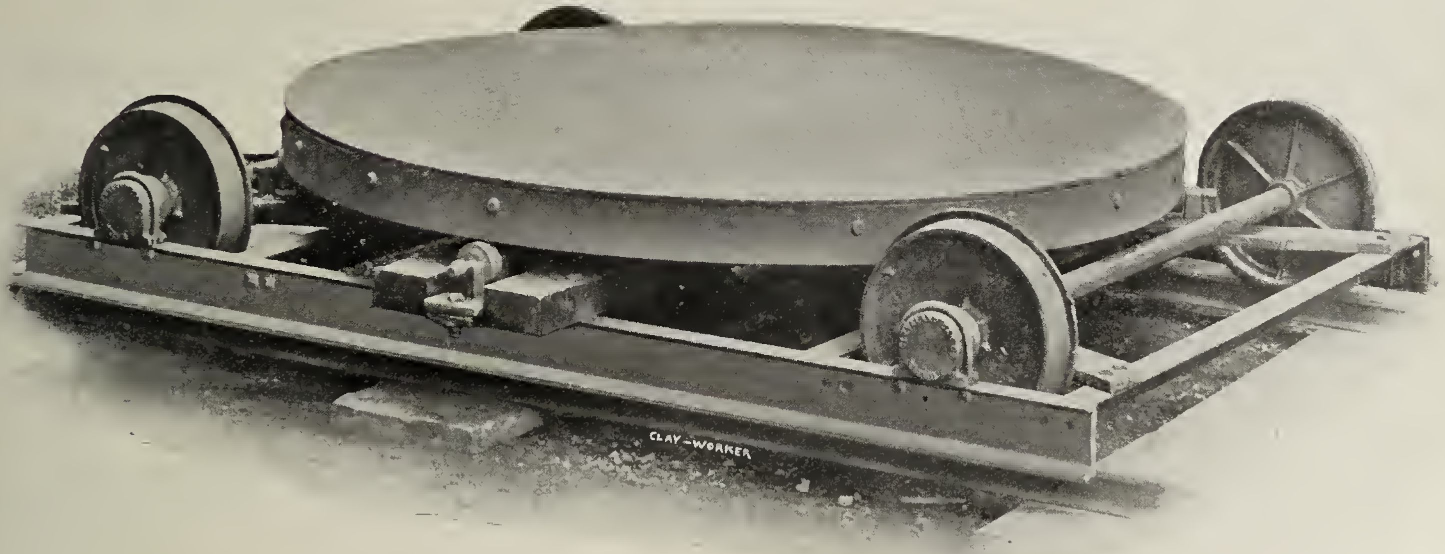

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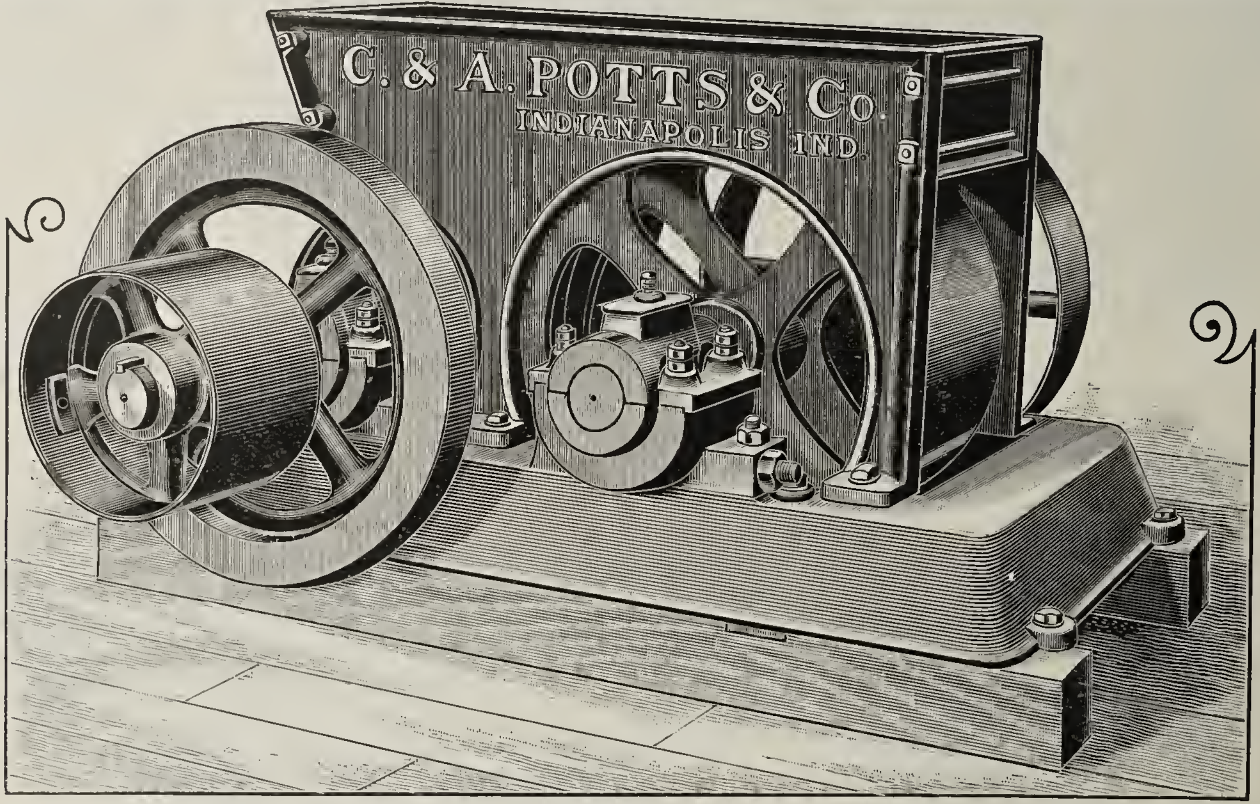
Are used in all parts of the United States and Europe. They are acknowledged by the trade in general to be the only Reliable Machine ever made for the work.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(Patented.) **Style "P"** Four Sizes, Capacity 20 to 150 M Brick per day.

It grinds any kind of clay. Does not Choke or Clog from wet, sticky or hard, dry clays. Grinds the clay, leaving it in a loose, open condition so it will take water readily, and can be thoroughly tempered.

These Disintegrators grind the small stone, and separate the large ones.

There is no piece of machinery made which will make a greater improvement in the quality of your Brick or Tile.

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Stop, Then, and figure what three new rolls for one of these machines will cost per year. You will purchase a Potts Disintegrator we know. THEY ARE THE BEST.

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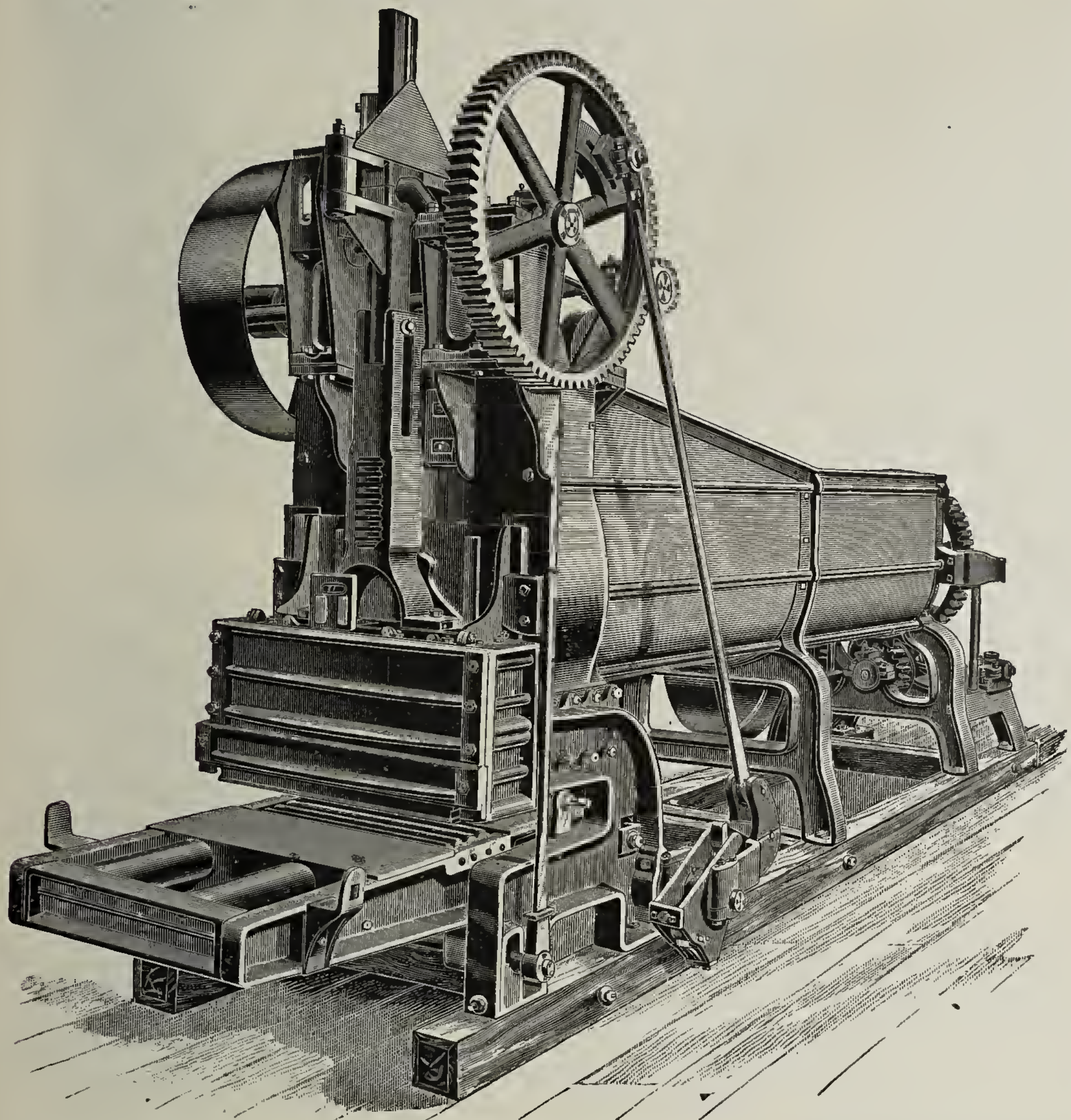
THE POTTS Horizontal Stock Brick Machine.

THE LEADING MACHINE OF AMERICA.



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We guarantee all we claim with a guarantee which is good, no verbal promises.

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A PERFECT CAR SYSTEM

For Either Soft or Stiff Mud.

With only TWO CARS
One man will handle 40 M brick per day.

No Fan to Run. No Boiler to Steam.
No Pipes to Burst. No Fireman to Pay.
No Dryer. No Fuel.

We Guarantee This to be the cheapest, best and only out-door car system ever offered the brick manufacturer. We guarantee to handle from the machine and put on the yard in good condition, from thirty to forty thousand green brick per day, with one man, and same amount to kiln. We guarantee our patent car and system to perform the work for which they are built, and all the workmanship and quality of material to be first class. Our Covers and Storm Curtains give absolute protection from rain and storms and also protects tender clays.

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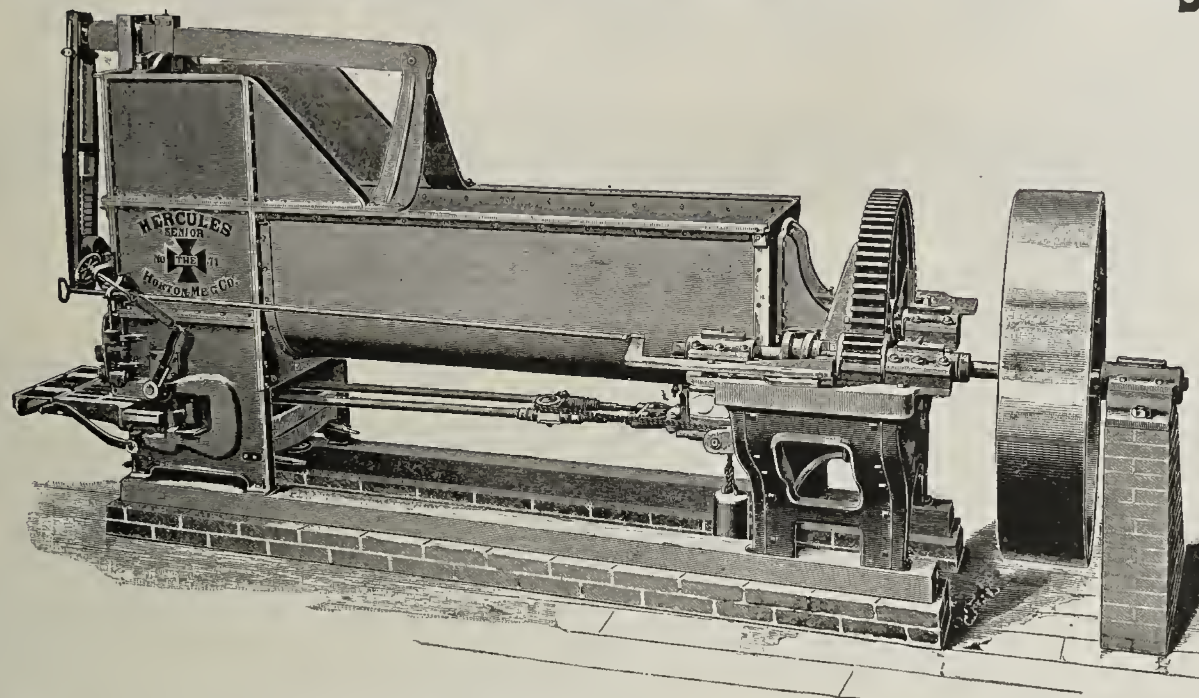
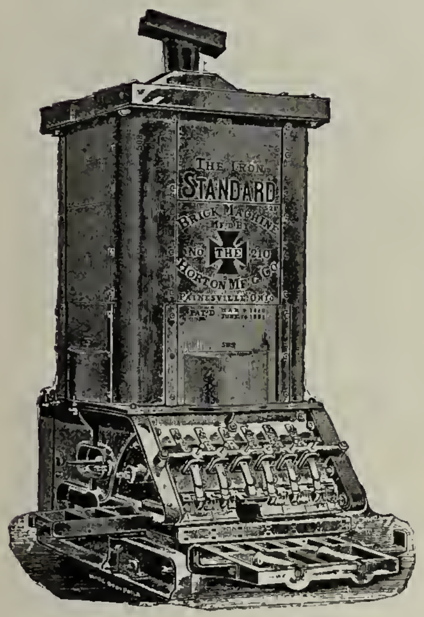
Scotts Patent Brick Car Co.,

Write for Catalogue. Knoxville, Tenn.

The HERCULES Works the Clay Stiff.

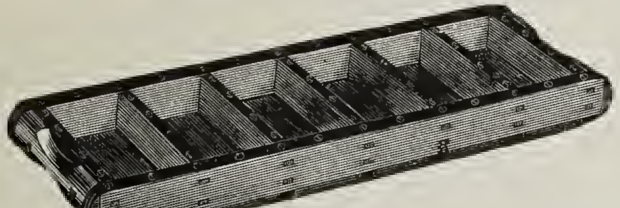


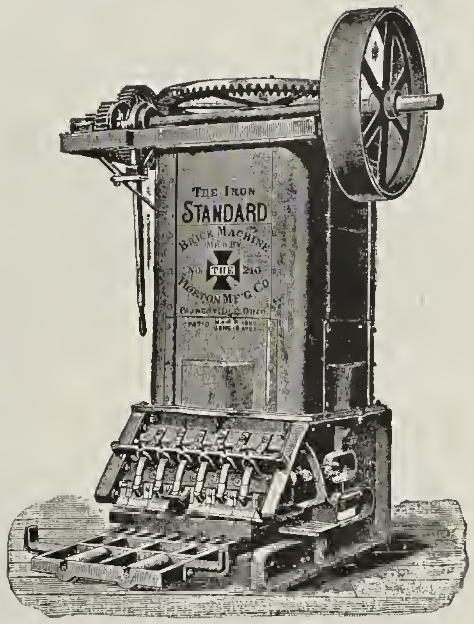
MOLDS.



Iron Standard Horse Power Brick Machine—The Leader of all Horse Power.

Is one of our Specialties. Either Hand, Machine or Shapes. We have a shop full of Special Machinery for the Manufacture of these as well as Trucks of all kinds, Wheelbarrows. Dump Cars, and Carts. In fact everything used on a Brickyard.





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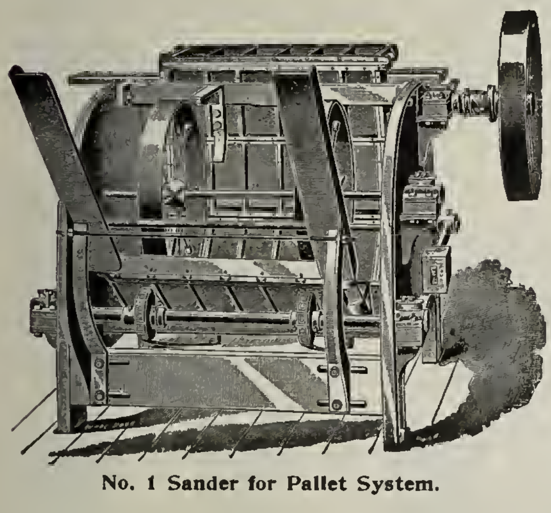
The Mold Sanders That "Sand"



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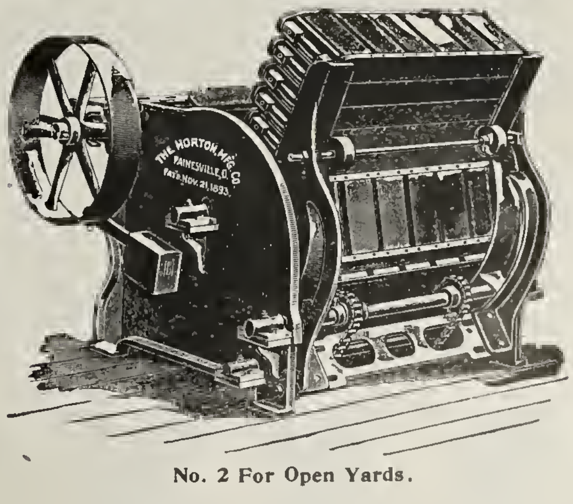
THE HORTON MFG. CO.
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WE EQUIP BRICK PLANTS COMPLETE AND GUARANTEE THEM TO GIVE SATISFACTION.

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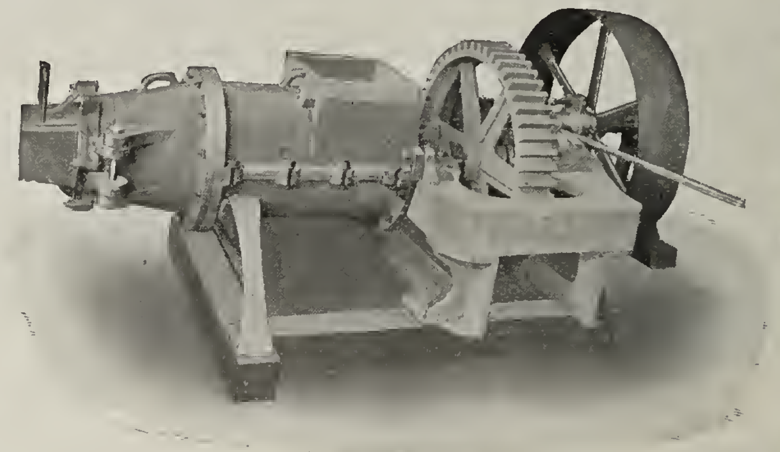
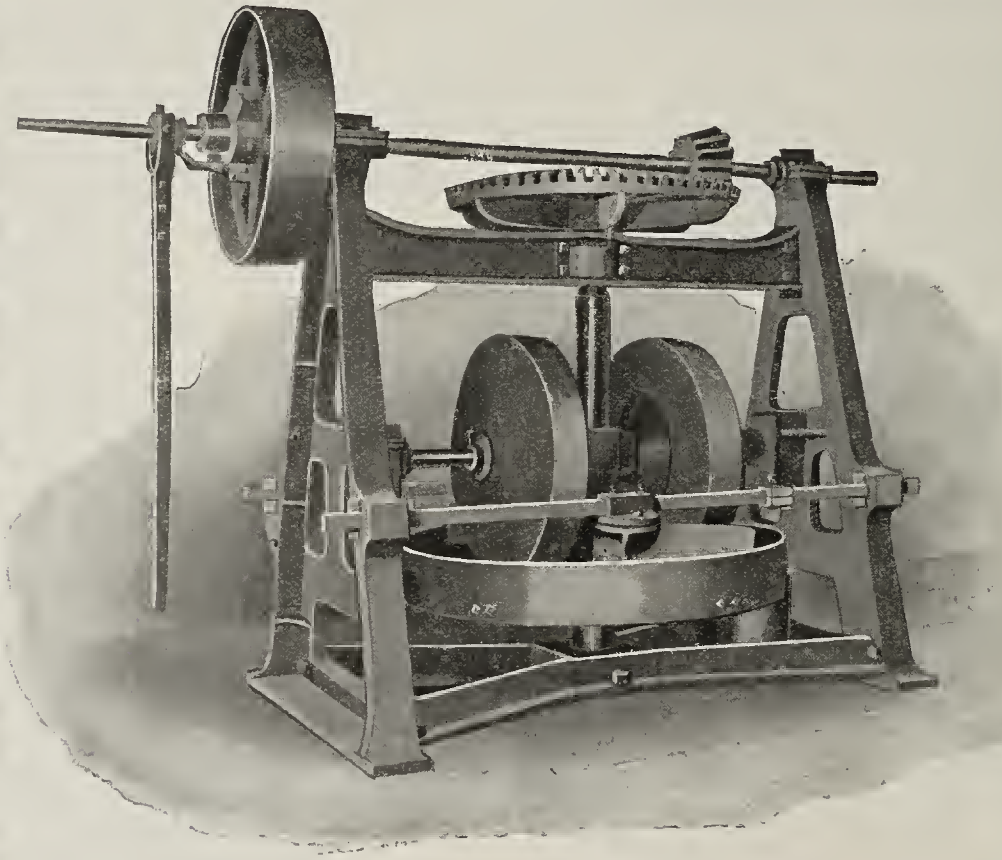
Advise us the capacity you desire and get our prices.

THEY WILL INTEREST YOU.

Send us a Sample of your clay and get our opinion of it.



Our No. 2 Auger Machine—Capacity 20 M.



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THE HENRY MARTIN BRICK MACHINE MFG. CO.,

Incorporated.

Send for our new Catalogue No. 60.

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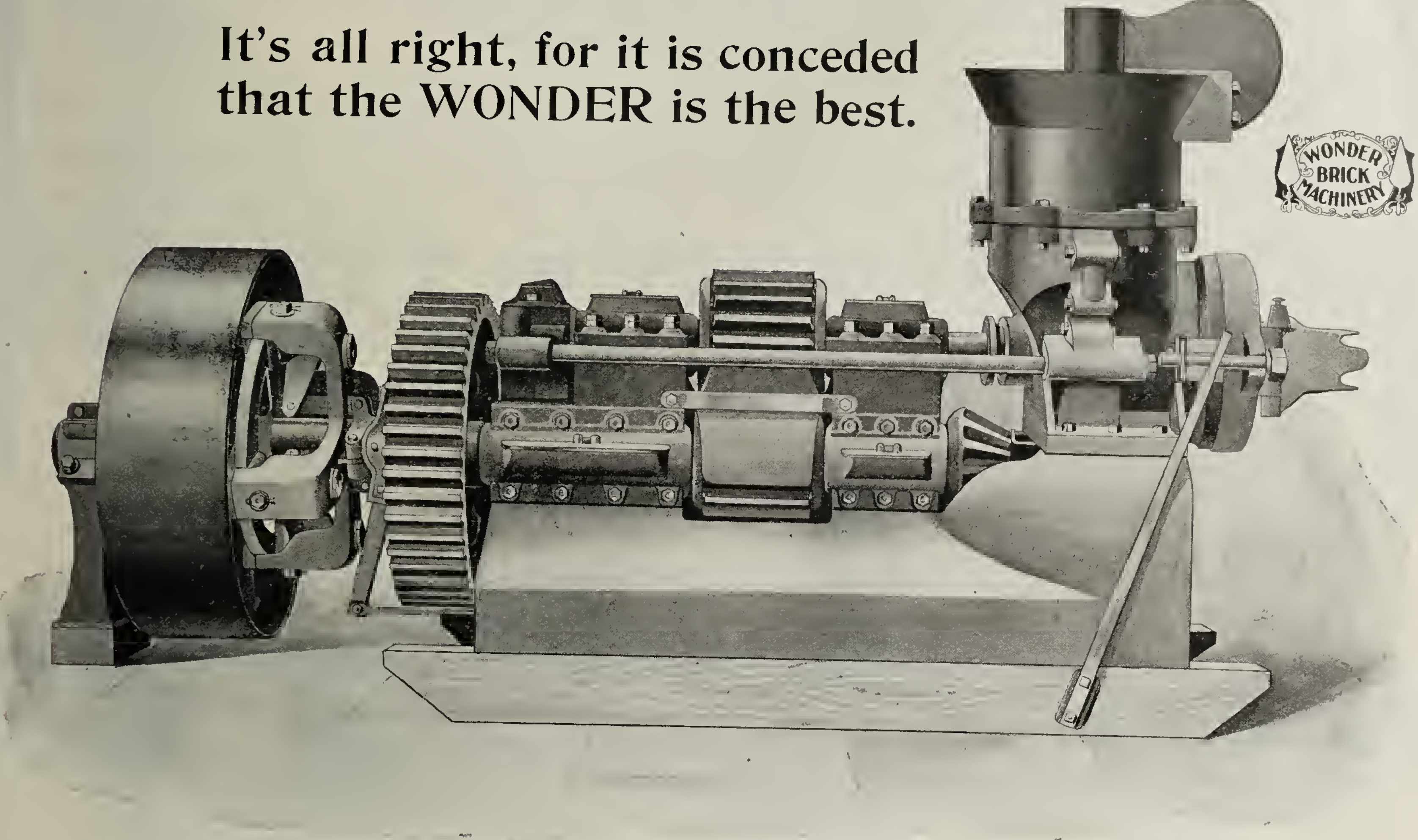
IF IT'S A WONDER,

It's all right, for it is conceded that the WONDER is the best.



We are not only in the front ranks, but in the lead. The WONDER stands today without an equal for STRENGTH, DURABILITY and GENERAL EXCELLENCE and with our new and strictly MODERN FACTORY and EQUIPMENTS we propose not only to maintain the high standard to which the WONDER brick machinery has been brought, but to bring it still higher.

It is not simply our desire to equal, but to excel. There are a great many features in the WONDER machine which are decidedly advantageous and which are not contained in other Stiff Mud machines.

With the WONDER, lamination is entirely destroyed and the brick are solid throughout.

We sold more machines last year than in any two previous years—more people are investigating, and where the WONDER machine is investigated it is always adopted.

Catalogue for the asking. Information cheerfully given.

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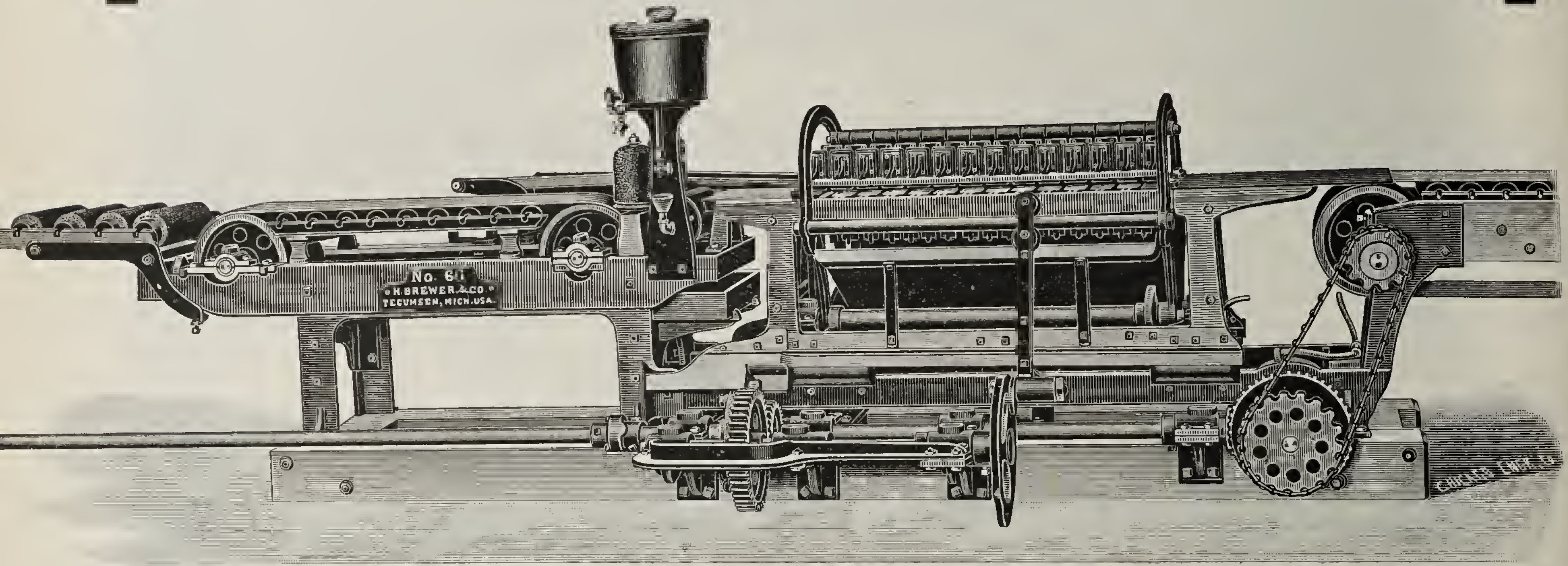
INCREASING POPULARITY.

We are selling more of these cutters every season and they are giving universal satisfaction. There is no machine of the kind upon the market so simple, so durable, or of greater capacity, and the price is right. When looking for an automatic cutter don't fail to investigate

THE BREWER.



IT IS SOLD ON ITS MERITS.

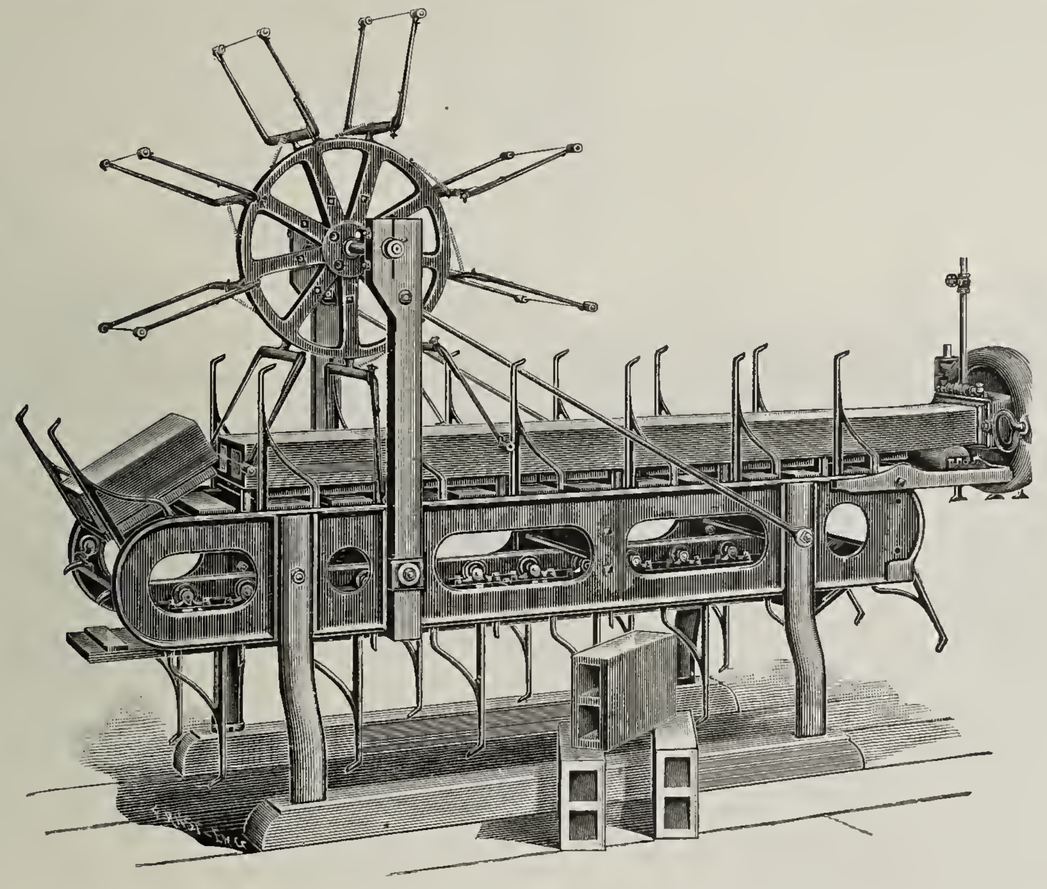
By that is meant that it will be shipped to any responsible party and not a dollar payment will be required or requested until it is set up and in satisfactory operation. If it doesn't suit, it may be returned at our expense. Write for further particulars.

H. BREWER & COMPANY,

Tecumseh, Michigan.

Do You Make Hollow Block?
What do You Cut Them With?
Are They Cut Perfectly Square?
And All of One Length?

BENSING'S AUTOMATIC TILE TABLE



Arranged to cut Hollow Blocks, is the finest thing made to do this work. Every block is exactly of the same length and cut perfectly square, and it cuts the Drain Tile in the same manner.

We would like an opportunity to more fully explain this Table to you and also some of the rest of our machinery.

A Postal Card will bring our Catalog.

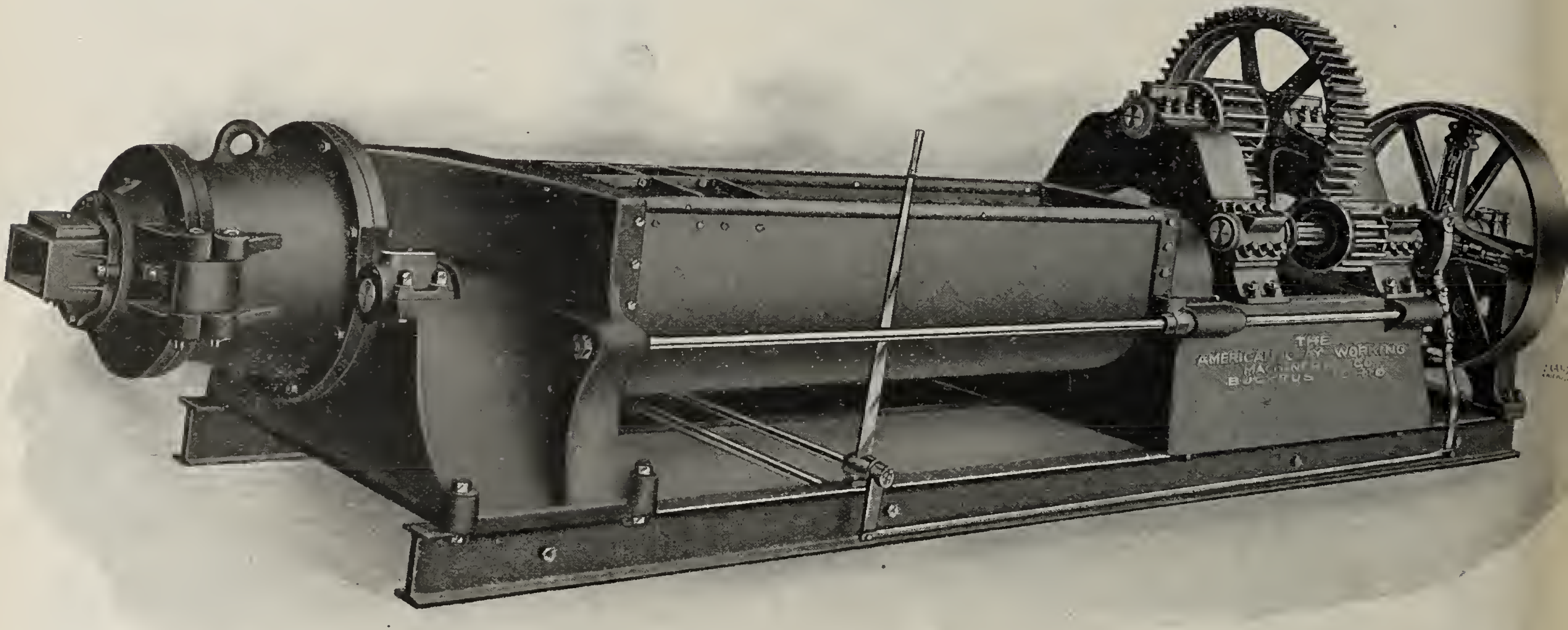
J. D. FATE & COMPANY,

PLYMOUTH, Richland Co., OHIO.
B. E. LaDOW, 1210 Chamber of Commerce, Chicago, Ill.

Mention The Clay-Worker.

BIFURCATED MACHINE.

This new type of Combined Machine has many points of superiority. Its strength factors are away above the average. The placing of the pugging cylinder by the side of the expressing cylinder removes all objections of a combined machine. The clay is forced by pressure from the pugging cylinder into expressing cylinder. On the old style combined machine the pugging was done above the expressing cylinder, and the clay fell by gravity through a throat to the brick machine. The clogging or balling up of the clay caused no end of trouble. This new machine removes this serious objection. The side by side arrangement makes the machine much lower down, saving in height of the building, length of elevator, etc., and places the operator on the floor level instead of on a raised platform as formerly. This makes the machine more easy to operate and with a saving of one man. It makes better brick and insures steady operation. The machine is mounted on substantial steel I-beams, and as shown weighs 25,000 pounds. Built in three sizes. Capacity 35,000 to 100,000 brick in ten hours. It can be equipped with our automatic cutters and will work a greater variety of clays than any other combined machine on the market. The careful and honest construction of this machine insures its successful operation.



Write for complete particulars.

The American-Clay-Working Machinery Company,

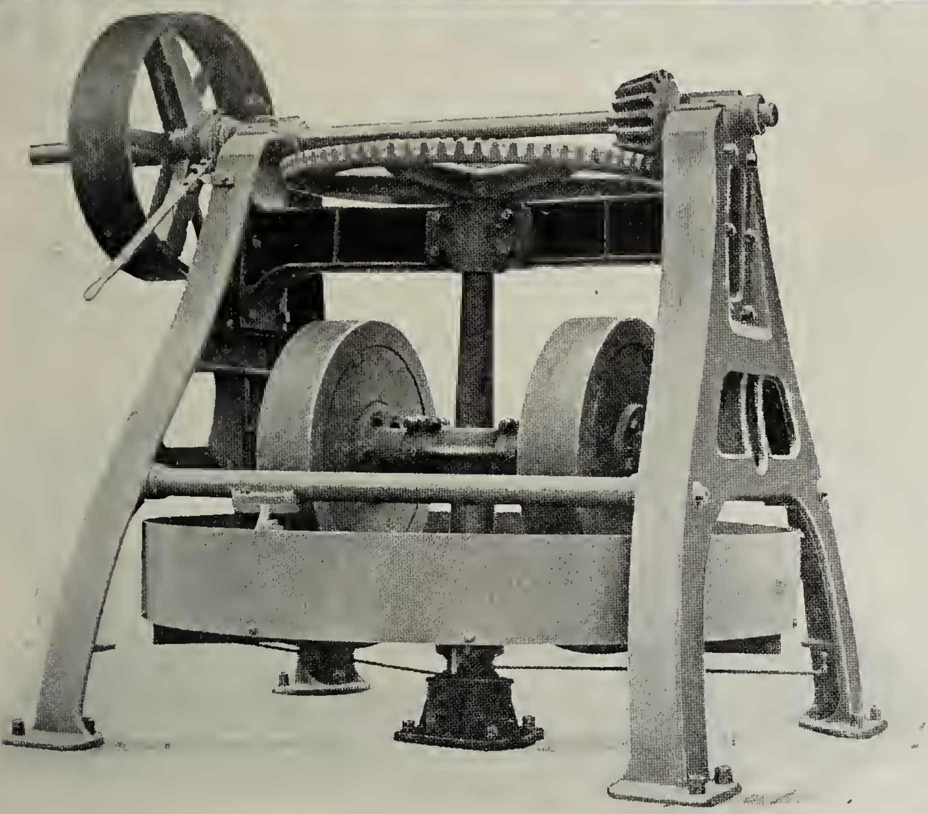
BUCYRUS, OHIO, U. S. A.

NEW YORK OFFICE:
39 and 41 Cortlandt St.,
Rooms 101 to 106.

CHICAGO OFFICE, Merchants' Loan and Trust Bldg.

EUROPEAN OFFICE, No. 3 Gore St., Picadilly, Manchester, Eng.

Modern Brick Machinery.



9-Foot Iron Frame Dry Pan.

Office of
THE ROYAL BRICK COMPANY,
MANUFACTURERS OF
The Royal Block and Iron Rock Street Pavers,
Building, Fire, Sewer and Sidewalk Brick.

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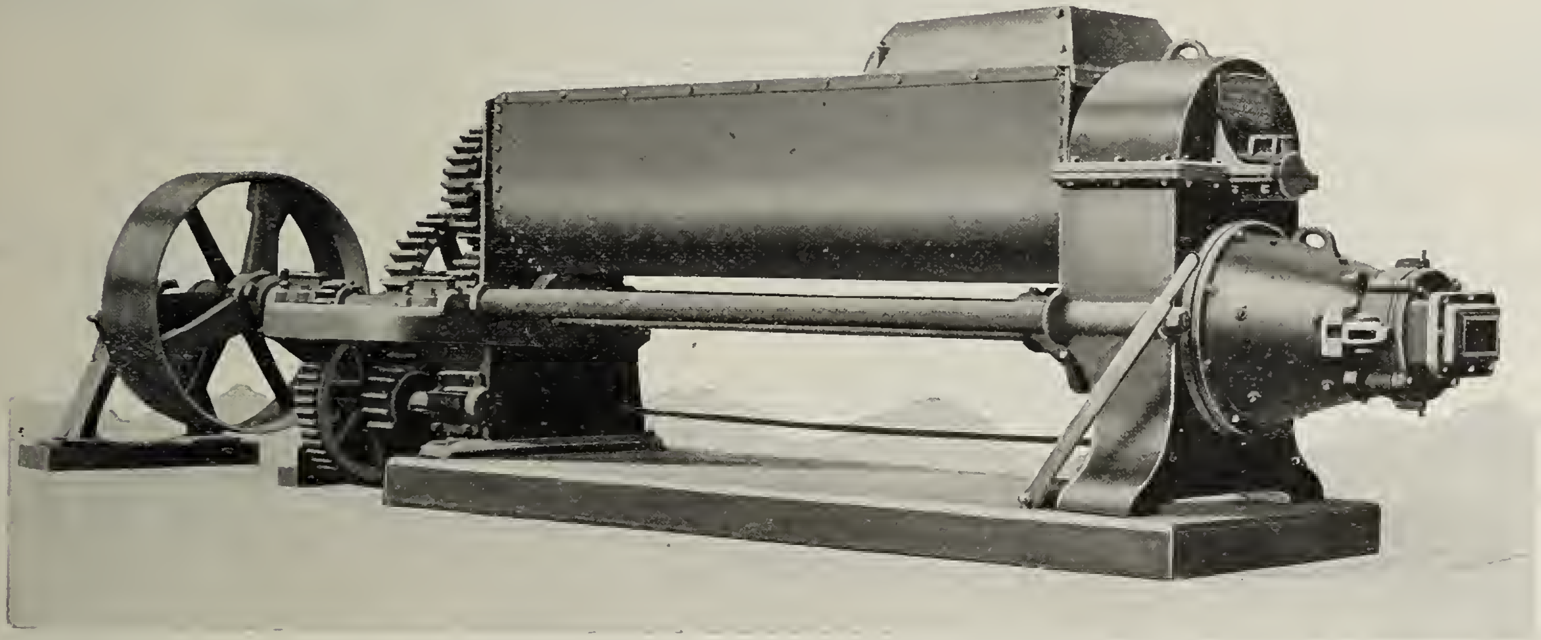
THE BONNOT COMPANY, CANTON, OHIO.

Gentlemen—Our works are equipped throughout with Bonnot Machinery and we are pleased to say that it is satisfactory in every way. We have your No. 1 Brick Machine and Automatic Cutting Table and have made as many as 65,000 brick in ten hours, although you only guaranteed the machine for 50,000. The table does not give us the slightest trouble and requires very little attention.

Your represses and dry-pans are also very satisfactory and we are well pleased with the entire outfit. Very truly,

THE ROYAL BRICK COMPANY.
OTTO GEISSEN, Secretary.



NO. 4 COMBINED BRICK MACHINE. CAPACITY, 50,000 TO 70,000 PER DAY.

THE BONNOT COMPANY, Canton, Ohio:
Jamestown, N. Y., December 16, 1901.

Gentlemen—In reply to your inquiry as to how we like your No. 4 Combination Stiff Mud Machine which we have had in almost constant use for the past FIVE YEARS will say we find the machine all that we can expect. We have had no breaks to speak of, and the machine works all the shale that our pulverizing machinery will grind. As you know, our shale here is very hard, stony, gritty clay, quite different from your soft, plastic shale.

Yours very truly, JAMESTOWN SHALE PAVING BRICK Co., per George C. Little, Superintendent.

Brick Machines of any capacity from 10,000 to 100,000 daily.
Automatic Side-Cut Table—Simple, Accurate and Durable.
Dry Pans, Represses, Screens, Pug Mills, Elevators, Cars, etc.

A COMPLETE LINE OF
BRICK, POTTERY and CEMENT
——MACHINERY.

The BONNOT CO.,

Write for our New
Descriptive Catalogue.

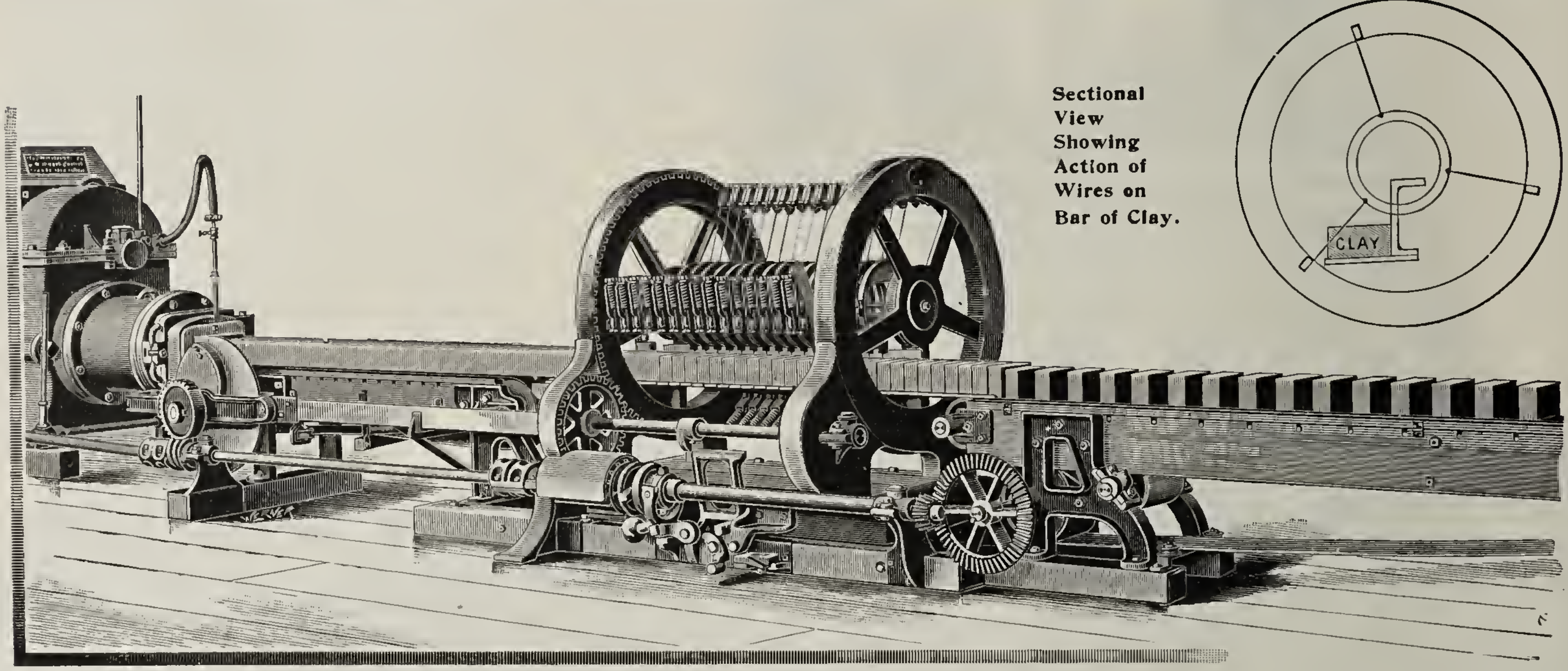
CANTON, OHIO, U. S. A.

Mention The Clay-Worker.

NO OTHER

AUTOMATIC CUTTER

Is "Just as Good" as This.



ROTATING AUTOMATIC CUTTER. Patented.

Why waste time and money using Cutters which are frequently out of order and cannot be depended upon to do good work?

Why not produce brick of **finest quality** when it can be done with less expense?

A multitude of others have found it profitable to use this Apparatus.

Why should you not use it also?

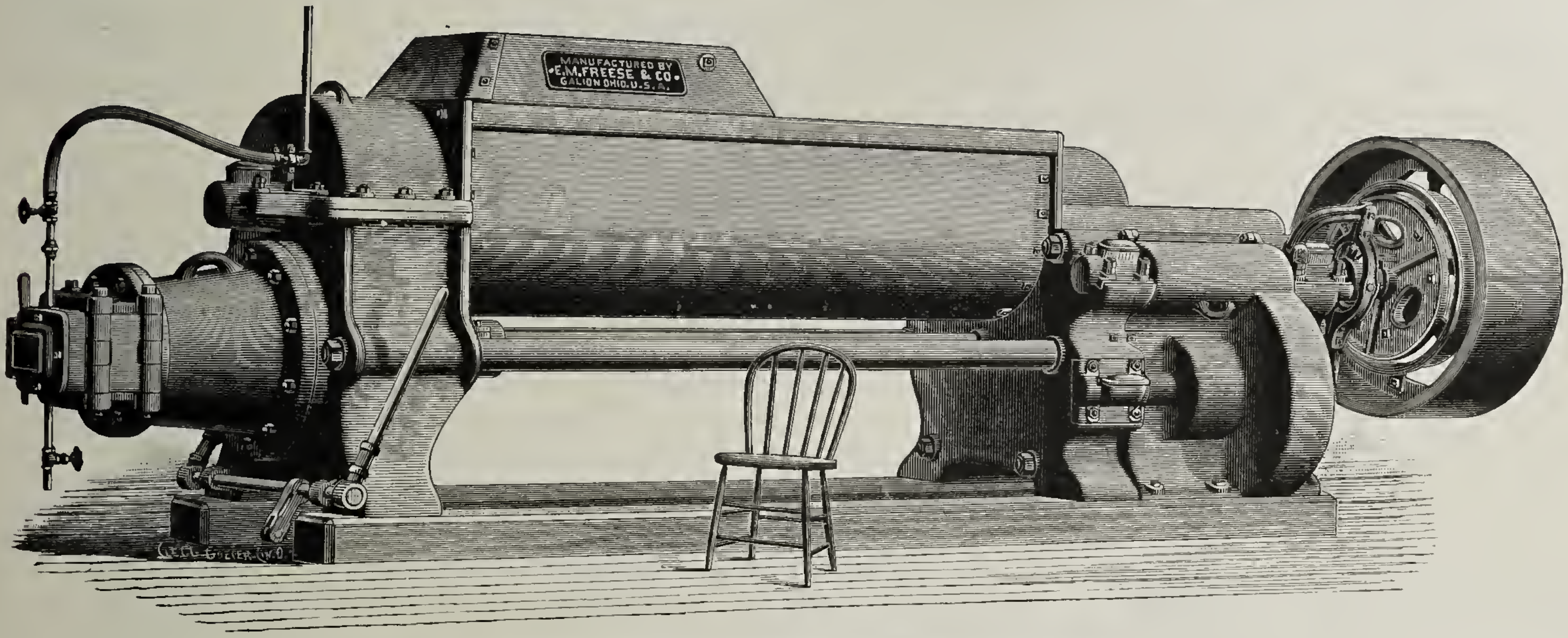
You will be satisfied with it.

We will prove this statement if you will give us opportunity.

E. M. FREESE & CO.,
Galion, Ohio.

Union Brick Machines

With Pug Mill Combined.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E.M. FREESE & CO.
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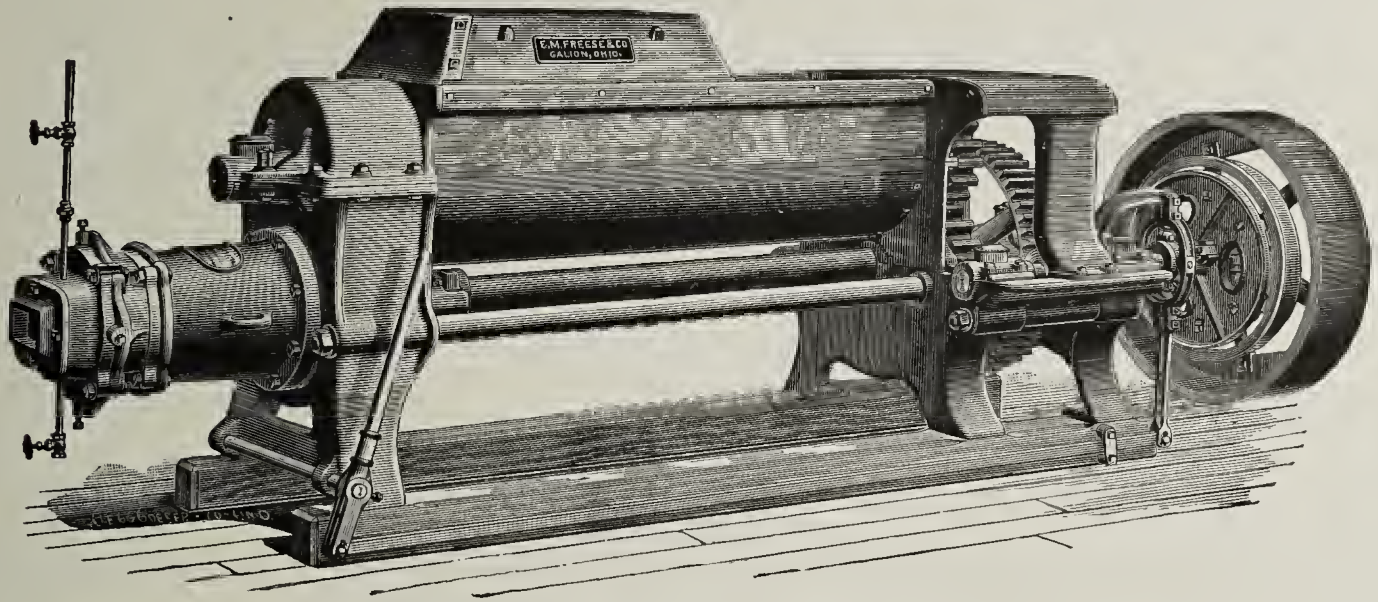
UNION BRICK MACHINE. (SPECIAL SIZE.)



UNION BRICK MACHINE. (No. 1 SIZE.)

We build these Machines in five (5) sizes.

Their reputation for convenience, enconomy and satisfactory service generally is established by their use in scores of the best Brick Plants.

E. M. FREESE & CO.,
Galion, Ohio.

SOME OF THE ARTICLES WE MAKE

Horizontal & Vertical Brick Machines

Clay Granulators,
Clay Elevators,
Clay Cars, Pug Mills,
Revolving Dump Tables,
Tempered Steel Brick Strikes,
Kiln Castings,
And other castings.

◆ ◆ ◆

Friction Winding Machines,
Friction Clutches,
Friction Clutch Pulleys,
Friction Cut-off Couplings.

◆ ◆ ◆

Power Freight Elevators,
Hoisting Machines,
And Some Other Things.

Have printed descriptive sheets describing many of these articles, which we will be happy to furnish, with prices on application.

It's not our aim to build the cheapest but we do try to build the best. Better Investigate Them.

The Eastern Machinery Co.,

Mention The Clay-Worker.

NEW HAVEN, CONN.

The FROST DRY PAN.

The ORIGINAL and BEST Dry Pan in the market. More of these Dry Pans in use to-day than all others combined. All sizes: both Wood and Iron Frames. Used by every Prominent Brick Manufacturer. ☞ Less repairs are required for the Frost Dry Pan than any other make. This is a very important fact. High Grade Automatic and Throttling Steam Engines, Horizontal Tubular Boilers and Plain and Submerged Tube Vertical Boilers. ☞ Send for Illustrated Catalogue.

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WORKS:
GALESBURG, ILL.

SALES DEPARTMENT:
135 Adams St., CHICAGO, Ill.

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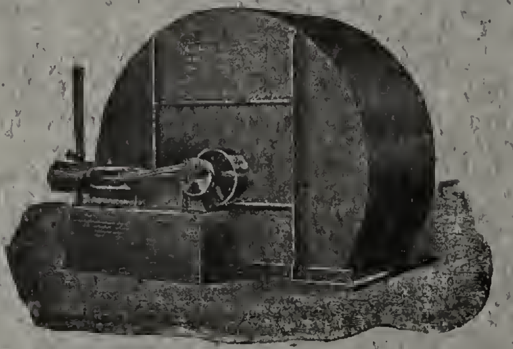
For the manufacturer who would achieve the highest success in the production of a perfect product.



"A B C" WASTE HEAT BRICK DRYERS

Show a greater saving in fuel and a higher percentage of "A-1" product than have been ever known by other processes.

Let us put you on a solid footing for big returns. Send for Catalogs.

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AMERICAN BLOWER CO.,
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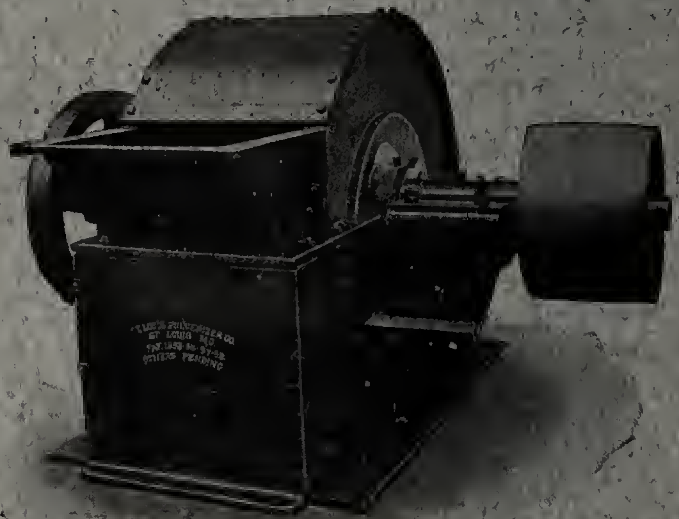
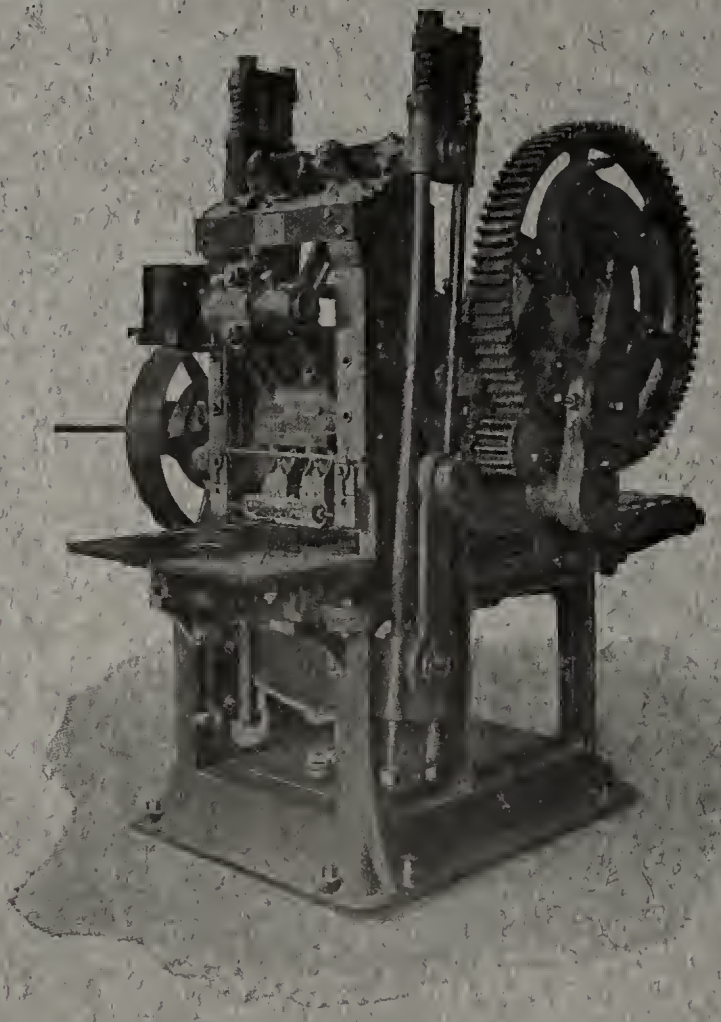
PATENT

Pulverizers, Breakers and Disintegrators



St. Louis Pulverizer Company,
416 N. Main St.,
ST. LOUIS, MO., U. S. A.



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We Have Just Shipped

The Thirteenth RICHARDSON REPRESS to the City of Washington.

These thirteen Represses were shipped to five different plants, on eleven different orders, the last four years.

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We would be glad to take your order also, and at the same time please include what Dryes Cars you need. They are as high grade as our Represses.

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STEAM and HAND REPRESSES,
STEAM DRY PRESSES, two mould,
SWORD BRICK MACHINES,
STEEL DRYER CARS.

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THE OHIO CERAMIC ENGINEERING CO.,
Cleveland, Ohio.

Table of Contents, Page 570.

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INCLUDING BRICK TILE TERRA COTTA SEWER PIPE POTTERY ETC.

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THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXXVII, No. 5. INDIANAPOLIS, IND., MAY, 1902 $2.00 a Year in Advance.

Automatic Side-Cut and End-Cut Brick Machines.

New Friction Hoisting Machine.

Built in heavy iron frame with all journal boxes in halves and babbeted.

Driving shaft $2\frac{15}{16}$-inch diameter with pulley 30-inch diameter by 9-inch face.

Drum 24 inches diameter, 29 inches between flanges and fitted with positive release mechanism. Thrust screw works through a phosphor bronze nut and friction head of drum made with double the usual surface. Gear large and strong.

Weight of machine about 4,500 lbs.

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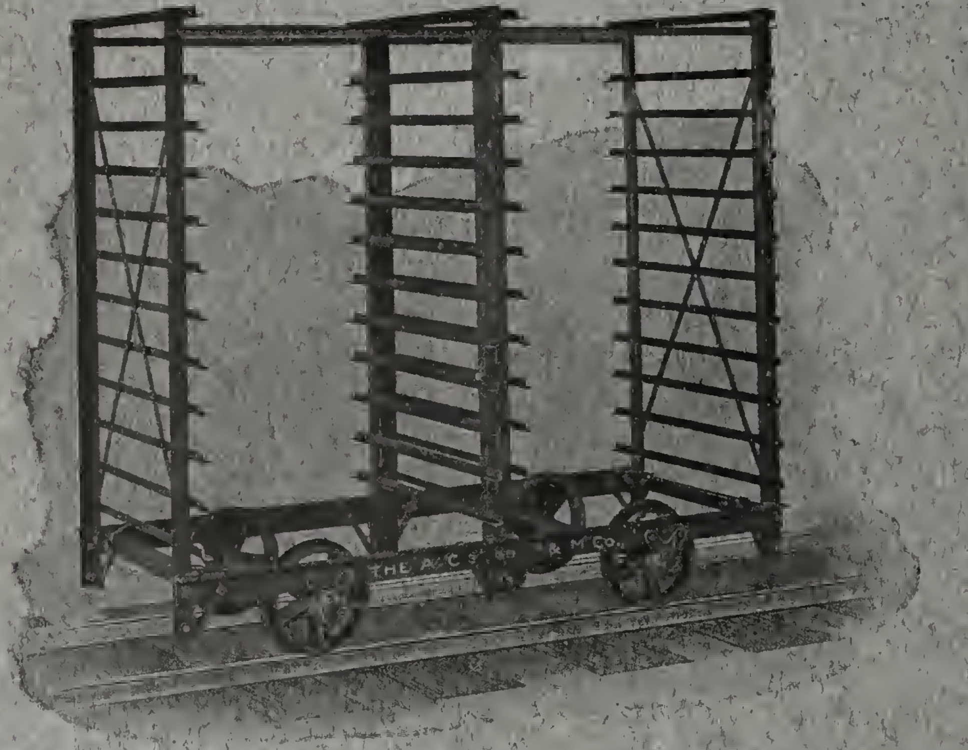

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We also make a full line of

Dump Cars, Turn Tables, Transfer Cars, Track Switches, Etc. ⌀ ⌀ ⌀

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CARS!

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Of every description in the World.

We do not confine ourselves to standard styles and sizes, but build anything in the way of cars to suit the requirements of our Clients. Our long experience in the manufacture of cars, enables us to design and build the strongest, lightest and easiest running car on the market.

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INDEX TO ADVERTISERS.

Brick Machinery—Dry Press Process.

Name. Page.
Anderson Foundry and Mach. Works ... 522
Chicago Brick Machinery Co... 591
Chisholm, Boyd & White Co... 516, 517, 518, 519
Name. Page.
Fernholtz Brick Machinery Co. The ... 521
Ill. Supply & Construction Co. 523
Ross-Keller Brick Machine Co 520

Brick and Tile Machinery.

American Clay-Working Mach Co., The ... 597, 606
Anderson Foundry and Mach. Works ... 522, 593
Brewer. H. & Co ... 604
Bonnot Co. The ... 607
Chambers Brothers Co ... 513
Chicago Brick Machinery Co... 591
Eastern Machinery Co, The ... 610
Fate & Co., The J. D ... 605
Freese, E. M. & Co ... 573, 608, 609
Henry Martin Brick Mach. Mfg Co., The ... 602
Hensley, I. W ... 515
Horton Mfg. Co., The ... 601
Ill. Supply & Construction Co. 523
Kells Foundry and Machine Co ... 583
Leader Mfg. Co, The ... 592
Madden & Co ... 582
Ohio Ceramic Engineering Co., The ... 612
Potts & Co., C. & A. ... 598, 599
Raymond Co., The C. W ... 571
Stedman Foundry and Machine Works ... 525
Steele & Sons, J. C ... 588
Wallace Mfg. Co, The ... 603
Wellington Machine Co, The ... 575
Wiles Co., A. M. & W. H ... 587

Brick Kilns and Dryers.

American Blower Co, The ... 612
Barron, A. F. & A. E ... 596
Bushong, M. M ... 590
Crown Dryer Co., The ... 589
Dennis, F. W ... 594
Eudaly, W. A ... 590
Frey Engineering Co ... 595
Haigh, H ... 584
Illinois Supply and Construction Co, The ... 523
Justice, I. M ... 588
Morrison & Co., R. B ... 584
New York Blower Co., The ... 595
National Dry Kiln Co, The ... 594
Phillips, S. G ... 577
Pike, E. M ... 584
Reppell, L. H ... 588
Sharer, Geo. W ... 594
Standard Dry Kiln Co, The ... 528
Starkey, John ... 578

Brick Yard Supplies.

Atlas Car & Mfg. Co. ... 514
Arnold, D. J. C ... 525
Bechtel, B. E ... 586
Cleveland Car Co ... 589
Caldwell & Son Co., H. W ... 582
Carnell, Geo ... 587
Central Iron Works ... 577
Cox, Geo. S ... 584
Dunlap Mfg. Co ... 580
Frost Manufacturing Co ... 611
Gandy Belting Co., The ... 579
Gray, S. B ... 578
Harrington & King Perforating Co, The ... 515
Henry Martin Brick Machine Mfg. Co, The ... 602
Horton Mfg. Co, The ... 601
Jeffrey Manufacturing Co, The. 581
Kendall & Flick ... 581
Marion Steam Shovel Co ... 592
Main Belting Co ... 580
Mershon, Schuette, Parker & Co 581
Phillips & McLaren ... 583
Rockwood Mfg. Co, The ... 583
Smidth & Co., F. L ... 586
Scotts Patent Brick Car Co ... 600
Shaw, Willis ... 579
St. Louis Pulverizer Co ... 612
Tecktonius, E C ... 584
Thew Automatic Shovel Co, The 593
Wells & Hall ... 579
Williams & Co., M. F ... 586
Williams Patent Crusher and Pulverizer Co ... 524

Miscellaneous.

American Ceramic Society ... 591
American Road Machine Co... 582
Audel & Co., Theo ... 578
Baird & Co., Henry Carey ... 581
Big Four Route ... 584
Caldwell Co., W. E ... 580
Chesapeake & Ohio R. R ... 583
Clark W. J. Co., The ... 580
Clinton Paving and Building Brick Co., The ... 527
Coaldale Paving Brick Co., The 526
Connolley, W. A ... 578
Crown Fire Clay Co., The ... 579
Dean Bros. Steam Pump Works 580
Eastern Paving Brick Co. ... 526
Evens & Howard ... 579
Evert & Co., H. C ... 582
Gabriel & Schall ... 582
Green & Hunter Brick Co ... 526
Hook, F. E ... 585
Indianapolis Engraving and Electro Co ... 579, 582
Indiana, Decatur & Western ... 584
Indiana Paving Brick Co ... 526
Johnsonburg Vitrified Brick Co 526
Lake Erie & Western ... 584
McAvoy Vitrified Brick Co ... 527
Miller Oil and Supply Co ... 581
New York Brick and Paving Co 526
Ohio Steam Pump Co., The ... 581
Ohio State University ... 580
Pennsylvania Line ... 583
Purington Paving Brick Co, The 527
Perrine & Son, H. C ... 582
Reese-Hammond Fire Brick Co 579
Roessler-Hasslacher Chemical Company, The ... 587
Sangamo Brick Co ... 527
Terre Haute Brick and Pipe Co. 527
Vandalia Line ... 588
Wabash Clay Co., The ... 527
Ads., Small Wanted, For Sale, etc.

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PERFORATED SHEET STEEL
FOR
CLAY SCREENS
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The MONARCH

Is an All Iron and Steel Brick Machine with

Double Pug Mill.

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SIMPLE
IN CONSTRUCTION,
DURABLE
AND . . .
POWERFUL.

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Every working part stands open to view both front and rear. It is a World Beater when it comes to quantity and quality of brick. We carry in stock a full line of first-class Brickyard supplies at a very reasonable price. Also the new **IRON QUAKER.** Engines and boilers. Send for new 1901 Catalogue.

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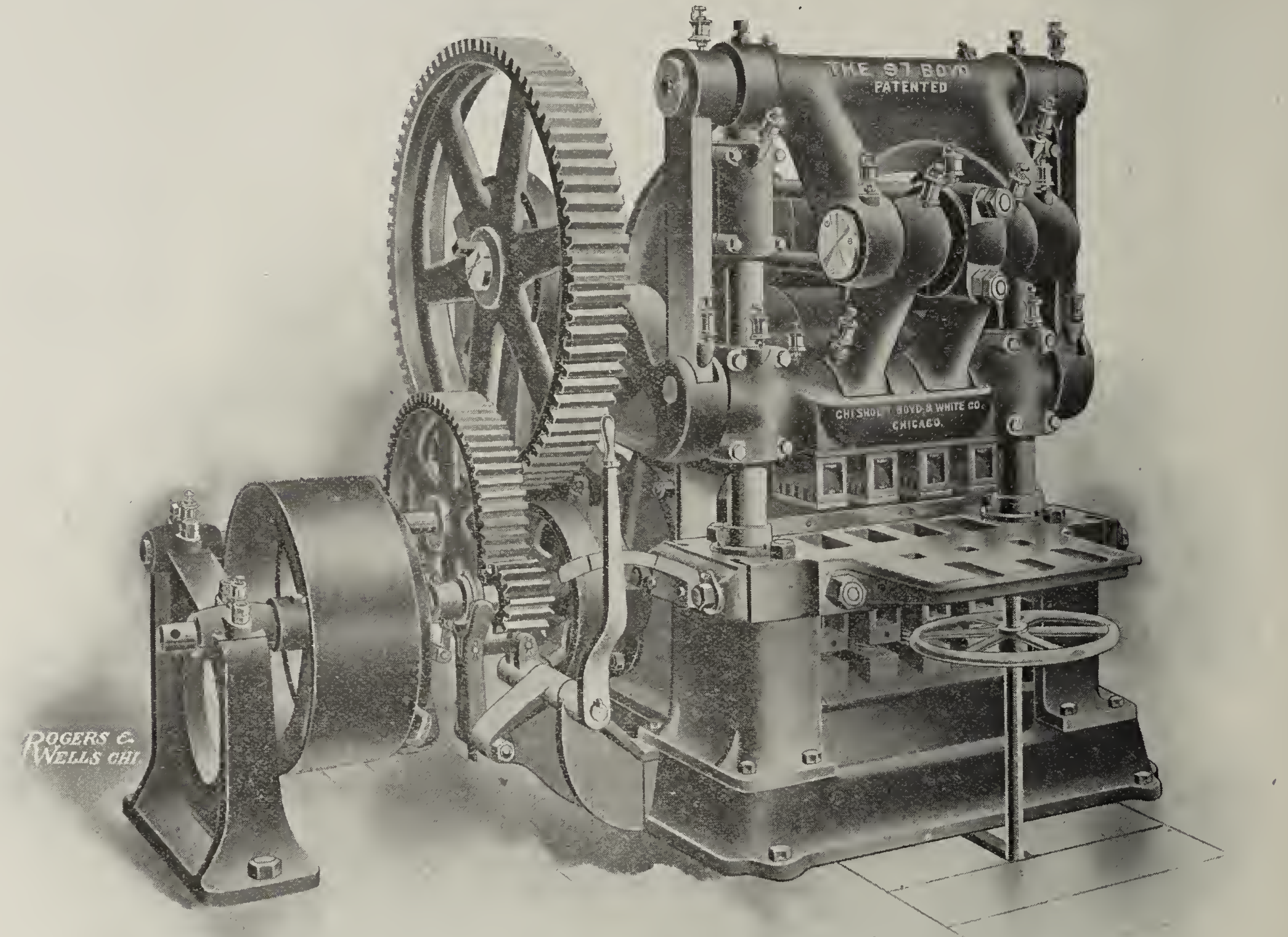
W. L. KIDNEY, Sales Agent, Capetown, South Africa.

The Improved Boyd Brick Press.

The '97 Model.

IT'S NAME A GUARANTEE.



The '97 Boyd Brick Press has Enormous Strength and Great Durability: It is Compact; The Adjustments are Convenient; It Operates Quietly and Smoothly; The Workmanship and Material are of the best; The Design Ingenious, and shows the most Perfect Application of Scientific and Mechanical Principles to the Art of Brickmaking.

Sent on trial and subject to purchase after the making and burning of one or more Kilns of Brick.

Fifty Presses of this Pattern Now in Use.

Can not be broken in pressing brick. Fully Guaranteed.

Write for Descriptive Catalogue, No. 9.

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OFFICE AND WORKS:
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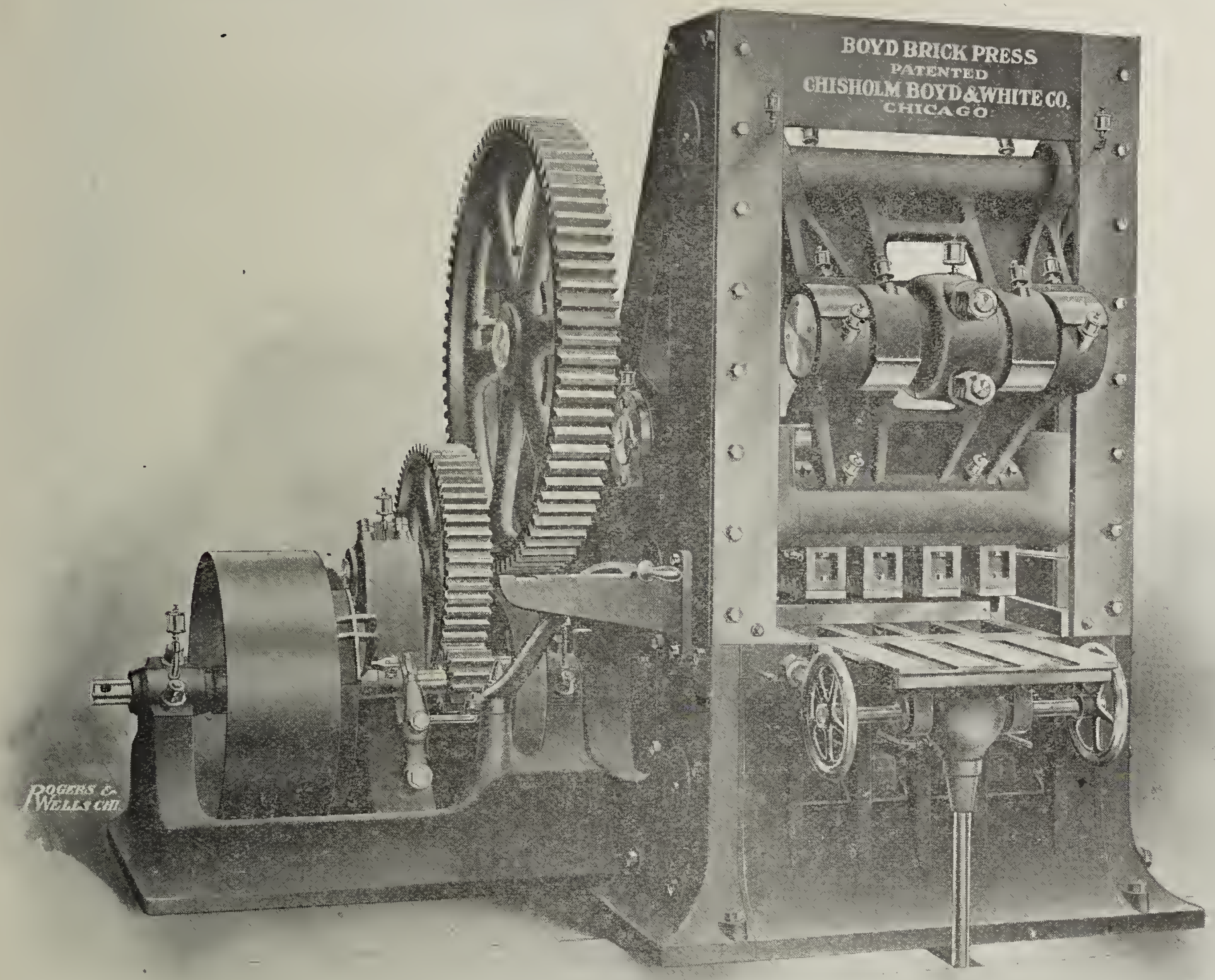
Cable Address; CHISHOLM, CHICAGO.
A. B. C. and Liebers Code.

The BOYD BRICK PRESS.



The Boyd Brick Press will make Better Brick from Clay or Shale than can be made from the same material by any other press.

Especially adapted for Working Shales; and is the only Successful Machine for Making Fire Brick.

Its Record: More Boyd Presses in Actual Operation than of all other Press Brick Machines Combined.

Brick Plants ot any desired capacity designed and constructed complete, Under Guarantee of Producing Satisfactory Burned Brick.

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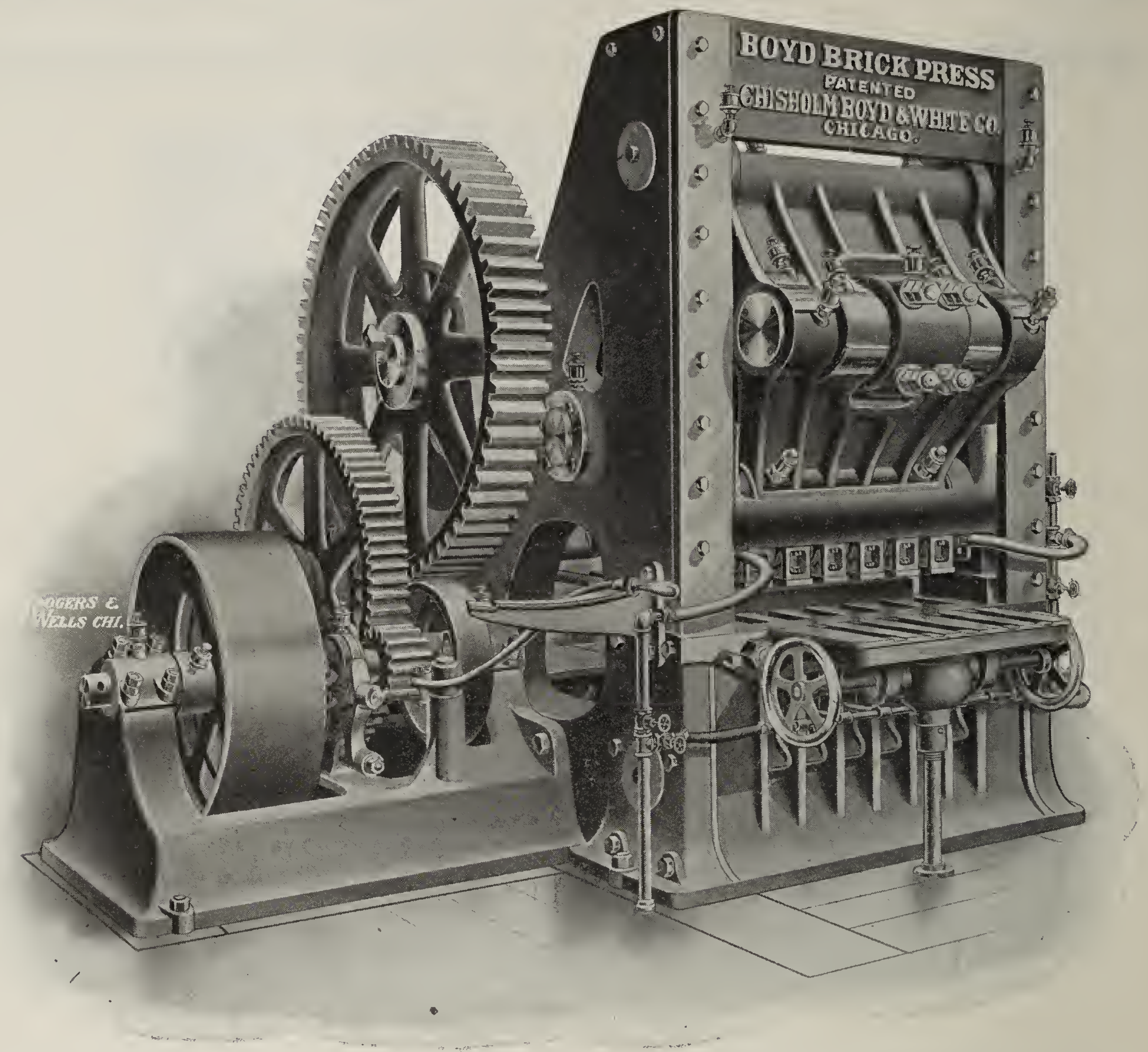
America's Greatest Brick Press.



Another Record for the Boyd Press! Six of our Six-Mold Presses in use **on one yard** since 1892. Average cost of repairs for each machine $1.00 per year.

The Boyd Press exerts greater pressure than any other machine made. It is the only Press in which the lower plungers are independent of the lower crosshead. This feature positively ensures equal pressure and finish on both sides of the brick, and no granulated or soft centers.

The mold liners are made of the hardest and toughest known metal, and are guaranteed for two years. The movement of the Boyd Press is noiseless and without jar or shock; no rubber or air cushions, hooks, latches or other uncertain and unmechanical devices are employed.

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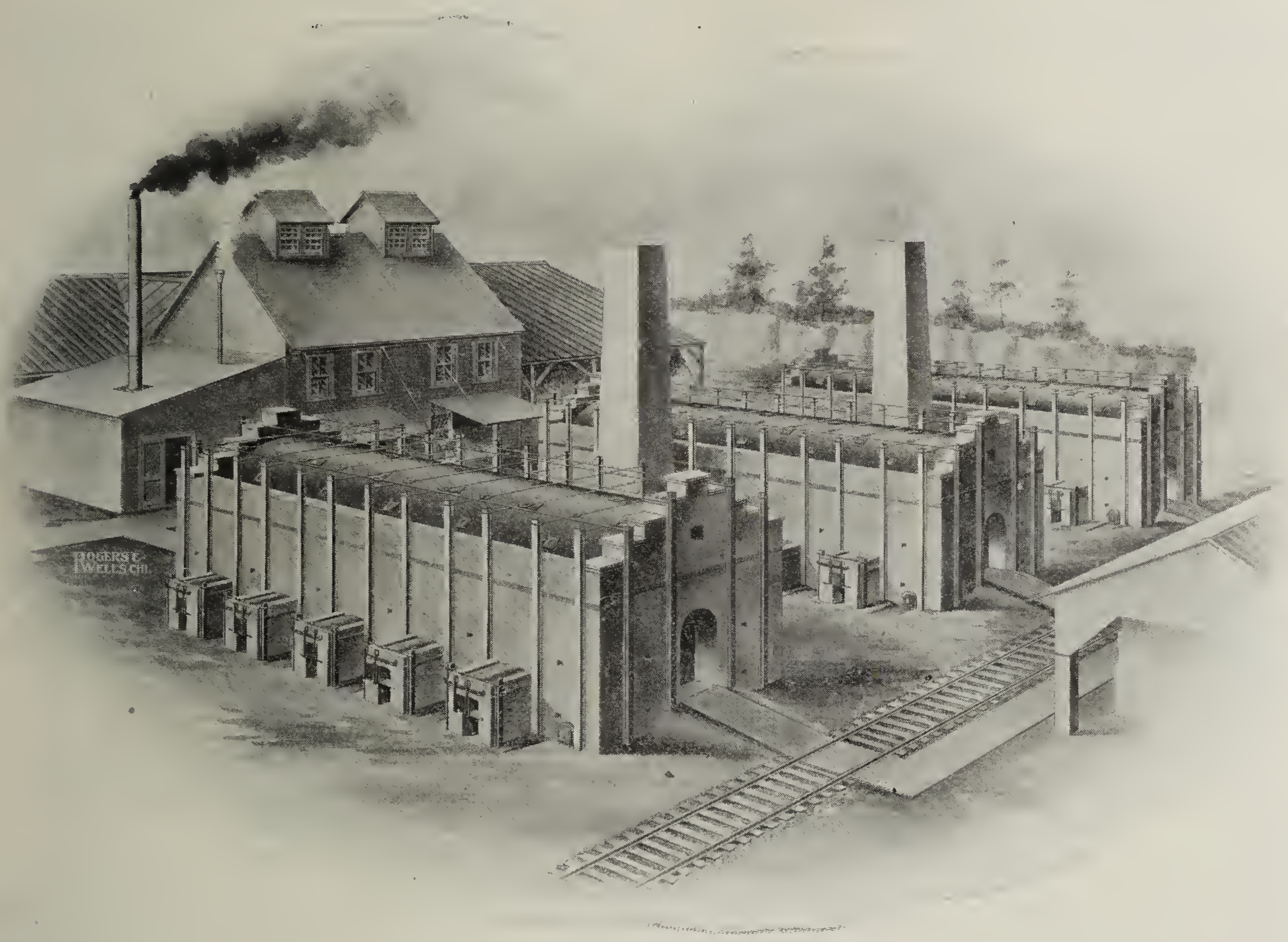
Chisholm, Boyd & White Company,

ENGINEERS AND CONTRACTORS FOR BRICK PLANTS.

MANUFACTURERS OF

The Boyd Brick Press.



A MODERN BRICK PLANT—As Equipped by Us.

A Sure Thing—We are prepared to construct and equip a Brick Plant of any desired capacity, furnishing the brickmaking machinery and power plant, erect the necessary buildings and kilns, and turn the plant over to the purchaser in proper working order, under guarantee of satisfactory results.

Brick Plants designed and equipped by us have the highest reputation for efficiency. They are modern, up-to-date, compact, convenient in arrangement, and are not encumbered with unnecessary or useless machinery or appliances.

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The LATEST IMPROVED

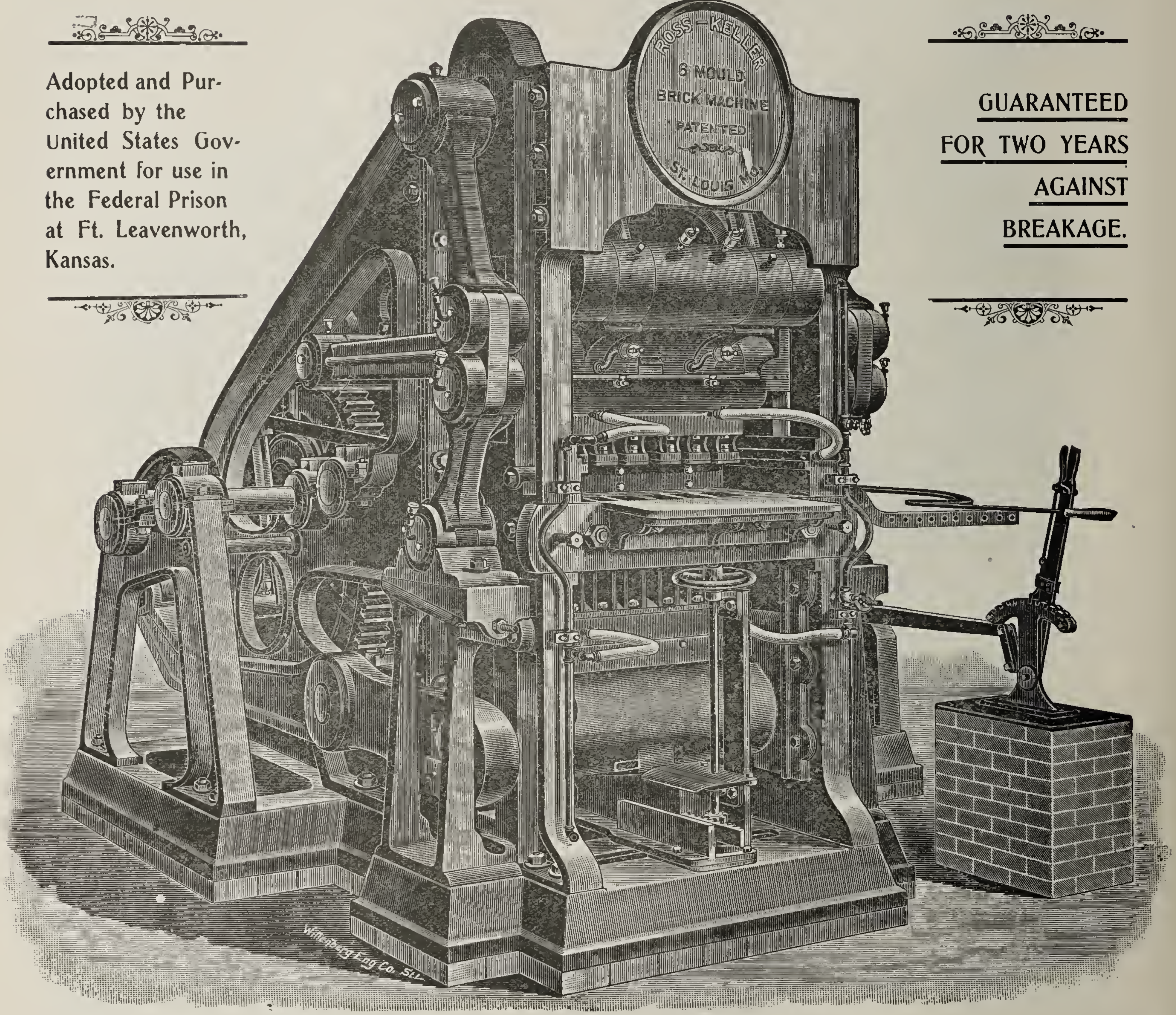
Ross-Keller TRIPLE PRESSURE Brick Machine

Manufactured in four and six-mould sizes. Weight of four-mould machine 58,000 pounds; capacity 24,000 brick per day. Weight of six-mould machine 75,000 pounds, capacity 35,000 to 40,000 brick per day.

BRICK SET IN KILN DIRECT FROM MACHINE.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

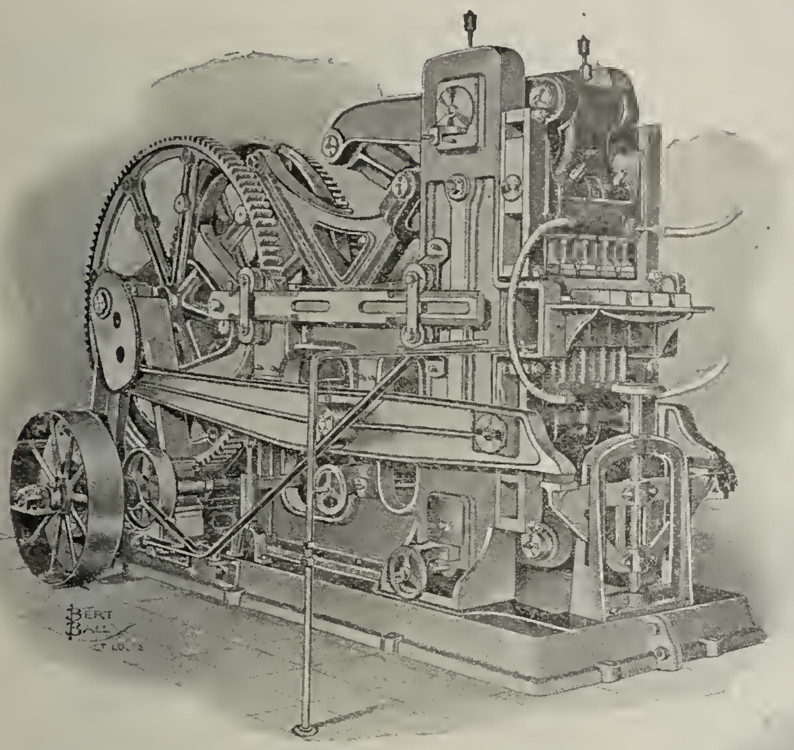
GUARANTEED FOR TWO YEARS AGAINST BREAKAGE.



THIS machine has an unbroken record of success. It is used on a number of the best equipped brick plants in the United States. It has never failed to give entire satisfaction and we are perfectly safe in guaranteeing that it will work any clay of which pressed brick can be made, and make them better and cheaper than any other press. It makes better brick because the pressure is greater and is applied in a way most effective. It makes brick cheaper because it is unbreakable and hence there are no repair bills or expensive delays and stopping of work which brickmakers know are more costly than the repair bills themselves. If you want to make the best brick at the least expense the season through don't fail to investigate this machine, with it you can "put money in your purse." Let us tell you more about it and give the address of those now using it. Remember "the proof of the pudding is in the eating of it."

For Prices and Full Particulars, address **ROSS-KELLER BRICK MACHINE CO.,** Fullerton Bldg., ST. LOUIS, MO., U. S. A.

The New Fernholtz Brick Press.



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IMPROVED.

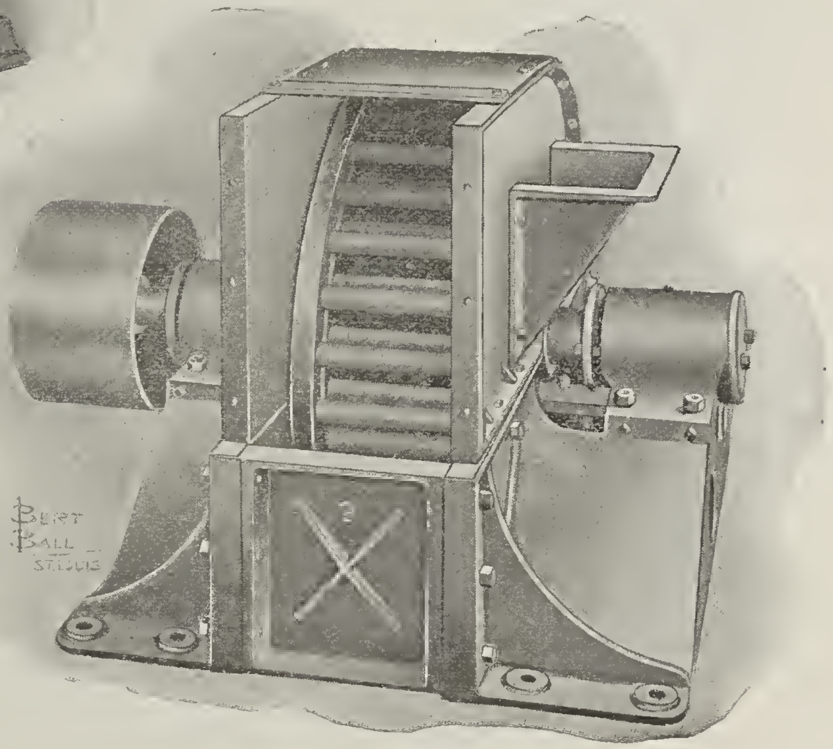
Fitted with the Celebrated

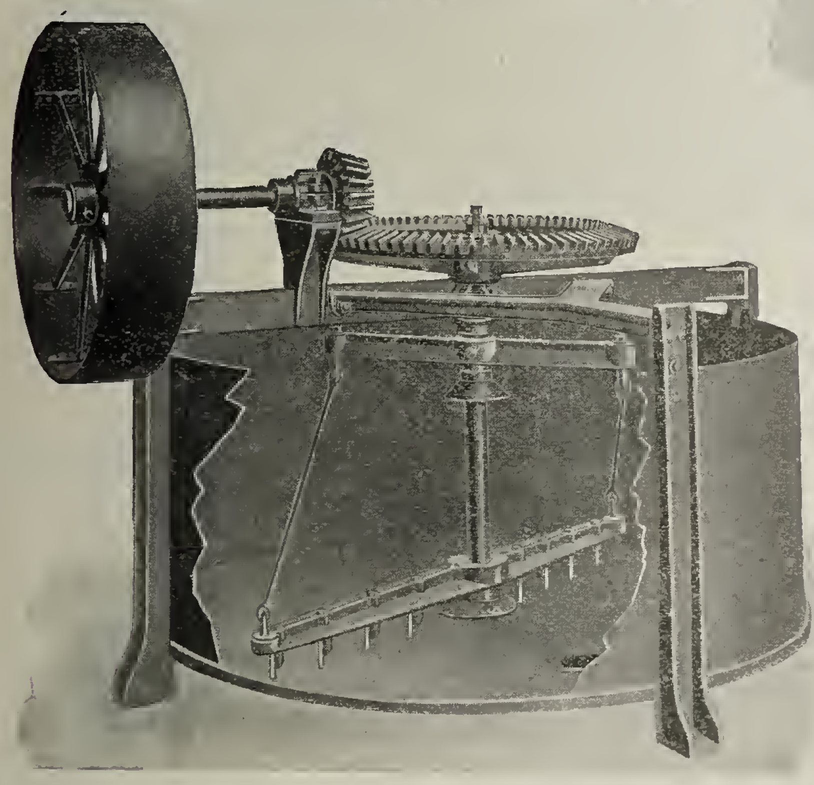
FERNHOLTZ MOLD BOX

Which is used by leading Brick Manufacturers in other Dry Presses.

The Fernholtz PATENT Clay Pulverizer.

No more rivetting Pins in Cage.
Any one can put them in. Most economical Clay Grinder ever made.





The Fernholtz Iron Frame Clay Mixer.

"The Mixer that Mixes."

WE HAVE a first class repair department and can repair all kinds of Brick Machines and Machinery. We make a specialty of Molds for Fancy Shape brick at reasonable prices.

Dealers in BRICKYARD SUPPLIES.

If you don't see what you want ask for it. No trouble to answer questions.

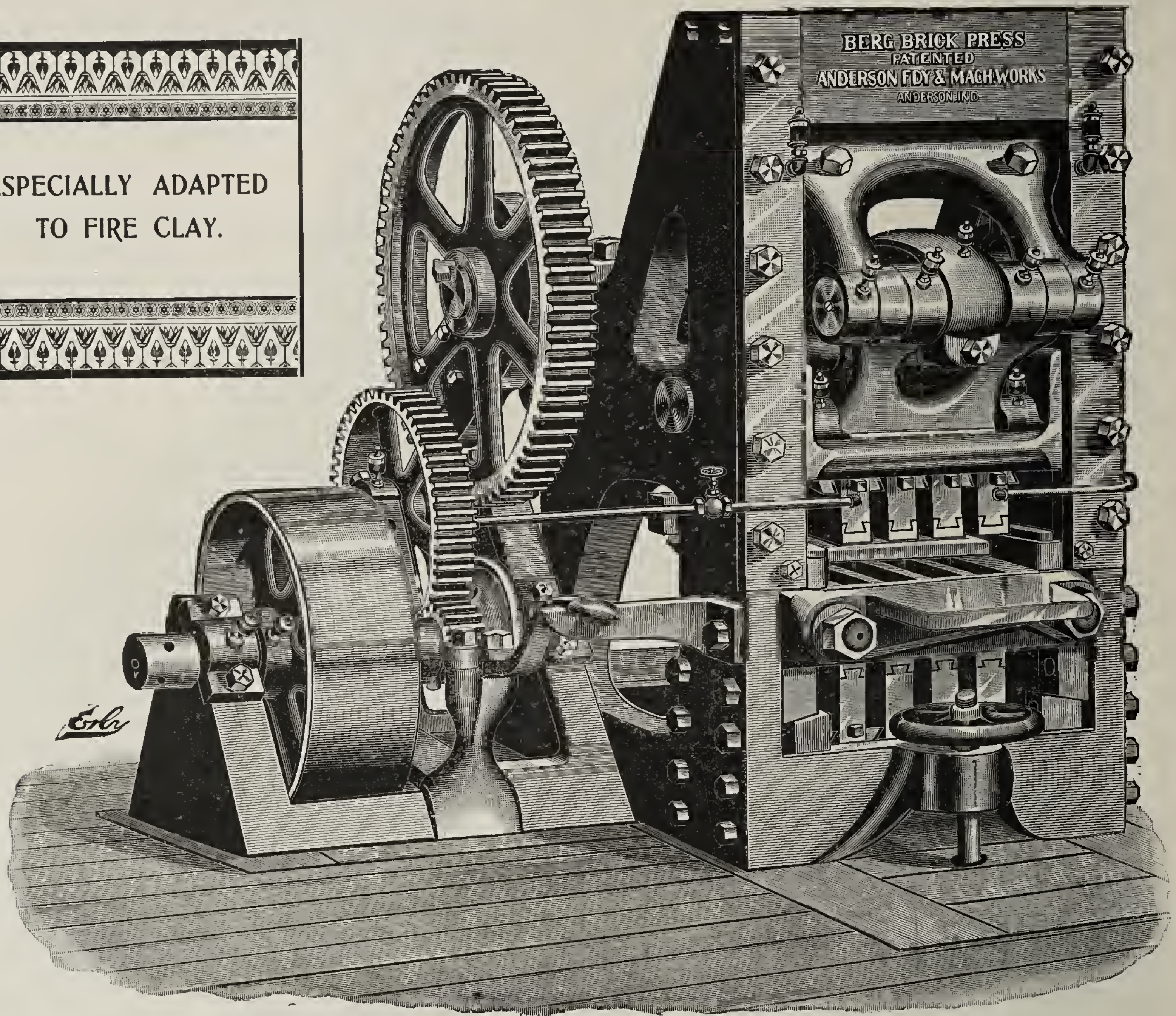
The Fernholtz Brick Machinery Co.,

CABLE ADDRESS "FERNBRICK."
WESTERN UNION CODE.

1214 to 1216 Poplar Street, ST. LOUIS, MO., U. S. A.

The BERG BRICK PRESS.

ESPECIALLY ADAPTED
TO FIRE CLAY.



The Highest Development of the Art of Brickmaking—so Pronounced by the U. S. Government.

Three distinct pressures.
Greater Pressure than any other machine.
Greater Strength than any other machine.
Will put more clay into given space than any other machine
Less working parts than any other machine.
No Plunger Stems, eye rods or Springs.

Mold Liners Made of Tempered Tool Steel.

Makes all size Brick and Tile from 2 to 24-inch.

SOLD BY

Chicago Brick Machinery Co.,
225 Dearborn St., CHICAGO.

MANUFACTURED BY

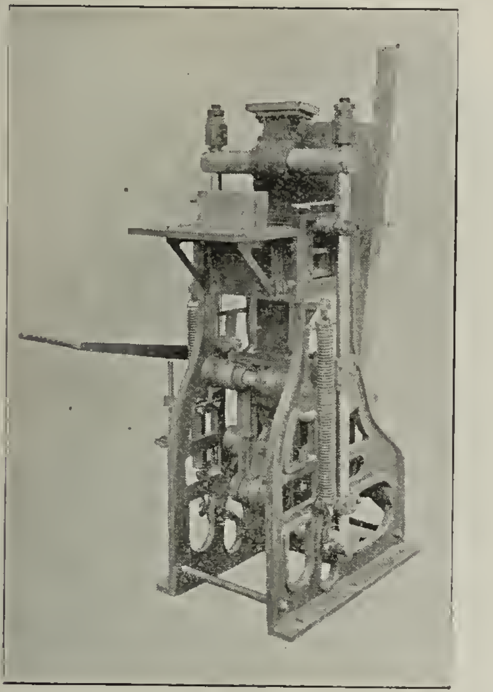
The Anderson Foundry & Machine Works,
Anderson, Indiana.

Mention The Clay-Worker.

THE NEW

Grath Hand-Power Brick Press

FOR MAKING PLAIN AND ORNAMENTAL PRESS BRICK FROM SEMI-DRY CLAY.

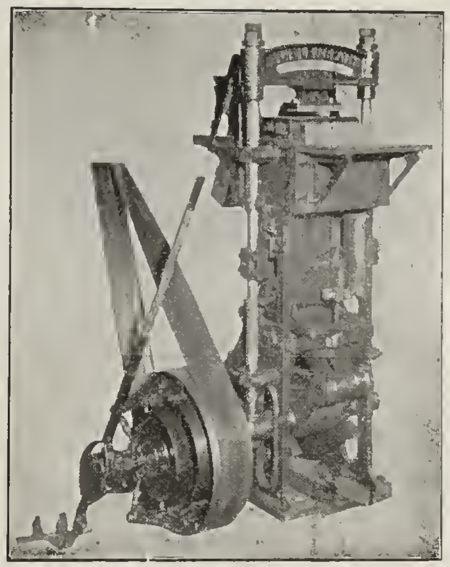


The accompanying cut shows the only successful **HAND POWER PRESS** for pressing brick direct from the clay. The brick made on same are equal to those made on any steam power or hydraulic press. They have a polished face and perfect edges and corners. As will be seen, the press is equipped with charger and feed box. Two men can easily make 2,000 best quality press brick per day. By simply changing the liners and die plates, brick of any size up to 12½ inches long, 8½ inches wide and from 1 to 4¼ inches in depth can be pressed. In making brick on edge the mould is 9 inches deep. No brickyard is complete without a press of this sort. It is also recognized as the only successful press for making plain press or front brick for small yards that are making brick by the plastic process.

The Coffeyville (Kansas) Vitrified Brick & Tile Co. were the first one to order one of these presses, and to show what they think of same, they have only recently placed an order for two more of them.

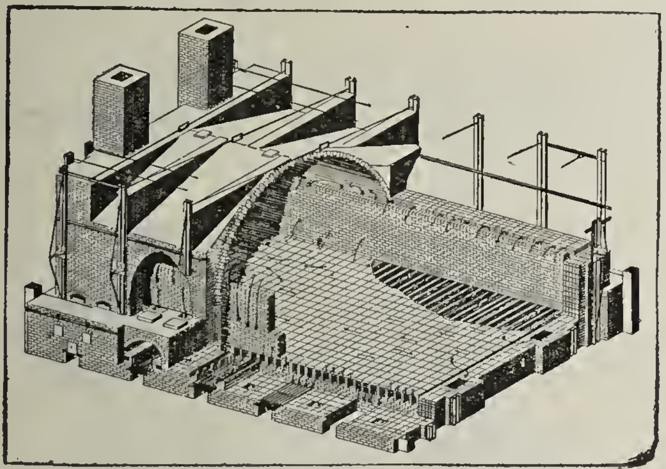
The Grath ONE AND TWO Mould Steam Power Press

The accompanying cut shows the latest improvement in Brick Presses which are built in two sizes. The One Mould, which has a capacity of 5,000 best quality press brick per day. The Two Mould having a capacity of 10,000 best quality press brick per day. This press is so constructed that all shapes and sizes of ornamental brick can be made on same by simply changing moulds and die plates, and is the cheapest as well as the simplest and most powerful Press of its kind in the market. The brick made are very dense with perfect edges and corners. The Press is guaranteed against breakage for one year. All parts subject to strain are of steel.



The Grath Gas and Coking Furnaces

Can be attached to ALL kinds of Kilns, either old or new, and produces better results with SLACK than lump coal in ordinary furnaces. PROTECTION GUARANTEED TO ALL USERS. REWARD FOR INFORMATION ON INFRINGEMENTS.



The GRATH Combined Radiating Floor and Direct Down=Draft Kiln,

(THE PERFECT KILN.)

BUILT ROUND, SQUARE AND CONTINUOUS.

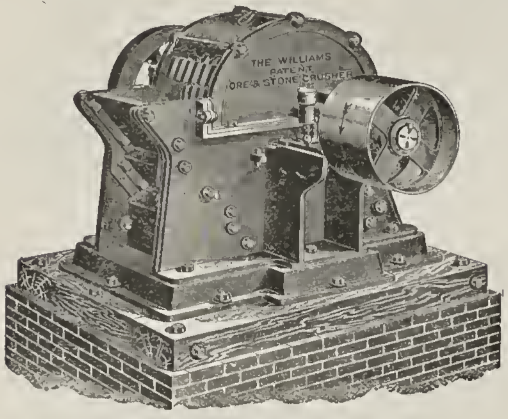
PATENTED.

BY OPERATING the Tile Dampers over the furnaces the heat is directed to any part of the kiln. When the dampers are closed all the heat from the furnaces is drawn into the flues under the Radiating Floor, then up the bag on the opposite side, then down through the ware. If the dampers are entirely open, all of the heat from the furnaces ascends directly up the bag and then down through the ware. If the dampers are split, part of the heat ascends up the bag and the balance is drawn into the flues under the Radiating Floor, up the bag on the opposite side, and then down through the ware. The heat passing under the Radiating Floor burns the ware in the lower part of the kiln by radiation to any degree of intensity. Thus it will be seen that all the material in the kiln is thoroughly burnt to any degree all at the same time. This constitutes the long sought for perfect kiln. For Catalogue and Prices apply to

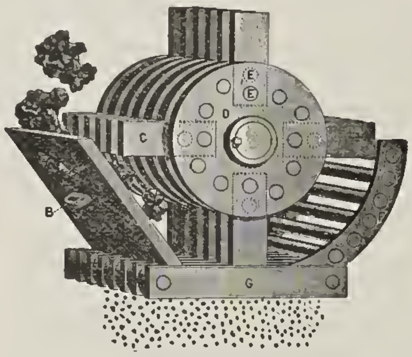
The Illinois Supply & Construction Co., 800 Columbia Building,
ST. LOUIS, MO., U. S. A.

The Williams Patent Crusher and Pulverizer Co.

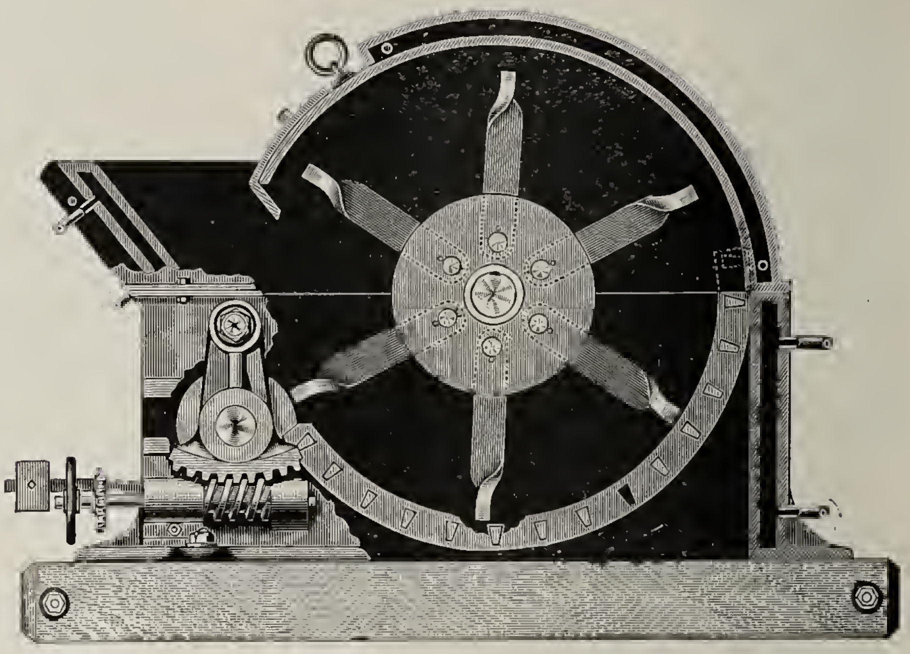
St. Louis, Mo., U. S. A.



SHALE CRUSHER ahead of a Pan. 5 Sizes

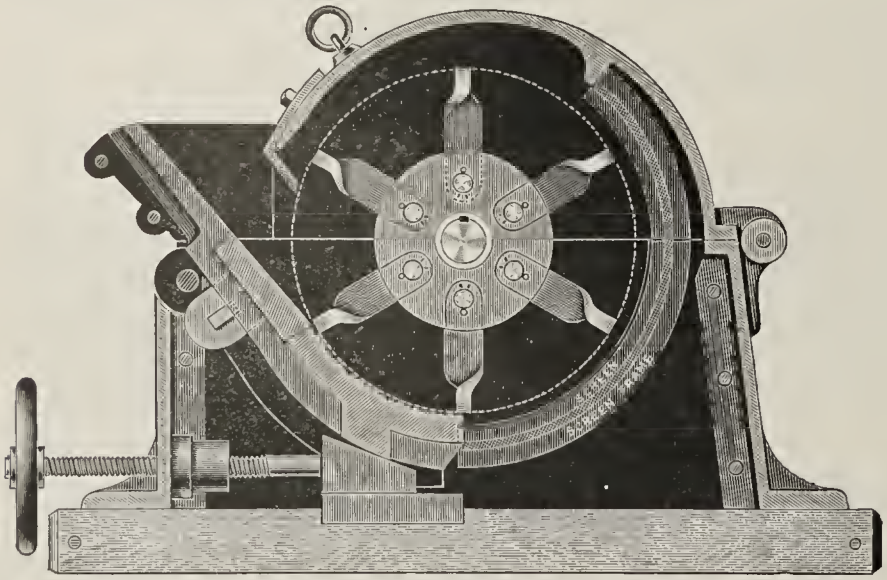


Interior of Same.

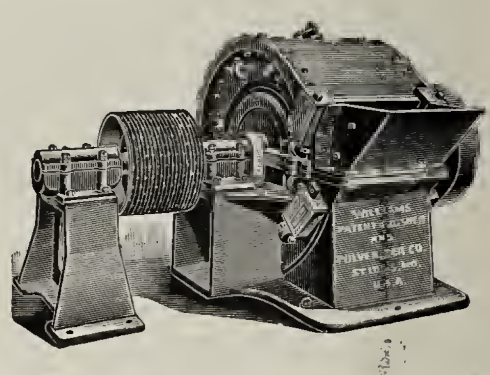


WET and DAMP CLAY DISINTEGRATOR, from the Bank. Five Sizes

WE NEVER FOLLOW BUT ALWAYS LEAD. Our Steam Screen leads them all. We guarantee to work satisfactorily any clay that will make a Brick, wet or dry, with less cost than any other machine on earth. : : : : : :



TAILINGS GRINDER (which finishes without additional Screening). Five Sizes.



SHALE and CLAY PULVERIZER. Five Sizes.

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WEST VIRGINIA OFFICE: Bramwell.
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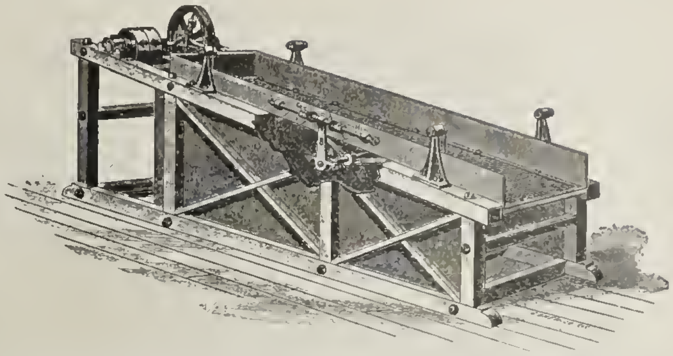
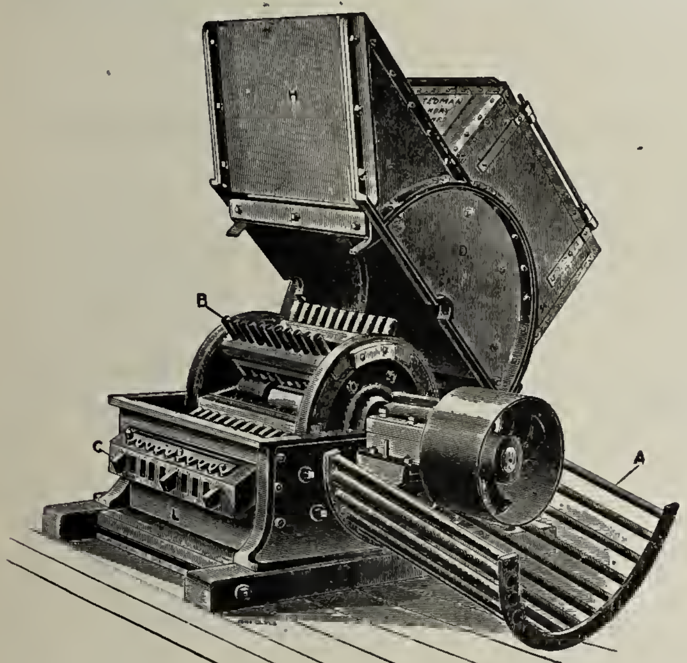
SAN FRANCISCO: Partridge Building.

STEDMAN'S AGITATING INCLINE SHAKER SCREEN.



A GOOD Screen for properly screening to any degree of fineness a great variety of materials, and especially clay, is a long felt want. Our Incline Agitating Shaker Screen meets the requirements of the trade in the most successful manner possible.

In this screen we have one of large capacity for small floor space and one that will screen fine without clogging, as the agitating device we have underneath the screen wire prevents any clogging of the screen holes when screening clay or any other material in a dry or semi-dry condition. The screen will run with little power and without any shake or jar to the building, as the moving parts are well balanced by an adjustable counter-weight within the rim of the balance or fly wheel.



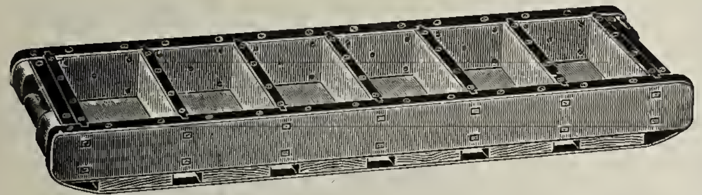
STEDMAN'S TORNADO CLAY PULVERIZER.

For Thoroughly Pulverizing Clay in a Dry, Semi-Dry or Damp Condition.

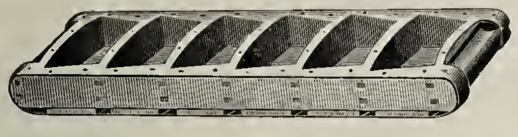
Its construction is such that it will not clog in pulverizing damp clay, and the journal bearings are constructed dust proof.

Write for catalogue, giving full description, references and testimonials.

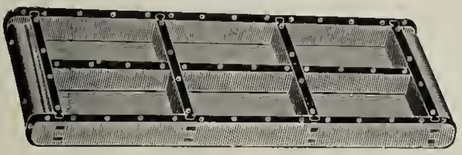
Stedman Foundry and Machine Works,
Aurora, Indiana.



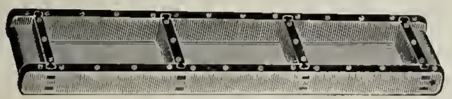
Six Brick Machine Mould.



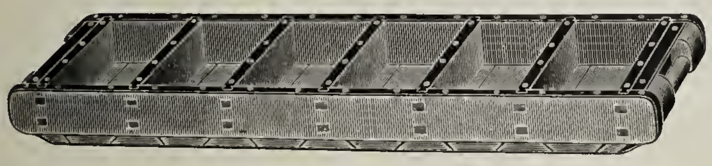
Circle Mould.



Hand Mould, Six Brick.



Hand Mould, Three Brick.



Roots Patent Bottoms.

DO IT NOW.

PLACE YOUR ORDER for 1902 brick moulds with Arnold. You can have them made and shipped any time between now and May 1st, 1902, and if you have the order placed ***there*** you know you will get the best there is made, and will get them promptly and when you want them. We make moulds to fit "any old machine" that uses moulds and guarantee satisfaction if you will give us the following particulars:

1st. Size of the brick.
2nd. Number of brick in a mould.
3rd. Thickness of partition or distance from center to center of bars in die.
4th. Length of mould over all allowing 1¼ inches at each end for handles if possible.
5th. Style of handle by number, (see our catalog).

We also make hand moulds any number of brick and any size desired.

Machine moulds with Roots Patent Bottom. We have made quite a number of these moulds in 1901, they are designed for making a better quality of brick than ordinary molds, and cost but little more. In addition to moulds we make a full line of Trucks and Wheel Barrows, also make special Trucks and Wheel Barrows to order, and a full line of Furnace Fronts, Kiln Doors, Grate Bars, Ventilators, etc.

Let us know what you will need and get our price before you place your order elsewhere. Get our catalog. Address

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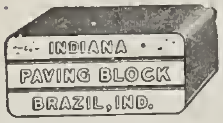
JOHNSONBURG VITRIFIED BRICK CO.
Johnsonburg, Penn.

Street Paving **Brick and Block.**

High Grade Fire Brick. Samples on Application.

INDIANA PAVING BRICK AND BLOCK CO.
W. W. WINSLOW, Proprietor.



Street Paving Brick and Block.

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OFFICE: 1 HUBBARD BLOCK,
Works at Brazil, Ind. INDIANAPOLIS, IND.

New York Brick & Paving Co.,
Manufacturers of

VITRIFIED PAVING BRICK,

Sewer and Hard Building Brick,
. . . ALSO . . . .
Berlin Vitrified Brick that Withstands all Acids.

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T. A. RANDALL & CO., Publishers, Indianapolis.

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A Manual of City Pavements: The Methods and Materials of Their Construction. For the Use of Students, Engineers, and City Officials.

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Also Fine Pressed and Ornamental Brick.

COALDALE VITRIFIED PAVERS,
Represent the Highest Standard of Excellence.

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The extent and character of our clays and facilities for manufacture insure uniform quality of product.

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HAS the largest and best equipped plant in the United States for the manufacture of Paving and Sidewalk Brick. The Galesburg Paving Brick have a reputation second to none and this Company points with pride to its record for quality of material and its methods of conducting its business.

Correspondence respectfully solicited.

The Terre Haute Brick and Pipe Co.,

Manufacturers of Best Quality of

VITRIFIED PAVING BRICK.

You should use them in sewers and building foundations as well as streets. If you do not think so—write us, we will say why.

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DRIERS OF ANY CAPACITY PROMPTLY INSTALLED.

We want to send you some "Standard" literature on the subject of brick drying. Write for it today, specifying Catalogue "R."

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THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA

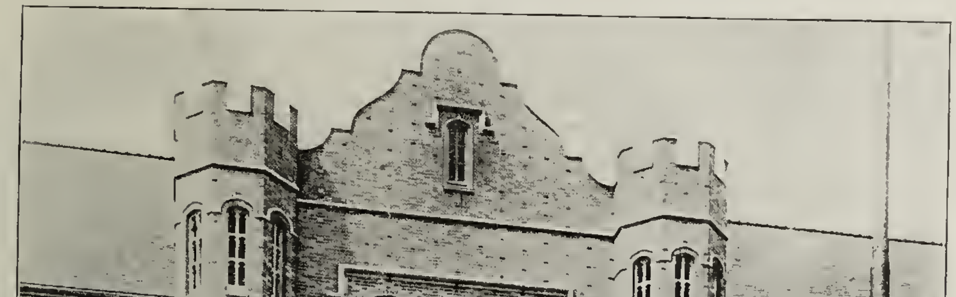
VOL. XXXVII. INDIANAPOLIS, IND., MAY, 1902. No. 5.

WRITTEN FOR THE CLAY-WORKER.

AMERICAN BRICK ARCHITECTURE.

An Ideal School Building.

AN EDIFICE that is a delight to the lover of the best building material used in all time, the barbaric or civilized, will be found on Theresa avenue, St. Louis, between Eades and St. Vincent avenues. This is the Edward Wyman School, a brick building that compels the admiration of all, whether judges of matters architectural or not. The style of the structure is that variously known as early English, rectilinear or perpendicular gothic, or Tudor gothic. Early English, besides being vague, is a misnomer. Tudor gothic is a much better term, bringing to us memory pictures of the ancient seats of learning in England, Oxford, Cambridge, Eton, Rugby, to which the thoughts of old scholars of the schools so often turn with intense loving. Tudor gothic appears to be a style of architecture peculiarly appropriate to the gravity and dignity of learning, combining beauty and utility without the gloomy emotional influence of the ecclesiastical gothic. Some of our most important modern educational institutions are in this style, such as the buildings and halls of Chicago University, the newly erected Washington University, of St. Louis, and others. One of the Washington University buildings will be used as the World's Fair administration building until the close of the fair. This immense building is a fine example of Tudor gothic. Its only fault is that it is carried out entirely in stone, which, though beautiful, has a gloomy and depressing effect, very different from the same style carried out in the warmer tinted and variegated brick.

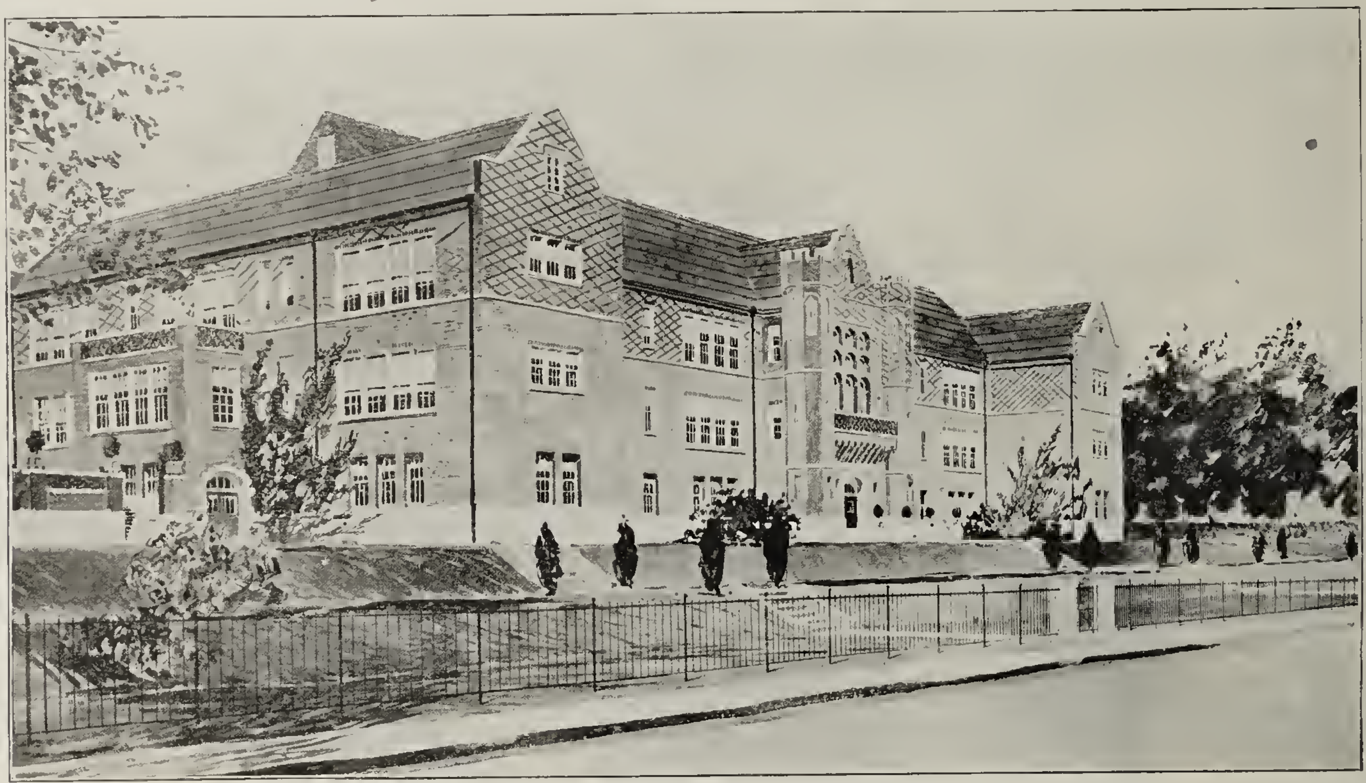


Entrance to the Edward Wyman School, St. Louis, Mo.

The Edward Wyman School is on a lot 348 ft. front by 295 ft. deep, and differs from others in the city in that it is a two-story building. This was made possible by the fact that the Board of Education purchased an unusually large building site, which lent itself not only to admirable plans, but also, on account of its peculiar grades, to a natural and happy treatment of the foreground.

The material used in the building is a very hard reddish brick made by the Hydraulic Pressed Brick Co., known as No. 100, or speckled hard common. It was made originally to be used as a paving brick and sold at $9 per thousand, but Architect Ittner, seeing its excellence as a building material, used it first in the Field School, St. Louis, and afterwards in the Wyman School, with the result that the price has appreciated. The brick, which is vitrified, is not only very hard, but is tough. Judging from the white specks in it, it probably contains some fire clay. The diaper pattern in the wall is produced by a lighter colored brick, known as No. 519 pink edge. The common brick, as it came from the kiln, some light, some dark, some black headers, were mixed in going to the wagon and were mixed again from the wagon to the scaffold, so as to get the greatest possible variegated effect.

The bricks are laid with an extra heavy joint—five courses of brick go to 14½ inches. This gives a joint of about half an inch thick, and as, in pointing, the joint is well cut under, a deep shadow is cast, which adds still further variety to the surface. The most striking constructive feature is the beautiful and daring treatment of the balcony over the main entrance. This is entirely of brick, and though similar work may be found in ancient brick structures in the old world, it is a novelty here. The corbels and vaults are of shaped brick. Another feature exhibiting a fine and effective treatment of brickwork is the main window. Here the mullions and transoms are exclusively of brick.



The Edward Wyman School, St. Louis, Mo.

The appropriate crown of a building such as this is a roof of red tile. This is the production of the Standard Tile Co., of St. Louis. The tile is a square shingle, 6x12 in. and half an inch thick. They cost $9 per square, and about 200 squares was the number used. The tiles are square butt in shape, except a few round butts that were used to accentuate the horizontal lines. They were laid in the usual manner on sheathing and tarred paper by a reputable firm of St. Louis, the Hayden Slate Co.

The school is 225 feet in length and sets about 100 feet back from the lot line, making a beautiful picture with its blending of red color tones in the spacious grounds. The cost of the complete building, including the heating, ventilating and plumbing plants, is about $125,000. As a school building it represents, probably, as near an ideal building for educational purposes as it is possible to erect, for it embodies the improvements which the architect has been able to make as a result of his extensive experience in designing these buildings. The basement contains play rooms of ample dimensions for boys and girls, toilet rooms with all the most approved hygenic fittings, boiler, fan and engine rooms and coal and ash depositories.

Above there are two stories, having eighteen class rooms, kindergartens, large lecture room, library, principal's office, wardrobes, store and toilet rooms. The class rooms are arranged around three sides of the central corridor, each room being planned with a view of obtaining, at some time during the day, a full flood of sunlight.

These class rooms are unusually attractive, being well ventilated and having several unique improvements. The doors are covered with leather and turn on easy working hinges, preventing all noises not absolutely necessary, and they contain glass panels, through which the entire room may be observed at any moment from the corridor without. Each room has a large wardrobe, bookcase and teachers' wardrobe built in the wall, the latest approved desks, capable of adjustment to any height, and a special arrangement of a panel above the natural slate blackboards for mounting class work without defacing the walls by nails or tacks.

The color scheme used in the decoration of the rooms is based on the theory of colors recognized as standard. The northern rooms are finished in terra cotta or red tones, the southern rooms in gray or green, and there are varied geometrical stencils on the walls. All this gives a feeling of warmth and cheerfulness which unconsciously aids the pupils in their study.

The building is provided with three iron stairways with asphalt treads, one in front and one in each wing. The floors are of maple with oak finish. Provision has been made for both gas and electric lighting. There are electric clocks in each room, and rooms and corridors are connected with electric bells and speaking tubes.

Special attention has been given to the kindergarten, resulting in its being the most beautiful and convenient home for this purpose in the city. It is, of course, on the first floor, with windows on the south, west and north. The room is very large and has glass front cases built into the walls for the kindergarten materials and the specimens, etc., so dear to the hearts of the little ones. The decorations in this room are especially beautiful. The slate blackboards are placed low on the walls for the convenience of the children; above these is space and arrangement for such framed pictures as the director may wish, while higher still and reaching to the ceiling is a dado of pictures representing children engaged in different games. This dado was painted in oils on prepared canvas, and is intended to be permanent.

The kindergarten has separate toilet rooms and every modern improvement has been added to make this an ideal deparment.

The heating and ventilating of this building is conducted on scientific principles. Mr. Alvin D. Reed, the chief engineer, has planned a system as near perfection as possible. The temperature of the air is controlled by thermostats, which keep the heat at 70 degrees, as prescribed by school law, and a humidistat preserves the humidity by opening a steam jet when the air gets too dry. The air is drawn into the building through the two front towers at a height of about 30 feet from the ground, where it is supposed to be purest, and passes into the basement, where it is drawn into the fan and blown through the heating coils. Entering the class rooms, the warm air circulates through the adjoining cloak rooms and then makes its exit, carrying along with it the odors of soiled or wet clothing. By this improved apparatus the air is changed in each class room every seven minutes.

The entire building, including every known improvement for the comfort, health and happiness of the children, reflects in the highest degree the painstaking efforts of Mr. William B. Ittner, Commissioner of School Buildings, in the work of bringing the school buildings to perfection.

—William B. Ittner.—

A notice of the architect of this beautiful brick building is certainly fitting here, and will be additionally welcome to the great number of our craft that holds high regard for the name of Anthony Ittner, the St. Louis brickmaker. William B. Ittner, the eldest son of Anthony Ittner, was born in St. Louis in 1864. After passing through the public schools he was a member of the first graduating class of the St. Louis Manual Training School, which was the first training school of the country. He learned the arts of brickmaking and of bricklaying thoroughly in his father's business. In addition to this, he learned other crafts in the training school, such as forging, turning, etc. The last piece of work he did at the Manual was building an engine, which is at work to-day at Washington University. From the Manual Training School he went to Cornell University, where he took a special course in architecture under Prof. Babcock, and graduated from Cornell in 1887. While at Cornell Andrew D. White was president and Mr. Ittner worked with him, laying out the plans for the future development of the university buildings. Two years later he began practicing on his own account, and for the past five years has been Commissioner of School Buildings. This is an elective position, but is non-partisan. At the last election he was not only unanimously re-elected, but an increase was voted to his salary of $1,000 per year. He is a member of the American Institute of Architects, and has been twice president and is now vice president of the local chapter. He was vice president of the Architectural League of America during the first year of its organization. He has built a dozen schools in St. Louis. Among the large ones are the Monroe, Sherman, Eliot, Arlington, Jackson, Field (one of the monuments of the city), Horace Mann, Rock Spring, Simons and the Emerson. All these are of brick, as Mr. Ittner says that is the right and logical material.

A notice of the work of this eminently successful son of a successful brickmaker would not be complete without mention of the portable schools adopted by him. These are frame buildings, in order that they can be knocked down and easily removed to any place required, thus obviating the necessity for renting unsuitable private rooms where temporary accommodation is required. Each portable school has sixty-two desks; it measures 24 ft. by 38 ft. inside, is complete with heating and ventilating arrangements, and can be removed and set up wherever wanted in three days. Forty of these portable schools are in use in St. Louis, and they have proved so advantageous that they are being copied in other cities of the country.

GEORGE J. M. ASHBY.

ART POTTERY.

IN A LITTLE building at Corona, Long Island, some of the finest art ware in the world is being made to-day. New machinery has taken the place of the old-time kick and throwing wheel until it would be out of reason for a man to make a regular line of ware and successfully compete with the more up-to-date methods of manufacture.

However, it is a settled fact that ware, to be art ware, and be artistic in all its features, has to be made and modeled more or less by hand. The little plant is owned by Charles Volkmer and the ware turned out is well known to buyers of artistic pottery. The process that he uses is so slow and the variety of his output is so great that it very necessarily keeps the amount of his output very low.

William B. Ittner, Architect and Commissioner of School Buildings, St. Louis.

Every set is modeled different from the one before it, and should it not vary enough when passing the test it is immediately destroyed, as one great point in the manufacture of this class of goods lies in the variation of design. It is said that not more than five hundred pieces are turned out annually.

For cheap machinery the reader is referred to our "For Sale" columns. We do not advise the purchase of cheap machinery. As a rule, cheap machinery is dear in the end, but for some places second-hand machinery answers a very good purpose. Those wanting experienced help will also find the "Wanted," "For Sale," etc., columns a means of satisfying their needs.

THE LEANING TOWER OF PISA.

THE ARTISTIC WORLD has been disturbing itself for some centuries in connection with the construction of the leaning tower at Pisa. The question is, was it accident or design? If it was design, certainly it was an insane sort of performance, and as such it has attracted a great deal of attention and much speculation. It is hard to believe, however, that it was intentional. On the other hand, it is difficult to understand how a tower should settle exactly in this sort of a way and not invite its total destruction. Theoretically, this tower should fall; practically, it stands.

The only thing to justify the theory of the intentional leaning of the tower is the fact that in many parts of the world leaning buildings have been built and constructed with this evident intent. In western France there are many structures of moderate size, built of wood as a framing material, and stone, plaster and concrete as an intermediate filling, which indicates clearly enough that they are purposely built out of plumb. The joints of the woodwork are convincing in this respect. The mortises and the wood connections show that there was no accident in this matter, but of the other leaning towers of the world, of which there are a number, there is no evidence that they were constructed with the intent of having them lean. As a matter of fact, there is no evidence to justify the fact that the tower at Pisa was built out of plumb, either with or without intent. It is positively known, however, as demonstrated by the construction, that additions to the height were made after it was definitely known that the structure was badly out of plumb. This tower is an unsolved problem; it is a question for much speculation, without the possibility of actually determining the whole matter.

Leaning Tower, Saragossa, Spain.

There are three theories in regard to it. One that it was built with the thought of having it slant, for picturesque reasons, and another that it was built over a foundation of earth which was solid on one side and soft on the other, because of earlier excavations or something of that kind, and the third that it was caused by some internal upheaval. It is nevertheless true, however, that the upper part of the structure was added long after a certain portion of it had been finished, and that the sense of the picturesque of these people suggested that great interest would be added to it because of its slanting condition.

The whole truth of the matter is that no one knows anything about it. The world has got as much satisfaction from speculation on this question as it would have had from positive knowledge. Long documents have been written, much argument has been presented from all points of view, but nothing has been said and nothing has been presented which proves anything. It is very interesting to read these various theories, believe what is said for the time being, and then allow a short space of time to dissipate all assurance as to their reliability.

The leaning tower at Pisa is one of the world's great mysteries, and as such it is fascinating. It is an engineering absurdity, and, from accident or design, it is wonderfully picturesque. From top to bottom it is out of plumb twelve feet.

Written for The Clay-Worker.

OHIO'S OLDEST PAVING BRICK PLANT.

T. B. TOWNSEND BRICK AND CONTRACTING CO.

ON ARRIVING in Zanesville I first made inquiry for the T. B. Townsend Brick and Contracting Co., knowing that the long-standing pleasant relations between the members of that company and The Clay-Worker would make me twice welcome. Their office I found on the rear of the lot occupied by the residence of its president, Mr. T. B. Townsend, while next to Mr. Townsend's house is that of Mr. Burton, and next to that, the residence of Mr. O. N. Townsend, vice president and general manager. The office, a neat and artistic, though not large, building, is in keeping with the three residences just mentioned. The outer walls up to the window sills are of enameled brick, which were made to some extent by this concern several years ago. Above those the walls are of pressed brick, which are also Townsend products. In the private office of Mr. Burton and Mr. Townsend are more of their enameled products, with a particularly attractive mantel of Townsend enameled ware.

Mr. Burton promptly offered to drive me to the plant, and it was behind his trusty steed that he told me, in part, the history of this company. It is not only the oldest as well as the largest of the brick works in Zanesville, but is the oldest established paving brick plant in Ohio. The plant, though, is not old, since in 1893 the old plant, which was located practically on the site of the present one, was burned and the present plant, both better and larger, built in its place. The buildings of the present plant were all built as nearly fireproof as possible.

The size of the shale pit—not the bank of shale—is sufficient evidence that this is an old, established plant, since the shale in the bank that was once thought to be inexhaustible has at last become so scarce that a large part of the raw material now comes from other sources. The vein of shale is something more than forty feet in thickness, is underlaid by a vein of bituminous coal, and on top of the shale is a layer of yellow clay, which, while not reliable enough to use in pavers, can be used in the manufacture of building brick. The shale is blasted and loaded in dump cars, which are pulled up the incline by means of a winding drum, to the shale house. The shale house has a capacity sufficient to hold enough shale for eight or ten days' run, and is arranged to admit both cars from the tramway and the indispensable horses and carts.

The main building is the first real work of art it has been my good fortune to find of a brick works, and was, indeed, a puzzle to me until Mr. Burton explained that eight years ago it was the Oil Well Supply Co.'s building at the World's Fair, and was moved to Zanesville after the burning of the old plant. The engine room, while not as beautiful as the main building, is a substantially built structure of brick, and probably just as near fireproof as the other building.

The power plant consists of two boilers, furnished by the Blandy Machine Co., of Zanesville, and a new Griffith & Wedge Ohio Corliss engine of 400-horse-power. There are three dry pans, two Raricks and one Frey-Schekler, from which the ground material is carried above by a belt elevator, dropping it into revolving screens, which were designed by the house foreman, Mr. See, who has been with the Townsend Co. for eighteen years. The screens are hexagonal, and, instead of having a slanting shaft, are also conical, enough so to produce the desired slant for a revolving screen. From the hopper under the screens to the pug mill the material is carried by a belt conveyor. The pug mill is a product of the American Clayworking Machinery Co., while the brick machine, too, bears the name Penfield. A Bonnot automatic cutting table is used, while the corners are rounded by Eagle represses.

There is a Bucyrus steam tunnel dryer of seventeen tracks, which accommodates something over two hundred cars. In the dryer one of the remarkable qualities of the shale is evidenced by the fact that common building brick can be dried in one night and paving block in two nights, steam being turned on the dryer at night only, since there is not enough boiler power to carry both dryers and engine during the day.

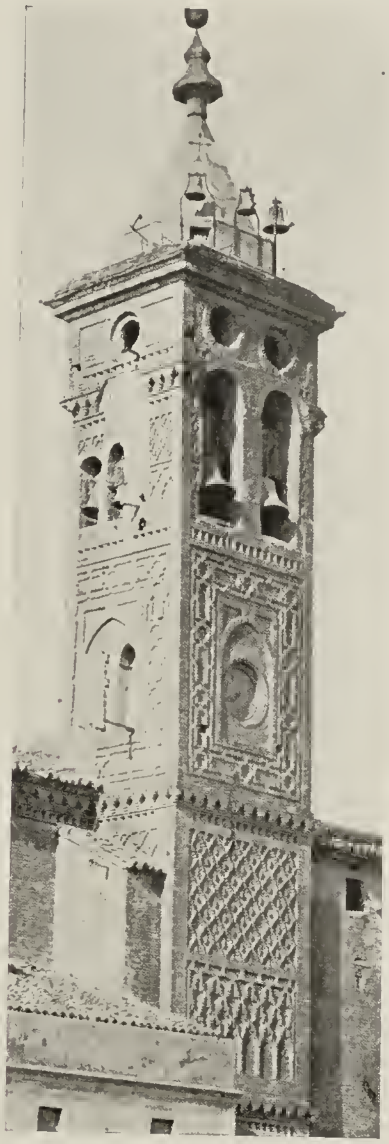
A variety of kilns is found here, comprising six square Eudalys, six round down-draft kilns of Mr. Burton's design, one Winguard kiln and one Wilfred continuous kiln of sixteen chambers. The Wingard and continuous kilns are used for burning building brick only. The average time consumed in burning one chamber of the continuous kiln is something over twenty-four hours, though all of the sixteen chambers were once burned in fourteen and one-half days. The round kilns are equipped with solid bottoms, which were also designed by Mr. Burton. The principle is that of four flues diverging from the center at right angles. The time consumed in burning paving material is about ten days, while in the Eudaly kilns cooling is accomplished in about five days, instead of seven, as in the round kilns. Along the switch in front of the row of Eudalys is a row of sheds, which afford protection, in bad weather, for the loading crew.

There are both carpenter and blacksmith shops, and two blacksmiths and one carpenter are at all times repairing or adding to the already long list of fixtures and appliances. Though the buildings are fireproof, there is also ample water supply for fire protection. The switch to the plant is from the Belt road, and, like all other important concerns of Zanesville, they are favored by having their switching done twice daily.

The products of the Townsend Co. are Townsend block, tunnel block, Star pavers and the common building brick. The most important of these are the Townsend block, whose reputation has long been established by use in numerous cities of New York, Pennsylvania, Ohio, Indiana, Illinois and Michigan, with over forty streets and alleys in Zanesville as their chief drawing card. The Star paver is a fancy sidewalk tile for which, though only a limited number are turned out each year, there is much demand. Common building brick find ready sale in the city, and besides those shipped in, six teams are engaged in delivering building brick to the local trade. In speaking of tunnel block Mr. Burton mentioned a large order filled for the B. & O. R. R. not long ago, in which eight million of their tunnel block were used in a tunnel at Willock, Pa.

An average of 130 men are on the pay rolls, and besides these are the five teams used in delivering material and eight cart horses, which do various duties around the plant.

The Townsend Co. own another tract of land of twenty-one acres, on which they are now preparing to build another plant, more modern, and if such a thing is possible, more complete than this plant. The new place is southeast of Zanesville, on the Belt road, and the switch has already been built. A fine vein of shale, some forty or fifty feet in depth, is overlaid by a thin layer of top soil, but underlain by a three-foot vein of bituminous coal, while an excellent building sand is another of the rich deposits on this land. The shale is already being used at the old plant, and as soon as enough of it has been shipped out to make room for the new plant its construction will be begun, and it is expected to be turning out material for the early spring business. This plant, when completed, will have a capacity of 60,000 ten-pound block per day, and is being built to help take care of the rapidly increasing business. As soon as this plant is in operation, another one will be erected, not far from the old plant, where they have sixteen acres of both shale and fire clay. It is not yet decided whether this plant will be for the manufacture of paving brick, sewer pipe, or both. Mr. Burton informed me that his company owns about twenty tenant houses, occupied by their men, were


Tower of San Miguel, Saragossa, Spain.

building eighteen more, and since my visit have begun the erection of an apartment house of thirty-six apartments. He not only considers this a good investment, but thinks more steady men can be secured, and, with the present scarcity of labor in and around Zanesville and the scarcity of tenant dwellings, this is an important factor.

Besides the manufacture of brick, this company is all that its name implies, since they are engaged in a general contracting business, embracing buildings, sewers and masonry, and are also dealers in sand, cement, sewer pipe, etc.

OAKDALE PRESSED BRICK CO.

Having been instructed to take a Greenwood avenue car, I left it reluctantly at the end of the line, and followed a road covered with broken brick past the Zanesville Art Pottery, within sight of Weller's Marietta Street Pottery, to the Harris Brick Works, from which I followed the Belt road past the sight of the new Townsend plant for a short distance, when I came to the works of the above company. Here I was greeted by their superintendent, Mr. E. F. Grimsley, who was quite busy unloading a kiln, which stirred the only bit of photographic enthusiasm the writer was ever known to manifest. From the manner in which Mr. Grimsley spoke, though, he seemed to think it no more than an average kiln, and, as the photograph turned out to be of the class which characterizes my efforts, it might be well for anyone whose curiosity has been aroused to visit the Oakdale works, and Mr. Grimsley could no doubt show them kilns just as good as this one.

The clays are of two kinds, are both found on the hill just back of the works, and are hauled the short distance to the dry pans in dump carts. There are two dry pans, one a nine-foot Rarick pan, which is used for grinding red clay, and another eight-foot pan used for buff, gray and terra cotta materials. Chain elevators, one for each kind of clay, carry the ground material to the screens. A Bonnot revolving screen, with stationary brush, is used for screening the buff clays, and two of the good, old-fashioned slanting screens perform a like function in the red clay department. There is also a Carmichael clay steamer, which assists in preparing the buff materials. There are three Whittaker dry presses, one three-mold press for reds and one of the same capacity for buff materials, with a single die press for shapes and ornamentals. The two three-mold presses have a capacity of 25,000 brick per day, while the single press turns out about 5,000 in the same time. The power plant consists of a 100-horse-power engine and two boilers of 60-horse-power each.

There is a steam tunnel dryer of fifty-two tracks, each track affording room for three cars and making a total dryer capacity of about 75,000 brick, which is sufficient to give the brick about seventy-two hours in which to dry. The steam pipes are laid at right angles to, instead of parallel with, the tracks of the dryer.

There are five square, down-draft kilns of the Griswold pattern, with solid floors and continuous bag walls. The brick are set two on two, with the shapes and ornamentals in seggars. In watersmoking, the waste heat from other kilns is utilized in the same way it is now being used for drying purposes at a number of plants. The principle here is that of a large drum over the row of kilns connected to smaller drums on the top of each kiln, and fitted with dampers that the kilns burning may not be effected. A small fan, driven by an independent engine, transfers the heat from the cooling to the watersmoking kiln. About three days of this watersmoking is followed by two days of wood firing and seven to eight days of coal.

The stock sheds, built between the row of kilns and the loading tracks, are quite extensive, in addition to which there is quite a large shed for the storage of shapes and terra cotta ware. According to Mr. Grimsley, the stock sheds have a capacity of about one and one-half millions, and the stock of shapes and ornamentals is probably twice as large as that of the average concern of their capacity. This, Mr. Grimsley says, is to be cut down quite materially, since there is not now the demand for this material that there has been in the past, to say nothing of the amount of money tied up in this way.

Their brick weigh six pounds each, and are made in two sizes, the buffs burning to 2⅜x4¼x8¼ and the reds to 2⅝x 4 7-16x8⅝ inches. The market for this product is not easily described, though the main office of the concern is in Parkersburg, in charge of Mr. R. H. Rutherford, its manager. Mr. Grimsley is now almost a fixture at the Oakdale plant, since he has been in charge of it, with the exception of one year, for the past eleven years, having been connected with the Hydraulic Press Brick Co. for the one year he was away from Zanesville.

The Oakdale plant is located on the Belt road, between the switch and the hill in which their material is found, so that from the time the clay is loaded on the carts till it leaves the yards, it is at all times on an incline, making its way easily to market. HOOSIER.

WRITTEN FOR THE CLAY-WORKER.

LAMINATIONS IN CLAY WARES.

NEARLY EVERY attempt to mold clay through dies, stiffer than a plastic condition barely necessary to handle the ware, has caused seams and laminations in the ware. Whether they are good or evil features it is not our purpose to discuss, but to show, as far as we are able, how they are made and how brick and drain tile may be made without them.

In treating upon this subject we must of necessity speak of our own experiences and refer to the following drawings which we have made to illustrate our views.

We first became acquainted with laminations forty-three years ago, in the drain tile made by the Tiffany tile machine. In this machine the core pin was on the end of the auger, and the complete die was of the same form as is used on all auger machines at the present time. The die and the auger are shown in Fig. 1. The core pin has a cone-shaped and a nearly cylindrical surface. The latter we will call the finishing surface. The outer die has a cylindrical shaped surface, inclosing a part of the auger, a funnel-shaped surface and a nearly cylindrical surface, which we will also call the finishing surface.

No form of die has excelled it in making laminations in drain tile. It soon became known that if the tiles were left upon the ground, in a wet place, through the winter, in our Michigan climate, they would "flake off" with every successive freezing and thawing, until but a very small portion of the tile remained. This fact was used to prevent the sale of the auger machine, but the superiority of the tile made by it in strength, form and smoothness, and the advantages it gave in manufacturing, and the fact that the drains laid with the tile kept on working, contrary to all prophecies of failure, overcame all prejudice. It was the practice at first to make only three sizes of tile with an auger, one the same external diameter as the auger, a size larger and a size smaller, the object being to bring the pressure to bear as nearly as possible on the sectional area of the shell.

Many suppose that the laminations are caused by seams cut in the clay by the auger. There is no construction more favorable to produce this effect, but the body of the clay between the auger and the finishing surface of the dies is so changed in form and kneaded together that these seams must be obliterated. The seams in the tile are at a right angle to those formed by the auger, and are caused by the slipping upon itself of the clay in passing between the cone and the funnel of the die. This decision is confirmed by my experience with my Centennial machine. I could make the medium sizes of tile on this machine with the old style of die by suspending the core pin on a spindle that was screwed into the center shaft, but to make the larger sizes and the smaller sizes, of which I had two or three dies in a plate, I was obliged to use a bracket die. I dispensed with the cone on the core pin and the funnel on the outer die, and made the finishing surface two or three times longer (see Fig. 2) and so nearly parallel that the clay would not bank upon them. The result was a tile free from laminations. The reader will notice that the clay between the auger and the die is massed into a much larger body than in the old machine, and that the die receives no more clay than can be compressed into form and pass through. From this experience we feel assured that if the form of die shown in Fig. 1 were changed to the form in Fig. 3, the tiles made would be as free from laminations as it is possible to make them. A taper of one-eighth of an inch to the inch in length is as much as should be given to core and funnel.

Fig. 1.

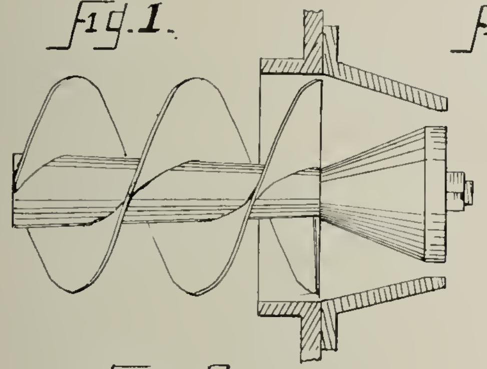


Fig. 2.

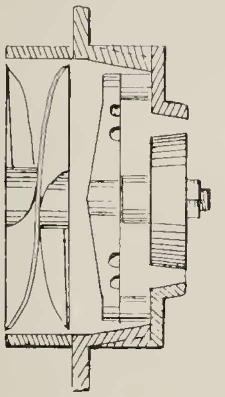


Fig. 4.

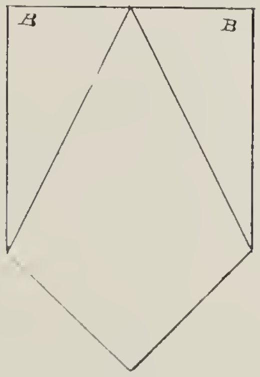


Fig. 5.

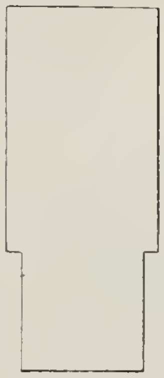


Fig. 3.

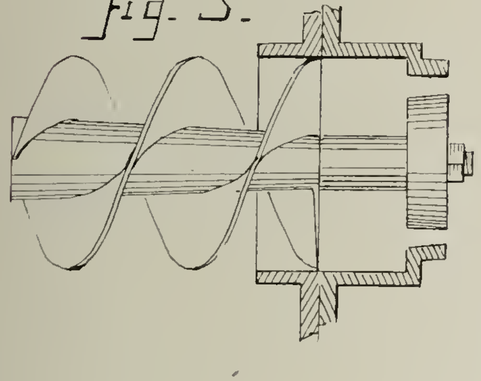


Fig. 6.

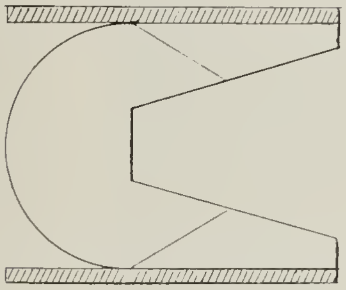
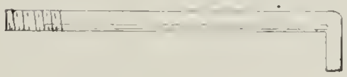


Fig. 7.



Let us now consider the construction and working of a few styles of end-cut dies for making brick. Every one familiar with auger machines is aware that a die in which the inlet corners are made large and round will make a brick with laminations, and the question is, is there any form of die that will make brick without them? One of the most successful dies in this respect was designed and patented by a man in Osseo, Mich., many years ago. A side of the die, which forms the flat side of the brick, is shown in Fig. 4, and a side forming the edge of the brick in Fig. 5. Two of each, held together by set of screws, made the die. The sides which formed the edges of the brick were plain surfaces, and the plates which formed the sides of the brick were dressed so as to form triangular planes, inclined toward the corner of the die at the inlet B B, a perfectly flat surface and square corner. Two of these dies in a front plate, arranged "on the flat," made brick free from laminations, so many will testify. No such die is now made, but the lessons it teaches should not be forgotten, as they are still valuable in dressing dies for hollow blocks and irregular forms. The idea that the corners of a die must be rounded is a delusion, for it forms a funnel shape in which frictional resistance is increased. This causes the clay to slip upon itself and forms seams or laminations. Many hollow block dies have been spoiled by rounding the corners and cutting out beyond the area covered by the auger.

We once made an experiment for the purpose of determining the proper form for the corners of an end-cut die. We made two dies and set them in a single die front, so that they would be used under the same conditions. One of these had the corners not rounded, but cut out, leaving the sides projecting toward the auger on the principle of the good Dutch rule, "If little is good, more is better," a "reductio ad absurdum" trial. The other die had the sides cut away as shown in Fig. 5, leaving the corners projecting toward the auger. The first never made a good corner, and the last worked successfully on the first trial. Compare this die with those in common use. The corners of the die were nearly parallel to each other and offered no resistance to the movement of the clay. The die received an excess of clay at the middle of the sides and was pushed toward the corners. The common form of die received an excess of clay at the corners and pressed toward the middle. Our readers are aware that of two dies in a single front on an auger machine, that which is nearer the auger will work the faster. May we not then conclude that in a single die that part of the die which has its outlet nearest the auger will work the faster or with less friction? But making the surface of any part of a die parallel to a line through the middle of the die has the same effect as to make the outlet of the die nearer the auger. The practice of the trade is approaching the form or shape of the die herein indicated. Some of the best lubricating side-cut brick dies have no large, rounded corners; they are no larger across the die at the inlet corners than at the middle of the die. They have done a great deal to prevent lamination.

In making side-cut brick from strong clays the "S" check will sometimes prove a great annoyance. It is a check of the form of an elongated "S" across the middle of the brick, and may not appear until after the brick are burned. The proper remedy is the admixture of more sand or ground brick with the clay, but the device shown in Fig. 7 may in some cases be efficient. It is simply a rod screwed into the end of the auger shaft, having a short bend at the other end, which is just at the entrance to the die.

We fear that we shall be misunderstood. Our object is not to criticise the form of end-cut die commonly used on the large auger machines, but to show how dies may be shaped to prevent laminations. This form of die would not answer for side-cut brick, for laminations in such brick are a serious evil. Nor would it answer for large hollow blocks. To illustrate: We have made 8-inch by 16-inch hollow blocks and a solid column 5¾ inches by 15¾ inches with a 13-inch auger. The ends of the tile were beyond the space covered by the auger, and to cut them out still further by rounding the corners would probably spoil the die. The ends should be left a smooth plane and the corners of the sides finished as in Fig. 4, being very careful not to cut away too much.

The writer is not engaged in the manufacture of machines or clay wares. He frankly confesses to being a "back number," but as in some old journal the reader will sometimes find something of more value to him than from the last copy, new and clean and damp from the press, so we hope that the reader, be he a manufacturer of machines or of clay wares, will find something which will assist him in making better machines or better wares. GEO. S. TIFFANY.

WRITTEN FOR THE CLAY-WORKER.

LIGHT AND HEAT. No. 4.

By Master Mechanic.

IN THIS NUMBER we will treat upon fuels and combustion in relation to heat.

In order to give us a fuller understanding in these matters to be treated upon, it becomes necessary to explain the theories adopted by scientists, and especially chemists, in the phenomena of combustion which goes under the name of

THE ATOMIC THEORY.

This is based upon the assumption that all matter is composed of numbers of infinitesimal particles, which are termed atoms.

Many years of investigation and experiment have led to this conclusion. We call it a theory, because atoms, by themselves, cannot be seen, yet the arrangement of chemical combinations demonstrate that these exist, and the way they group themselves with other atoms of different and related substances.

Like electricity, we do not know what it is, but know many of its laws, which can be mathematically demonstrated.

The facts are that all chemical combinations between elementary substances shape themselves into definite and invariable proportions.

For an example we take hydrogen and oxygen and mix them in the proper proportions and secure water. The whole amount of these gases will be utilized in the process, but only when there are two volumes of hydrogen and one volume of oxygen. Now when this water is maintained in its gaseous state it will only occupy the place of two volumes, although three volumes went into combination.

Should there be an excess of oxygen it will not be taken up; only the exact proportion, as stated above, will be associated. The quantity and extent does not matter; the result is always the same.

When the different atoms have thus combined according to their chemical affinity we call them molecules. That is, two volumes of hydrogen and one of oxygen is a molecule.

The atoms, however, do not always weigh alike. For instance, we will take the composition of air, which is composed of oxygen and nitrogen.

BY VOLUME THEY STAND AS FOLLOWS:

Oxygen	0.213 parts
Nitrogen	0.787 parts

BY WEIGHT.

Oxygen	0.236 parts
Nitrogen	0.764 parts

This, of course, pertains only to pure air, devoid of carbonic acid and moisture. It is assumed that all atoms are of equal size, while the weight differs under the same temperature and pressure.

Hydrogen is the lightest substance, therefore, is taken for the standard for atomic weight. Oxygen to it is 16. That is, a volume of oxygen weighs 16 times as much as a volume of hydrogen. By this we see why aeronauts generally use this latter gas for inflating balloons.

Water having two atoms of hydrogen combined with one atom of oxygen weighing 16 shows that the ratio is 1 to 8.

The elementary substances that generally go in combustion are:

	Atomic Weight.
Hydrogen	1
Carbon	12
Nitrogen	14
Oxygen	16
Sulphur	32

As carbon and oxygen are the usual substances that go into combustion, we will now consider these first.

CARBON.

This being the most widely distributed of all combustibles in nature, is found in the different coals, wood, peat, natural gas and oil, while others derived from these are coke, charcoal and fuel gas.

Carbon, however, exists in conditions, which preclude combustion in the diamond, plumbago and lamp black.

WHAT IS A COMBUSTIBLE?

The term combustion is the name of a chemical process for the combination of oxygen with carbon or other substances. Oxygen is the supporter of combustion, therefore a combustible may be defined as a substance capable of combining rapidly with oxygen, thereby producing heat, and also usually light.

Oxygen being very abundant in nature, is, however, always combined with some other substance. Thus in air it is combined with nitrogen in the proportion as stated above.

Carbon and oxygen, like many other elementary substances, combine with each other in more than one proportion. If a piece of carbon heated to a high heat be placed in a sufficient volume of oxygen free, or mixed with other gases, each atom of carbon will pick out two atoms and unite with it, making the well-known carbonic acid gas; or carbonic dioxide, as called by chemists, denoted by symbol C_1O_2. This carbonic dioxide is a colorless gas. It is one and a half times heavier than air. For this reason it can be poured from one vessel into another, or made to run out of drains in a cellar. The taste is slightly acid. It is incombustible, as it has already gone through that process. It is not poisonous, as generally supposed, but is not a supporter of animal life, nor combustion.

When carbonic acid gas without a sufficient oxygen is brought in contact with incandescent carbon, one-half of its oxygen will be taken up by it. Namely, each atom of oxygen thus retarded will combine with an atom of carbon to form a new compound carbonic oxide. This gas is somewhat lighter than air, odorless, and is destructive of animal life—it is poisonous. It will not support combustion, but can be burnt in the air.

From this we see that the process of burning, which, as was stated, was the rapid chemical union of a combustible with oxygen, would result in the accession of oxygen to the carbonic oxide. The product is really carbonic acid again, the result of perfect combustion.

Our next articles will further elucidate the combustion of different fuels, and the manner of loss and gain by perfect and imperfect processes.

(To Be Continued.)

BY THE LIGHT OF THE KILN FIRE

STORY OF A TRAMP BRICK BURNER.

"FUNNIEST THING ever I heard of happened in Montana when I was there," said the first helper. "We worked for an old duck out there who went crazy on copper, and every once in awhile he'd drop his work and rush off for a trip, the Lord only knew where. When he went he left four of us to wag along as best we could without a boss. You bet we didn't bust any buttons doing the strenuous while he was away. I could set fairly good, and when the bricks got partly dry we throwed up an arch or so as a change. Well, we'd got twelve arches nearly closed in when the old duck takes a notion that he could make more money chasing copper out in the wilderness, and he goes off, leaving orders to set in all the dry brick we had and then to strike and hack them up until he returned. He was gone a long spell on that trip. We set all the dry brick we could till it came to setting up the outside arch. That was a feat that flummixed me. I didn't know how to do it. So we scoved up all of the kiln that we had and then took to striking. We struck and hacked and struck and hacked, and waited, not overanxious, you can bet, for the old duck's return. But he didn't come, and one day we found the yard plugged so thick with hacks and rows that there was no more striking to be done. We loafed around half a day or so, thinking we had a snap. But it's surprising how sick a crew will get of loafing. We were sick of it right off. We thought up all manner of schemes for setting the outside arch, but didn't dare to do it. One forenoon, as we were wondering what had happened the old man and where our wages were coming from, a battered individual ambled into the yard and asked me for a chaw of terbacker and a feed. I gave him both. Well, sir, when he got about enough grub into him to feed a crew a week, he sat down and told us stories for an hour. Strange stories they were, too. He'd been a brickmaker once, and a bank clerk afterwards, and an Indian fighter after that, and sailor on the rolling Mississippi and on the China seas, and all that. We didn't believe a word he said, but he passed the time for us. But when he arose to leave us it occurred to me to test him on the truth of some of his stories.

"'You say you was a brickmaker?' said I. 'If you were you ought to know how to set an outside arch.'

"'I do,' he said.

"'Then set one for us,' said I.

"'What! Me?' he asked. 'Do you mean to ask me to work?' he said, in a tone of indignation.

"'Oh, no,' said I, 'only we're hung up here because we don't know how to set one, and we thought you could help us.'

"'Oh,' said he, 'and so I can. I'll boss the job. But, by hokey, you guys'll do the work,' he said. 'Get your bricks,' he said, and he went to work and laid the stringers, and then he set me to work setting the bench. It didn't take me long to discover that he was an almighty particular boss. 'Set them bricks even,' he would say. 'Don't let your bricks hang out into the arches,' and when we got to setting the jets he'd swear and say: 'You d—d lunkhead! Set your jets two on two and then break joints,' and when it come to setting the body of the arch his profanity increased. 'Can't you set three on, you d—d son of a coyote?' he'd cry, and he'd grab a lath and pry my bricks into place. But my setting wouldn't suit him, and, bless me! if all at once he didn't jump on to the arch and heave me off. 'Take your barrow,' he said, 'and help them dead men haul in bricks. I'll show you how a straight outside should be set.' Well, we hustled in the brick and he took care of them faster than we could pass them, and that arch went in the fastest I ever saw. And it was a corker when it was set. Straight as a die from end to end, and smooth as the front of the Mechanics' Exchange Building. When it was finished he came down and bossed again, and we throwed up the scoving and daubed the kiln in jig time. Oh, he had the knack to make us move, and we couldn't get mad if we tried. When the kiln was scoved he made us trim it up and log it and fix the hearths. Then he said: 'Go haul in your wood!'

"Said I: 'You don't mean to set fire, do you? Because,' I said, 'the proprietor is away, the devil knows where, and we don't know how to burn.'

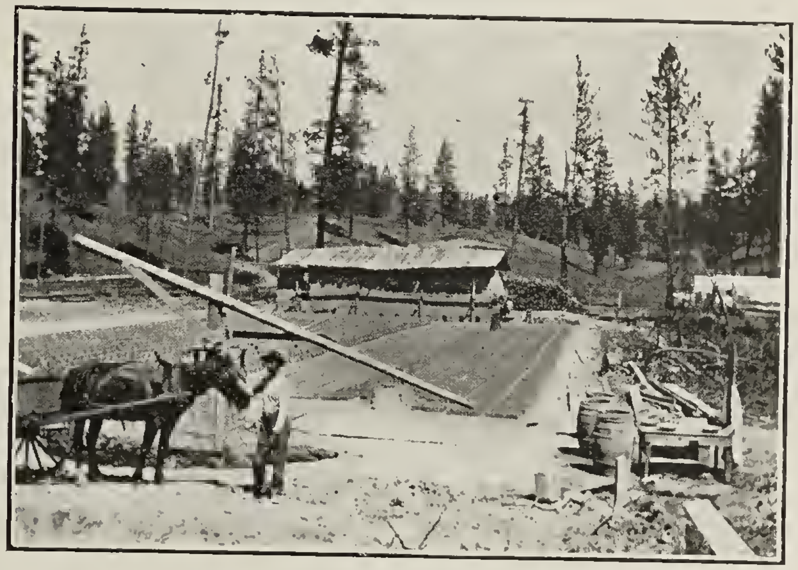
"'To hell with you and the proprietor!' he said. 'I don't do things by halves. You d—d lunkheads got me into this mess, and I'm going to sail her through if I bust. Get your wood!'

"Get it? Of course we did; and that miserable tramp stood around day and night, catching catnaps by the kilnside, and made us poke the heat to that kiln till I thought the kiln and I would melt. Well, we beat the old man's best record by forty-eight hours, and got the prettiest burn I ever saw. The tramp woke out of his last nap at daylight and went up the ladder. He was there about a minute, when he sung out in the only cheerful tone I had heard from him, 'She's all hunk, by hokey! Shove in your brands and let her simmer awhile till the blaze dies down; then plug your arches, and for God's sake use your brains when you're left alone with a brickyard. You've nearly destroyed my health and totally busted my moral character by forcing me to work, but I'll forgive you. Ta! ta!' he said, and he hitched out of the brickyard in rags, without even stopping to wash the one hundred and fifty-odd hours' accumulation of soot off his face. Next day the old man came back, nearly broken-hearted. His copper mine had proved a fake. But you can imagine his surprise and pleasure at finding his kiln burned. Next day it was sold at a good price, and he went back to copper again and I came South. The old man's a copper king now, but I'd give a good month's wages to see that hobo. We never learned his name."

THE DREAMER.

HIGH WAGES AND DULL TIMES.

Inclosed herewith find $2.00 to pay for The Clay-Worker for the year 1902. Brick business has been bad here the past year. This is a mining camp, and the mines have nearly all been closed down on account of transportation difficulties, which we hope will soon be remedied, as there are two roads now being constructed. They are the Kettle Valley, from Grand Forks, B. C., and the Great Northern extension, from Marcus, Wash. The inclosed is a photo of my yard. It is an old style pug mill, and hand-molded brick. There is but one brick building in Republic, and it is a two-story building, 50 by 90 feet, and used as a dry goods and gents' furnishing house.



Henry Bird's Brick Yard at Republic, Wash.

A comparison of wages paid here and in the East might be interesting to your readers:

Molders get from $4.00 to $6.00 per day.

Setters and burners, $4.00 per day.

Off-bearers, $3.00 per day.

Wheelers, $3.00 per day.

Yard hands, $3.00 per day.

Our yard is the only one within forty miles of Republic.

Republic, Wash., March 1. HENRY BIRD.

WRITTEN FOR THE CLAY-WORKER.

THE EAST COAST OF FLORIDA AND ITS BUILDING MATERIAL.

WHEN THE SPANIARDS first came to the east coast of this comparatively narrow peninsula in the search of wealth they evidently, from what the histories tell us, did not look for clay to make brick with. If they had been after this to us such valuable material, they would have been disappointed in as great a measure as in that what they were after, namely, the precious metals, gold and silver.

The history of the early settlers, whether they were Spanish, French or English, shows how the greed for gold made them overlook the things that in later years made up the principal products of this country. It furthermore shows the failures of the early settlements on that account. However, after the Spaniards considered themselves securely settled, subsequent to the extermination of the French Huguenots, they evidently looked about for a material wherewith to build houses and fortifications, but in doing so they were not fortunate enough to find such material, which the older formations of the earth's crust had ready for the diligent searcher for building material further north. While such things abound in the countries regained from the sea in the dim ages of long ago, this comparatively late emerged tongue of land called Florida has only the productions of the sea not yet made into rock, shale and clay.

The small shell fish called coquina form the universal material for building walls with. Here the Spaniards found it piled up as loose shells, from ten to twelve feet deep. In many places these have hardened and are cemented together into a soft, porous mass that becomes hard by exposure to the air, so that they make pretty substantial walls, that have endured from two to three hundred years in walls of forts, missions and dwelling houses. The binding material, evidently, is mortar made from lime made of burnt shells mixed with sand.

When the observer stands before these walls, made so long ago in the country's history, the mind naturally reverts back to the conditions and difficulties encountered by those venturesome newcomers.

The material being so much different from those that they were formerly used to, must necessarily have called for a certain amount of inventive skill and judgment before these large buildings we now see along the coast could be constructed. The mission house about a mile back from the shore at New Smyrna is constructed from this coquina stone, and was probably erected soon after the extermination of the French Huguenots, about the year 1664. Of course, now it is only a ruin. The country along the coast from this point to as far as the Tomoko river above Ormond, some twelve miles north of Daytona, has a soil of which the surface shows considerable decayed vegetation, the indication of a wet or damp stretch of country.

The early settlers soon found this soil so much richer than most of the soils found in Florida and so well suited for horticulture that they proceeded to drain it and cut canals back into the country to depth of tidewater, about a mile apart.

The ruins of sugar houses and other buildings show that nearly all the semi-tropical products were raised there in the past.

In cutting these canals the coquina rock naturally was discovered, and put to use as stated. Where these little shells do not abound sand takes their place, which, as the readers know, covers nearly the whole surface of Florida. The few clay beds found in the State, however, cannot supply the demand for brick, and most of them labor under the drawback inherent to the late formed clay deposits.

Jacksonville is putting up the burnt district mostly of brick made near there of very sandy clay. Some of a better quality have been brought in from further north. Some fronts have been built of a very good quality of Northern front brick. A few buildings in St Augustine and in the growing small cities along the coast also have employed them.

The United States Government, in accordance with its usage, also uses an excellent quality of brick for its buildings and lighthouses. Even the fences inclosing the lighthouse properties are built of this in open checker work, with a heavy cornice and top. The lighthouse on Anastasia island, on the ocean beach near St. Augustine, is built in the same manner, and coated with a heavy coat of whitewash. In fact, the whole lighthouse is painted white and black spirally, in barber pole fashion.

I make mention of the fast growing towns along the coast, but am compelled to say that nearly all the business houses and residences are being put up of wood.

When first I saw this material used so universally the thought occurred to me that some day the fire fiend (as it did at Atlantic City) would reap a rich harvest. I investigated the means for fighting this so destructive element and found them very inadequate. As all the brick have to be shipped in from the North, these cost from $10 to $15 a thousand. This refers to those made in the north part of the State—made from very sandy clay, and, of course, are light and of rather inferior quality. However, as frost does not as yet cut much of a figure, they stand the climate fairly well.

The best buildings of the most elaborate construction, however, found especially in St. Augustine, are built solid of coquina shells and cement. I said solid. The magnificent hotel and churches are made of this material, not from cement blocks put on top of each other, but molded into compact walls from top to bottom in one body to the most artistic architectural design, making the total wall an artificial monolith.

The material of many years of test having proven to be especially suited for this locality, and the principal ingredients so plentiful, I was astonished that some enterprising man from the North had not started in to make brick from it, as well as all kindreds of blocks for building. There certainly is a great future for such an industry.

The capital for such an enterprise need be only a small sum, as no kilns are required. For a beginning a small two, or even one-mold hand press, with a hopper and feed attachments, would suffice. The mixture of coquina, sand and cement would be made, as is done in the usual manner, by hand also. It can readily be seen how cheaply and rapid such cement brick can be made.

The only expensive material would be the Portland cement, which would have to be shipped in from the North, it requiring about one-third of this binding material. Judging from the tendency of these shells becoming a solid rock in the course of time, these would be converted into cement also, right where they are found, in the same manner as the marls are now made into Portland cement in Michigan, Ohio and other places.

F. E. FREY.

STEEL FILINGS.

Machinery is a case of money against minutes.

The grist at the end of the grind measures the bag of flour.

Life failures are sometimes due to the vain effort of adjusting the foot to a misfit shoe.

Honor to whom honor is due is more often an axiom than a fact.

The egg determines the bird.

We cannot fatten on the spilled milk or find apples on dead trees.

The slave of the office makes popcorn of his nerves and brains.

Six days' work is enough.

Some men look at things through a liver-medium, and fail to take even a dose of prosperity without the usual spoonful of bile.

Will men never count the cost of killing the hen that lays the egg?—*Age of Steel.*

BUTTONHOLE TALKS.

FAR OUT OVER the glistening waters of the bay the distant wooded shore shone blue, so very blue in the distance, that I called the Judge's attention to it. It evidently recalled reminiscences, for he began:

"Back in the sixties I was, for a while, stationed out there on that little speck of an island at Grant's Pass. The island isn't fifty feet across now, having been partly washed away, and even then wasn't much bigger, but it was right beside the dredged channel, which was only a hundred feet wide and which connected Mobile bay with Mississippi's sound. We had earthworks thrown up and we easily blockaded the channel. Pretty regularly, every third day, the Jackson, a Federal gunboat, would come up the sound, drop anchor and plunk in conical shells on us. Did you notice that unexploded conical shell on the gallery at my house? Well, that's one of the identical shells they threw at us then. One of the oyster men fished it out years afterward, and I keep it to bear in mind the difference there is in the way you look at things. Looking at it sitting quietly on the gallery floor is so different from looking right at the front end of it as it comes howling for gore. Well, to drop the shell and go back to the Jackson, she most always hit the island. She would come tearing up the sound, drop anchor, bang would go her cannon and our island caught the shell. She always had the range, never had to fool around to find it. We argued from this that she had some mark so that she knew the proper place, always anchored in the same spot, and so had the range. All we could do was to crawl up close under our earthwork and hug tight.

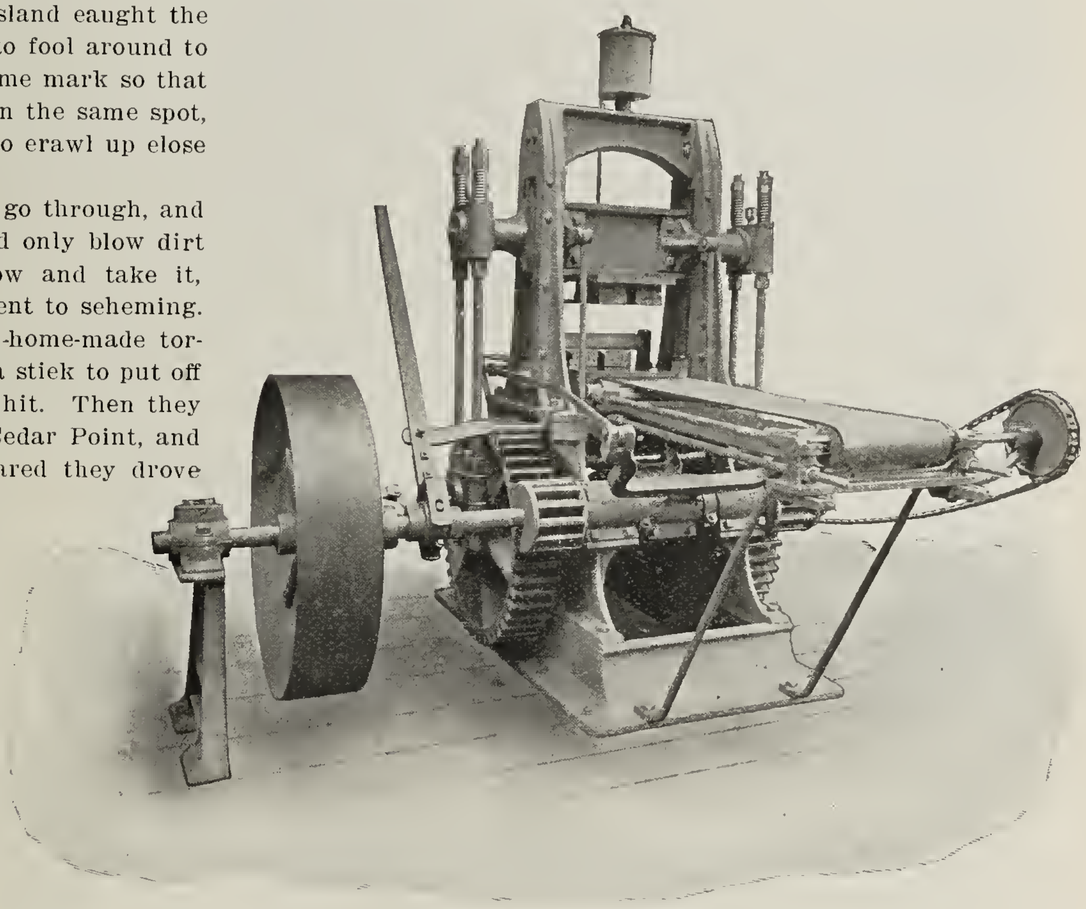
"If the shell hit the earthwork it could not go through, and if it went over, and hit in back of us, it could only blow dirt over us when it exploded. We had to lay low and take it, though, and it grew monotonous. Then we went to scheming. We got a lot of big tin cans and constructed home-made torpedoes by filling them with power and fixing a stick to put off a percussion when a boat would spring it or hit. Then they put me over on the mainland, on the end of Cedar Point, and we waited for the Jackson. When she appeared they drove two stakes and lined her up from the island, and I drove two and lined her from the point. The next day, when she was away paying her respects to some other unfortunates, we sent out a boat with the torpedoes. They directed the boat from the island, in line with their stakes, and they gave me a blue flag and put me on the point to signal the boat down when it crossed my line. When she got to my line I flagged her down and she stopped and put out the torpedoes, and all seemed right, but when we all returned to the island the boat party told me that they had been unable to see my flag at all, as the woods in the background were just the same blue as my flag. They had, however, discovered a pine sapling mark, which they rightly judged to be her discharge mark, and they had gone out and planted their torpedoes beyond it just right to catch her. We waited and watched, impatient but exultant. Finally she appeared in the distance, steaming up the sound, and we watched to see her go into the air. At length we were so sure she was up to our trap that we held our breaths and dare not wink lest we lose the sight. Then she stopped, put out a small boat, which went forward and investigated, and, looking down in the clear water, saw every detail of our work. Then another small boat put out and they stretched a cable between them, and as it struck our percussion sticks they exploded one after another of our torpedoes until they had them all. Then the boats put back, the Jackson came up to her old anchorage and she gave us such a shelling as we had never before experienced, and we had to lay low, hug the dirt and just take it till they got tired.

"It was a long time before I ever knew the sequel, but it seems some of our fellows had caught a boy on the mainland shortly before this, had 'rough housed' and amused themselves scaring him, and had carried their horse play to extremes. This boy, so helpless but so sore, had watched our maneuvers and then had taken a little boat and had rowed down the sound, all night, in order to warn the Jackson to look out for us.

"All our nice plans were frustrated by meanness to a boy, but I never look over at the blue woods on the horizon but what I think of my blue flag signaling against them, and I never see anyone imposing on a boy, but I recall the incident that prevented the destruction of the Jackson." GATES.

A NEW STEAM REPRESS.

EVER ANXIOUS to supply the brickmakers with up-to-date machinery, the Henry Martin Brick Machine Manufacturing Co., Inc., of Lancaster, Pa., are placing on the market an up-to-date steam repress, an illustration of which is printed herewith. This machine is constructed strictly upon mechanical principles; the movement is positive and the arrangement such that, while the press places an enormous pressure upon each brick fed into the die, yet the machine runs exceptionally easy and without the usual vibration found in heavy machinery of this class. The material is of the best throughout, and each machine is furnished with a friction clutch, which allows gradually starting and instantly stopping the machine. Particular attention is called to the positive feed attachment, whereby the brick are automatically delivered into the dies and in the same manner discharged after being pressed. It will be of interest to any of our readers to have a more detailed description of this machine, if they are considering the installation of a repress, and by writing direct to the Martin company they will receive a prompt reply to any questions.


The Martin Steam Repress.

WRITTEN FOR THE CLAY-WORKER.

BRICK PAVEMENTS. No. 4.

By D. W. Stookey.

—The Foundation.—

DURING THE VARIOUS stages in the evolution of the brick pavement many kinds of foundation have been tried. These range from setting the brick upon natural clay subsoil, with a sand cushion, to the heavy concrete. Each of these have, in some instances, given good satisfaction. The natural clay is the simplest and cheapest kind known, and, where the clay is naturally compact and always dry, this kind may be depended upon to give reasonably good satisfaction.

The two-course brick pavements were very good wherever the subfoundation was dry and solid enough to support the load, and where the upper course of brick were good pavers. Probably two-course brick pavements have served their time, and will be used in very few instances, if ever, again.

The crushed stone foundation, with sand cushion above, has also been tried and found wanting. Experience should not have been necessary to teach that the sand would settle down between the stones and thus allow the brick to sink. This was a natural result of the conditions. In some cases the specifications augmented the error by requiring that the crushed stone be screened. Screening only removed all fine materials that might have filled the spaces between the stones and that would have prevented, at least to a limited extent, the settling of the sand cushion. A much better pavement would have been made had the specifications required that all spaces between the pieces of crushed stone be filled by intimately mixing a specific amount of sand or earth with the macadam. Probably if the proper amount of fine material was thoroughly mixed with the broken stone, so that no spaces were left where the sand cushion could settle down, and the mixed foundation was well rolled before the sand cushion was put on, it would give as good results as the concrete, and at a much less cost. There might be cases where concrete would be considered necessary, but those instances would likely be rare.

One of Terre Haute's Model Brick Streets. Though in Use Eight Years and Subject to Heavy Traffic, it is Still Smoother Than Asphalt.

If more care, attention and expense were placed upon the subfoundation or soil underneath the pavement, much money could be saved in the construction of the foundation. It is well known that all soils are solid when dry, which is conclusive proof of the desirability of underdrainage before laying street pavements. Indeed, it appears very reasonable that a cheap and very satisfactory pavement foundation could be made by laying upon a well-drained subfoundation a course of about six inches of crushed stone, having the interstices completely filled with sand or earth to prevent the sifting down of the sand cushion. If this mixture be carefully brought to the grade and curve of the finished pavement and be well rolled with a heavy roller, it probably would give as good satisfaction as the more expensive concrete foundation.

In confirmation of this opinion reference is made to a case in Des Moines where about four thousand lineal feet of old macadam street was used as a foundation for brick pavement, and proved very satisfactory. In the same connection the pavements of Cleveland, O., are mentioned to show that a solid foundation of any kind below the sand cushion is all that is necessary. Mr. F. H. Eggers, at the N. B. M. A. Convention in 1900, said:

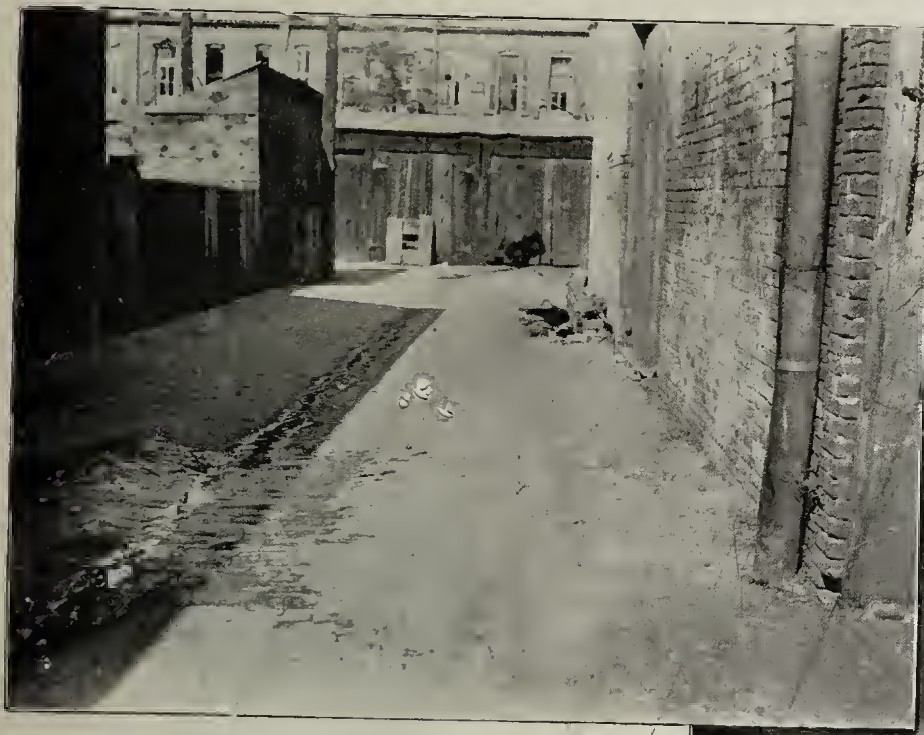
"In Cleveland they do not give us a concrete bedding at all. We have a good clay subsoil there, on which we put from two to three inches of sand bedding or sand cushion, and I want to say we have some streets there, paved in this way, that have been down for the last ten or twelve years, and they are in very good condition; but the fault with us is that we are not particular enough about our construction. Indeed, we are not particular enough in any respect."

In a paper read before the American Society of Municipal Improvements, Milwaukee, Aug. 29, 1900, by E. A. Kemmler, assistant city engineer of Columbus, O., in speaking of foundations, it was said:

"Within a short time the pavements failed in many places by bodily settlement in rectangular patches and longitudinal cracks at the center, as much as a hundred feet in length. As the foundation was not of concrete, these settlements were no doubt due to local rearrangement of the foundation aggregate and absorption of the sand cushion." Or, more plainly, the sand sifted down between the stones of the macadam foundation.

The fact that Cleveland, O., has satisfactory pavements of brick laid upon a clay subsoil, with nothing between but a sand cushion, demonstrates beyond argument that concrete foundations do not enter into the list of essentials to a satisfactory brick pavement. The fact that all soils are solid when dry, and the fact that tile drainage, properly applied, renders soils dry enough to be solid, lead logically to the conclusion that a satisfactory foundation for a brick pavement may, in many places, be constructed without the use of concrete foundations, and, in many, without even the use of macadam.

Just this last summer I knew an instance in which a city engineer specified concrete foundation for brick paving, but the committee from the city council who had charge of the work struck out the concrete clause and inserted crushed stone. This was in a city where brick pavements had been laid upon crushed stone foundations, and had so far lost in public favor that asphalt pavements were being laid at the same time upon other streets of the same city. The committee objected to and rejected the concrete foundation for the streets to be paved with brick upon the ground that the cost was too great. At the same time this same committee was having asphalt pavements laid, with concrete foundations, upon streets and in front of properties that were not valuable enough to legally bear the cost of the paving taxed against them, and at a cost per square yard far above that of the brick. As a result a part of the estimated cost for several of the abutting properties had to be remitted, while the property owners along the line of the brick paving were left with the full expense taxed up against them. We have failed, as yet, to understand why a concrete foundation was necessary for the asphalt, while open stone, with a sand cushion laid over the holes, was considered good enough for the brick pavement. In addition to this, the asphalt pavement was carefully ironed, smoothed, dusted with cement and rolled to make it pleasing to the eye and agreeable to drive over, while the brick pavement was laid of brick with rounded corners and with the maker's name, made of heavy raised letters, upon the sides. These held the brick apart and added to the distance that the wheels were required to jump in passing from one brick to the next. The cracks and spaces between the brick were increased by the rounded corners and by the free advertising of the maker that was stamped upon the sides. Finally these cracks were filled with bluff sand from a bank that I have seen drift in the wind like snow until it completely covered growing plants a few inches high that had started before the winds came.



Part of a Brick Paved Alley in Rear of a Row of Livery Stables. Subject Constantly to Accumulations of Filth, Yet is Easily Cleaned, and No Portion of the Filth Ever Enters Through the Pavement Into the Soil.

"Consistency, thou art a jewel."

Why should asphalt be favored with a concrete foundation, while brick are given one of carefully prepared holes, covered with sinking sand?

Why should asphalt be given a careful and expensive surface dressing, while brick only have a little loose sand thrown on to cover up the imperfections?

Why should asphalt be laid at a high price in front of some properties, and a part of the expense remitted to the abutting property owners, while the full amount for an old-style brick pavement is assessed to others, who, in addition, are required to pay their share of the general tax?

—Some Quotations.—

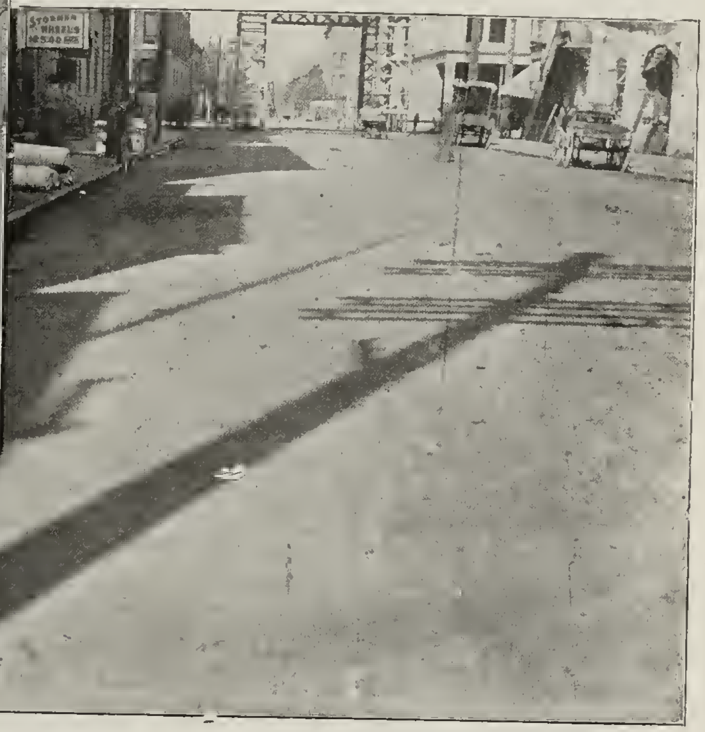
We herewith give some quotations relating to concrete foundations that will give a fairly representative idea of the methods employed where concrete foundations are wanted:

"The foundation of Nevins street, Brooklyn, N. Y., paved in 1895, was made of concrete, mixed in the proportions of one cement, two sand and four broken stone."

As far back as 1893 the Council of Philadelphia passed an ordinance requiring all improved pavements to be laid on concrete foundations.

In an article written for The Clay-Worker last year, Mr. Harrison Souder, civil engineer, gives the following extract from the city's specifications:

"Upon the subgrade, after rolling to a solid foundation, thus prepared, shall be laid a bed of hydraulic cement concrete, four (4) inches in thickness, to be made as follows: The cement shall be of the best American quality, American natural cement, ninety-six (96) per cent. of which, by weight, shall pass a wire cloth sieve of 2,500 meshes per square inch. Briquettes of neat cement, one square inch in cross-section, one day in water, after setting, shall have an ultimate tensile strength of fifty pounds, and, after seven days in water, 120 pounds. The concrete shall be composed of one measure of cement and two measures of approved Jersey gravel, thoroughly mixed dry, and then made into a mortar with the least possible amount of water; three measures of broken stone (limestone, slag or other equally hard stone), free from dust or dirt, and a size that its largest dimension will pass through a one and one-half (1½) inch ring, to be thoroughly drenched with water, but containing no excess of water in the heap, shall then be incorporated immediately with the mortar, and, when rammed, free mortar shall appear upon the surface. The concrete shall be evenly spread on the foundation and rammed with wooden rammers until thoroughly compacted and has a clear mortar surface, which surface shall be five inches below the grade of the top of the finished pavement and parallel thereto. No carting or wheeling will be allowed on the concrete until covered by the paving."



South Fifth Street, Terre Haute. Down Ten Years, but Still Perfectly Smooth.

The following extracts are taken from Terre Haute, Ind., specifications:

"Upon the subgrade formed as above specified shall be spread a layer of hydraulic cement concrete, —— inches in thickness after it has been compacted by tamping, to be made as follows: One (1) measure of cement of the best quality of fresh burned and finely ground domestic brands, and two (2) measures of clean, sharp sand, will be thoroughly mixed dry, and then made into mortar with as little water as practicable. Then —— measures (or an amount sufficient to give a small surplus of mortar when rammed) of broken stone, thoroughly screened and free from dirt and rubbish, and thoroughly damp, but containing no loose water in the heap, will then be incorporated immediately with the mortar by turning the mass over with shovels until each stone or piece of stone is completely coated with mortar. It will then be spread evenly the full thickness of the layer and at once thoroughly compacted by ramming until free mortar appears upon the entire surface. The whole operation must be performed as expeditiously as possible. No stone or piece of stone shall exceed two and one-half (2½) inches in its largest dimensions."

"Portland cement must be used which shall stand a tensile strain of three hundred (300) pounds per square inch after seven (7) days, six (6) days in water and one (1) day in air, and which shall have a crushing strength of two thousand (2,000) pounds per square inch after having been immersed in water seven (7) days and exposed to the air for thirteen (13) days."

"42. When required, the contractor shall furnish the engineer for testing purposes samples from the cement to be used in the work, and all cement shall be subject to tests at least thirty (30) days prior to being used."

SOME FIRE CLAY PRODUCTS.

SOME DEFINITE idea of the extent of the fire clay industry in western Pennsylvania was given by the writer in an article published in The Clay-Worker some time ago, so for the present let it suffice to say that, while Pittsburg has long been a center of this industry, which is so largely dependent upon the iron and steel and allied industries, the fire brick industry is annually becoming a more important factor in the industrial affairs of Pittsburg. Since the article above mentioned appeared some important additions to the fire brick industry have been made, and numerous manufacturers are now taking steps toward the further increase of their operations. There has also been of recent years a decided increase in the variety of fire clay products manufactured, and to-day an endless variety of these products enter into the different operations of the iron and steel manufacturing industries, while fire clay products have also a wide use for other purposes. An idea of the great variety of fire clay products manufactured in this district can be obtained from an enumeration of the products of the Harbison-Walker Co. This company manufactures fire clay brick of different grades for cupolas, furnaces, coke ovens, rolling mills, gas flues, tiles and blocks for retorts and blast furnace stove brick. The company also manufactures Bessemer converter tuyeres, sleeves and nozzles, Star silica brick for open hearth steel furnaces and gas furnaces, grate backs and stove linings, railroad specialties for locomotives, carbon and clay brick and carbon brick, the latter a patented product for lining blast furnaces. The carbon brick are also used in crucibles and boshes of lead, zinc and copper smelting furnaces. The trade of the company extends all over the country and to many foreign countries.

Probably more fire clay is manufactured into bricks of different kinds than is used in the numerous other ways. Fire brick for different purposes require different grades of clay, mixed in different proportions. Furnace brick require a high grade fire clay, but the upper part of the furnace, which is subjected to the most friction from the charge, requires a different kind of brick from the boshes, where the friction is less and the heat greater. In consequence, the lower part of the furnace is built of high-grade flint fire clay brick, and only sufficient plastic clay to hold the flint clay together is used. For the upper portion of the oven plastic fire clay brick are used in order to add to the strength of the furnace. Increasing the percentage of plastic fire clay increases the tensile strength of the furnace, while a high percentage of flint clay increases the refractory power. Medium grades of fire brick are usually used through the middle of the kiln or furnace.

The manufacture of mill brick and tile for use in foundries, rolling mills and other industrial operations is an important feature of the fire clay manufacturing industry in this district, and the bulk of this product is used about the mills and factories of this district. There is a surprising variety in the shapes, sizes and qualities of furnace and mill fire brick. Mill and furnace men are fully acquainted with all these varieties required for special work, and to them such designations as Nos. 1 and 2 split, Nos. 1, 2 and 3 wedge, Nos. 1 and 2 arch, checker, key or wedge, are perfectly intelligible, as are the different grades of jamb, skew, circle and cupola brick, cover brick, regenerator blocks and the great variety of names by which this class of fire clay brick and tile are known.

Some mention of coke oven brick was made in the article on "Fire Clays and the Fire Clay Industry," recently published in this journal. This class of fire clay products is not necessarily so highly refractory as blast furnace brick, save in some of the new by-product coking ovens which are coming into use in this section. The by-product coke oven requires a much greater variety of fire brick than does the regular beehive oven pattern, and the further introduction of these new coking ideas will add greatly to the market for fire brick products. The regular coke oven fire brick are required to stand violent and sudden changes of temperature, as the coke is cooled by turning a stream of cold water on the burning mass. Another class of fire brick products manufactured by a number of firms in this district includes locomotive and steamboat tile. Steel runners, sleeves and nozzles are comparatively new fire clay products, and are now largely used for running molten metal to the molds.

The manufacture of crucibles is also an important feature of the fire clay industry. This class of fire clay products is required to resist a high temperature without softening or melting in a sensible degree. In some cases they are required to resist violent corrosive action and permeation of molten metals. Glass pots require the highest grades of fire clay, and great care must be exercised in its selection and preparation. The pot must not only stand the highest temperatures, but it must withstand the chemical action of the fluxes, such as soda cake and lead oxide, used in the mix. These are much stronger corroding agents than the fluxes of the blast furnace. Glass pot fire clay is mined at Wymp's Gap and at Layton Station, in Fayette county, and in Cambria, Clarion and Clearfield counties, and a considerable part of the clay used in the glass factories of this section comes from Missouri, Kentucky, Germany and England. W. G. I.

SOMETHING NEW FOR CLAY-WORKERS.

Mr. F. E. Hook, of Hudson, Mich., originator and manufacturer of the "Best" pneumatic coating machine (see ad. on page 585) and "Stay-There" fireproof paint, has brought to our notice some of the advantages to be derived from the use of his products in the painting or whitewashing the walls of brick and clayworkers' buildings, as well as for the purpose of whitewashing kilns, making them not only lighter, but closing up all small crevices in one-tenth the time it takes by hand.

With the "Best" pneumatic coating machine either whitewash or paint can be applied more satisfactorily and durably than with brushes, and at a reduction of about 80 per cent. in the cost.

The work of Mr. Hook is in harmony with the apparent tendency of employers of large forces of men to better the condition of their workmen by providing light, healthful surroundings in which to work. In addition to the more sanitary conditions resulting, a saving of about two-thirds the usual cost of lighting a building is effected where walls and ceilings are whitened, aside from affording better and longer light during the daytime.

The "Stay-There" fireproof paint, which is fully guaranteed and approved by many boards of fire underwriters, can be applied at about the same cost as whitewash, while it is much whiter in color, will not rust, will not rub off, can be washed and is fireproof.

THE BRICKMAKERS OF PHILADELPHIA ARE ALL BUSY.

Eugene and Peter Carroll.

As I PREDICTED in the last of my last year's letters, our brickmakers are hugging themselves with rare satisfaction. Orders are coming in thick and fast, causing them to act quite within the tenets of pronounced altruism.

Not one, but several, illustrations have I met within the past two days where the genial maker of bricks, satisfied with the number of orders written upon his books to be filled during the coming season, and knowing that it would be impossible to fill further orders, has with open-hearted generosity turned over the additional orders to his near neighbor, thus equalizing nicely the distribution of the trade.

At McAvoy & Morris's yard, at Thirty-first and Dickinson, everything and everybody was hopping about like a parched pea in a skillet. After running from the first week in April until November of last year, they closed down, satisfied with the year's output. During the months of December and January they worked upon the new dry floor dryer. This is 180 feet long by 50 feet, raised twenty courses from the base beneath the flues, and opening towards the top with a three-course of open brick, set two upon two, and top dressed with eight inches of clay. This gives a floor space of 45,000 capacity, of which 30,000 can be dried every twenty-four hours. On the 20th of January they made six kilns, but unfortunately Jack Frost stepped in about this time and put a quietus on everything, and the clay bank stolidly refused to be picked at.

The break of the frost in February again allowed them a start, and the boys are working and sweating, and still argue that the improvements from League Island up haven't yet touched them. No, but it has to come. Think of it, in 1888 there were no houses south of Lasker street. Now the entire division, North, East, South and West, running eight blocks south, and de Lawd knows how many east and west, is completely filled up. From this yard large haulings are being made to supply an operation at Thirtieth and Oxford streets for 140 two and three-story houses, and another of forty-five two and three-story dwellings at Twenty-ninth and Read streets, and another order for the George A. Fuller Co. The output for this season will run into ten million, three-quarters of a million being the call for machine pressed brick.

The prices ruling are: For hard, $6.50 to $7.00; machine stretcher, $9.00; hand-made stretcher, $11.00.

Messrs. McAvoy & Morris have decided to discontinue making hand-made, as they have concluded it doesn't pay.

H. C. Carroll & Sons' yard, at Fifty-eighth and Haverford avenue, is fast being dismantled. The reason for this is that Michael, who has practically been running the yard at Fifty-eighth and Girard avenue since 1877, has closed out his interest and retired from the brick business. Our illustration shows him standing well to the front, as he always was in emulating the good examples set by his father, the late H. C. Carroll. Kindly and sympathetic, alike to friends and workmen, he was always to be found in a genial frame of mind, ready to enjoy a joke or book an order, and I for one will miss him.

Michael Carroll and Some of His Workmen.

Eugene and Peter Carroll have now decided to transfer the plant from Fifty-eighth and Haverford avenue and join this to the hand yard at Fifty-eighth and Girard avenue, and at this yard I found Eugene superintending the erection of four new ten-arch kilns, all to be constructed under one cover. The two Martin machines will be brought together, thus making the daily capacity 85,000, with two new dryers of 40,000 capacity.

Eugene Carroll said: "We have long been trying to reach a state of perfection, and the yard now will embrace the good qualities of both. We have ordered two eighty-horse-power boilers from Coatesville, but don't understand the delay. They were promised two weeks ago, and this retards our progress. How's business? Well, business is just so good that we don't have to go outside for an order.

"As to hauling. Well, as you see, there's a large operation over there, and you could strike it with an orange. We can feed that job faster than they can lay them."

At the plant of Mike Gaynor, Thirtieth and Morris street, there was the same sweet, cheery smile, orders booked for the season's output, and, well, they might just as well hang a shingle on the fence, "Have no more bricks to sell. Sold out." And yet this little yard is credited with making four or five million every year.

Several times the question has been put to me as to why the brick trust or combination didn't go through. Here will I answer the question and have done with it once and for all. The New York projectors started out with a satisfactory of one-half cash and one-half preferred stock, with a 7 per cent. dividend and an acceptance of the figures named as the purchasing price.

After many delays and further powwows, the great magnates offered to take in twenty-four of the yards, but insisted on the purchasing prices being cut down to $250,000, and in return they would stand ready to deal out one-half cash and one-half common stock. This offer the Quaker City boys threw overboard, as did the Bostonians the tea.

And now the smile broadens and deepens, the stolid Philadelphians scan the extended lists of the projected real estate operations, and one whom I met this morning said with absolute confidence born of sound knowledge and understanding: "Friend, thee will find there will not be a brick left by the 1st of September."

Brother Conway, at Fifty-eighth and Walnut, having covered his orders, goes no further. He doesnt try now to book an order.

Charles Huhn's estate, with an output of six to eight million, may also be said to be sold out.

Certainly it may be said that anxiety as to the outcome of the miners' conferences has something to do with the evasiveness of some to book further orders, for while the many plants have a sufficiency of coal to burn the usual outputs, they do not wish to be caught burning brick with water instead of coal.

At the office of Webster & Nephew Mr. Keyser informed me they had booked the order to supply the eighteen-story office building to be erected at the northwest corner of Fifteenth and Chestnut streets. This would probably soak up about two million. The iron structural work, however, is being held back from some unknown causes, and this creates a further delay in the delivery of the brick. The office order book shows some seven million bricks, and not a single stretcher or hard in the reserve racks. The Hercules machine runs to their satisfaction, turning out 32,000 daily.

Here hard brick are worth $7.25 to $8.00; machine stretcher, $9.00 to $10.00; hand, $10.00 to $12.00. Hand-made press already sold 200,000, and not one in stock. These are selling at $17 and $18, but $20 should be the ruling price.

This is the last year of the Philadelphia Brick Co. at Twenty-fifth and Wharton streets. Their lease expires next March, and as there is no clay left the ground will probably be built up and taken in hand by the real estate speculators.

This is likewise the case with McAvoy and McMichaels' plant at Twenty-seventh and Dickinson streets. There being no clay, haulings have to be made. This plant will probably turn out its four million and then cease to be an active factor.

Amos Dotterer's old yard is fast being dismantled, the machinery torn out, and the brick—what few remain—are being closed out.

Murtha & Early are also in the swim, making prodigious strides. So far they have eighteen millions sold, and prospects of many more orders to come in. The Frankford Arsenal, two or three factories and larger real estate operations making big inroads upon their already extended output.

Near one yard, I was told, an altercation had arisen between one of the teamsters and the clerk, the former refusing point blank to haul any more bricks, as they were hot. I took this *cum grano salis*. You may add the pepper.

With the devastation of the main yard, this will leave them with unincumbered ground covering two whole blocks, clear from the four points of the compass, worth, it is said, nearly a million dollars.

And thus I leave them, the brickmakers, for this month a very happy lot. W. P. LOCKINGTON.

Written for The Clay-Worker.

IOWA BRICK AND TILE NEWS.

PROSPECTS FOR ANOTHER record-breaking year in the brick and tile business continue to hold bright. An investigation of the stocks over the northwestern part of Iowa shows but small stocks on hand as compared with years gone by. The contemplated building the coming season and the inquiries being received are considered a safe criterion that there will be no reductions in price and a heavy demand.

A problem that confronts the operators with as much interest, if not more, than last year is the labor problem. Farmers in different parts of the State are looking for farm hands. The tempting offer of $18 and up to $22 a month and board is having its effect upon the young man who has probably become familiar with brick and tilemaking. One of the difficulties experienced by the plants last summer was a dearth of common laborers for loading cars. This prevented prompt shipments, and indications point to a repetition of the same condition the coming season.

F. W. Heidenreich, of Hedrick, Ia., has purchased a tract of land adjacent to Iowa Falls, on which has been located a splendid deposit of fine clay. A large plant will be constructed on the tract for the manufacture of brick and tile.

The brickmakers of the State are desirous of an appropriation from the present session of the State Legislature for the establishment of a plant at Ames, Ia., where is located the State Agricultural School. The brickmakers want the plant for testing brick and clay products and making experiments for the development of the ceramic art. The clay deposits of Iowa are great and varied. They are valuable, and many new industries might be promoted by the establishment of this department, to be operated in conjunction with the school.

Messrs. Straight & Campbell, formerly of Manhattan, Ill., have their new plant at Lehigh, Ia., completed and ready for business. The new plant represents an investment of $25,000. It is located on a seven-acre tract of land, and consists of six new kilns, with buildings and machinery for a capacity of 40,000 daily. The attention of the firm will be devoted at first to manufacturing the common sizes of brick and tile. It is their purpose eventually to begin the manufacture of sewer pipe and paving brick. Their deposit of clay has given them every hope of realizing their ambitions in this direction. Both members of the firm are most enthusiastic over their prospects for business and the quality of their product. Being men with years of experience, they do not build hope on mere suppositions.

At the annual meeting of the stockholders of the Lehigh Clay Works, held in Lehigh recently, the following officers were elected: President, H. R. Heath; vice president, A. C. Heath; secretary and treasurer, Fred C. Eslick; manager, Geo. J. Bailey. The company has enjoyed a very prosperous business the past year, and the prospects are promising for another the coming season.

The Fort Dodge Clay Works, of Fort Dodge, have arranged to increase their facilities for taking care of business this year by the purchase of a five-acre tract, which contains a fine deposit of clay, at a little distance from their plant. Although the company has an inexhaustible supply, most conveniently situated, it is their intention to operate an additional bank in connection. A miniature railway, crossing a wide creek, has been constructed, which will connect the new bank with the main plant. The clay will be sent to the mill in the latest improved dump cars, hauled by a steel cable. The total output of the plant last year was close to nine millions, and Manager L. A. Thorsen expressed himself as having every assurance that this year's output would not be less.

JED WING.

WRITTEN FOR THE CLAY-WORKER.

BUFFALO BRICK AND BUILDING NEWS.

COLD SPRING weather, coupled with a strike of the carpenters, has caused a temporary lull in the building line. Still nothing can stop the boom that has struck this city. New enterprises keep cropping out every day. The latest is another iron plant with two large modern blast furnaces, to be located out at Stony Point, adjoining the forty-million-dollar plant now being built by the Lackawanna Iron and Steel Co. The new one to commence with will cost six million dollars. It will occupy fifty acres of land and furnish employment to a large number of men. The company will have its own ore properties in the Lake Superior region and its own coal mines in Pennsylvania, as the parties interested now own the Buffalo & Susquehanna Railroad, extending almost direct to the coal fields.

The different yards in this city and vicinity are busy making brick to replenish their depleted stocks, and the almost brick famine will soon be over. I am told Eisenhart, of Horseheads, shipped in over a million to this city, but the boys will soon be in shape again to take care of all orders. I met O. W. Weyer in this city last week. He speaks very favorably of his new yard out at Wanakah; had just started a fire in his new continuous kiln—his clay works well; his two pans will turn out more than 50,000 a day, and his Freese machines are giving entire satisfaction. He extended me a hearty invitation to visit his yard. He has some new features in his kiln, which may be of interest to the many readers of The Clay-Worker, and which I will endeavor to explain in my next.

Matson & Hasselback, manufacturers of brick at Falls Creek, Pa., have purchased the interests of the other two members of the firm. They will make some improvements, and the outlook for the coming year's business is going to be something immense. They have now on hand about all the orders they can safely handle for the next six months, with good prospects for enough more that will carry them to their full capacity during the remainder of the year.

The Red Star Brick Co., with yards at Warren and Corry, Pa., and also at Jamestown, N. Y., are very busy, with plenty of orders to keep them running all summer. Brother Yates, at Johnsonburg, Pa., writes they do not care to take any orders for special shape paving blocks, as they have all the orders they care to fill for blocks and pavers.

Bro. W. H. Lignor, of the Ridgway Press Brick Co., Pennsylvania, has returned from an extended trip to Washington and other cities, and is so busy making brick to fill orders he has no time to think of anything else.

Owing maybe to the fact that we have a successful local organization here, we are frequently asked for copies of our formal agreement, by brickmakers of other cities who desire to form local organizations or exchanges. Perhaps a number of the readers of The Clay-Worker may be interested, so I submit a copy of the agreement under which the Buffalo brickmakers have operated successfully for some years. With such changes as local conditions may make necessary, it will probably answer for those in other localities who may want to follow Buffalo's good example, and it is a good example, for builders and contractors, as well as brickmakers, are benefited by such organizations.

FORM OF AGREEMENT FOR A LOCAL ASSOCIATION OR BRICK EXCHANGE.

THIS AGREEMENT, made this 19th day of July, in the year of our Lord one thousand nine hundred and ————, between (give the name of each firm interested.)

WITNESSETH, That we, the above-named firms and corporations, in consideration of the benefits thereby to be mutually obtained, have this day constituted ourselves, and by this instrument do constitute ourselves, in the manner following, an association.

I.

1. This association shall be known as the ———— Brick Assosiation. It shall continue from the date of this instrument up to and including the —— day of ———, one thousand nine hundred and ————.

2. There shall be officers—a president, vice president, a secretary. The term of office of these officers and of their successors shall be one year. They shall have the usual powers and duties of such officers in deliberative bodies.

3. There shall be an executive committee, consisting of the aforesaid president, vice president and secretary (who shall perform the same offices in the executive committee), and four others. No firm or corporation shall have more than one representative in the executive committee. Each one of said committee shall have one vote. Majority vote shall determine. Four shall constitute a quorum. The executive committee shall meet every Thursday at 3 o'clock in the afternoon at the office of this association.

The executive committee shall—

(a) Establish the prices at which common brick and stock brick shall be sold by this association.

(b) Establish the schedule of haulage rates at which the said brick shall be hauled to the jobs.

(c) Audit and pass upon the accounts kept by the manager of this association, at regular meetings to be held on the 15th day of each month.

At each of said monthly meetings it shall determine the amounts due and payable to the members of this association from the proceeds of sales then accumulated; and shall direct the manager forthwith to draw and the president and secretary forthwith to countersign checks upon the bank deposits of this association, payable to the order of the respective members to whom such sums shall have been found to be due and payable; and shall authorize and direct the manager forthwith to deliver such checks to said respective members of this association.

(d) It shall decide upon all emergent matters of this association; and

(e) It shall act generally in the capacity of an advisory committee to the manager of this association.

Special meetings of the executive committee may be convened upon one day's notice duly given by the manager or by any one of the executive committee.

4. Regular meetings of this association shall be held at 8 o'clock in the evening of the first Monday of each month, at the office of this association.

Every matter of every nature appertaining to the affairs of this association is reserved to the paramount discussion, control and determination of this association at such meetings. Each firm or corporation belonging to this association shall have one vote. Majority vote shall determine. Six firms, or corporations, shall constitute a quorum.

II.

There shall be a manager of the association. He shall be a competent and trustworthy person. He shall not have any pecuniary interest in any of the works of the members of this association, and he shall not be interested in any brick-manufacturing concern competing with the members of this association.

This association shall forthwith enter into a contract with such a party for his services during the term of this association. Each member shall sign such contract, and the president shall sign it in behalf of this association. A true copy of these articles of association shall be affixed to such contract.

In general, the manager shall transact for this association all its business of selling brick, placing orders for delivery among its members, receiving and collecting the proceeds of such sales and deliveries, and depositing said proceeds in bank to the credit of this association.

In particular, the manager (give name)—

1. May, with the advice of the executive committee, on the account of this association, select, lease and suitably furnish an office for the meetings and for the transaction of the business of this association; and

He may, on the account of this association, at salaries fixed by the executive committee, employ and dismiss such assistants as he may require; and

He may, on the account of this association, incur the expenditures for stationery, typewriting, telephone, telegraph, horse hire and similar items reasonably needful for the transaction of the business of this association; but

He may not in any other manner engage the credit of this association.

2. The manager shall employ all reasonable diligence in placing the product of the members of this association upon the market.

He shall award orders for delivery equitably among the members of this association, according to the ratios hereinafter set forth.

He shall impartially require of the members of this association that they severally shall, in all respects, honorably fill the orders which he shall award to them; and that they shall, severally, in all respects, honorably perform the obligations by them assumed under these articles of association.

3. In the matter of prices, he shall be governed by the written instructions of the executive committee. His terms of sale shall be strictly cash. But he may, with the advice of the executive committee, grant to customers of good standing reasonable terms of credit, not exceeding forty-five current days of delivery.

4. He shall diligently collect all the moneys due to this association.

5. All the proceeds of sales made for this association he shall deposit in their entirety to the credit of this association in the ———— Bank, of this city.

But he may retain in his possession, at all times, from said proceeds of sale, an amount in cash not exceeding one hundred dollars ($100), wherewith to defray the smaller current expenses of his office.

He shall draw and sign all checks for the sums duly authorized to be paid from such deposit, but such checks shall not be complete, nor shall they be honored by said bank until they are countersigned by the president and secretary of this association.

6. He shall cause to be kept full and accurate books of account

of all the business transacted by him on the behalf of this association. Such books shall at all times be open to the inspection of each and every of the members of this association.

On the 17th day of each month, at its regular monthly meeting, the executive committee shall audit such books.

7. He shall give due notice to the members of this association and to the members of the executive committee of the time and place of all meetings at which their attendance shall be requisite. He shall, by due notice to them, call such special meetings as he shall find to be needful for the welfare of this association; and

8. He shall in all other matters which may arise, and at all times, act in the interest of this association.

III.

The members of this association further mutually agree that—

1. Except as provided by these articles, each shall conduct the business of its manufactory as to it shall seem proper, but shall co-operate courteously and strenuously with the others to attain the objects of this association.

2. They will not sell any of their product of common brick and stock brick except through the agency of this association, by its manager; and for every thousand of brick so sold and delivered contrary to these articles they will forfeit one dollar to the special deposit of this association.

3. They will always deliver good, merchantable brick of the grade as ordered by the manager; will make prompt and correct deliveries to the jobs, and each member will indemnify this association for the claims justly established against this association, so far as such claims shall be due to the default of such member or of such member's servants.

4. They will severally render to the manager daily statements of the brick delivered by them, accompanying such statements with vouchers of satisfactory delivery at the jobs, and will for each delay beyond forty-eight hours in rendering such statements forfeit one dollar to the special deposit of this association.

5. They will not have any interest in any concern competing with the members of this association with products of common or stock brick.

IV.

The members of this association further mutually agree that the total annual products of their respective manufactories is as follows: (Give name and capacity of each firm.)

It is left to the option of each member to decide what portion of its total annual product shall be stock brick, but common brick and stock brick shall count alike in computing deliveries to which the members of this association shall be entitled under these articles of association.

The members of this association mutually agree that in the same ratios as are the ratios which the total annual products, as above stated, bear to each other, they shall—

(a) Share in the sales by this association; and according to the same ratios, as equitably as the demands of trade shall permit, the manager shall place orders for delivery among the members of this association; and the members will equitably share in the monthly distribution of the proceeds of sales, according to their respective deliveries; and they

(b). Shall share the monthly expenses and salary of the manager of this association; and they

(c) Shall share the losses falling upon this association from bad and incollectible debts.

V.

The place of deposit of this association shall be the ——— Bank of the city of ————.

There shall be maintained there two accounts; the one an ordinary open account, the other a special account.

To the credit of the open, or current, account shall be deposited all the proceeds of sales in their entirety, made by the manager for this association.

The special account shall be made up from the following sources, to-wit:

1. From the proceeds of forfeits as hereinbefore provided.
2. From the sums accruing to the credit of this association out of the privileges provided for in the paragraph next preceding; and,
3. From a fund of ten thousand dollars ($10,000), which the executive committee, at its first regular monthly meeting, is herewith authorized and directed to set aside out of the proceeds of sales at that time accumulated. In this said fund all the members of this association, without any exception, shall share, and they shall share absolutely in the ratios of their total annual products as hereinbefore stated. Each member shall make good his proportionate share in this fund before he shall share in the proceeds of sales as hereinbefore provided.

The current deposit shall, after the monthly expenses shall have been provided for, be distributed monthly by the executive committee, as hereinbefore provided, among the members of this association.

The deposits to the credit of the special account shall never fall, during the term of this agreement, below the amount of ten thousand dollars. Any excess over and above said sum of ten thousand dollars shall be divided quarterly, as follows: Firstly, such excess shall be divided, according to the rates of their total annual products, among those members of this association who have elected to bear the losses falling upon this association from bad and incollectible debts, to the full extent of such losses; and, secondly, any surplus of such excess that shall remain shall be divided among all the members of this association according to the ratios of their total annual products, as above stated. And the remaining permanent sum of ten thousand dollars shall, upon the termination of this association, be divided among the members of this association, according to the same ratios.

But no member who shall withdraw from this association before its termination, as hereinbefore provided, or who shall be guilty of breach of these articles of association, shall share in either of said accounts after such withdrawal or after such breach.

All checks drawn upon either of said accounts must be signed by the manager and countersigned by the president and secretary, or they shall not be honored by the said bank of deposit. And all such checks shall be authorized by the executive committee.

The bank of deposit shall be notified of the provisions of these articles touching said accounts, and the assent of said bank be procured thereto.

VI.

This agreement shall terminate, in any event, on the —— day of ————, and all stocks in hand not actually delivered on that date by the members of this association shall not in any wise be affected by these articles of association.

VII.

Nothing in these articles shall in any wise affect contracts of sale entered into by the members of this association prior to the final execution of this agreement. But each of the members of this association shall severally render to the manager a signed statement of the contracts of sale which it has outstanding, specifying the purchaser, the jobs at which the brick are to be delivered, and the approximate quantities of brick remaining undelivered at the time of the execution of these articles of agreement; and shall supplement such statement by prompt notice of the completed performance of said contracts.

VIII.

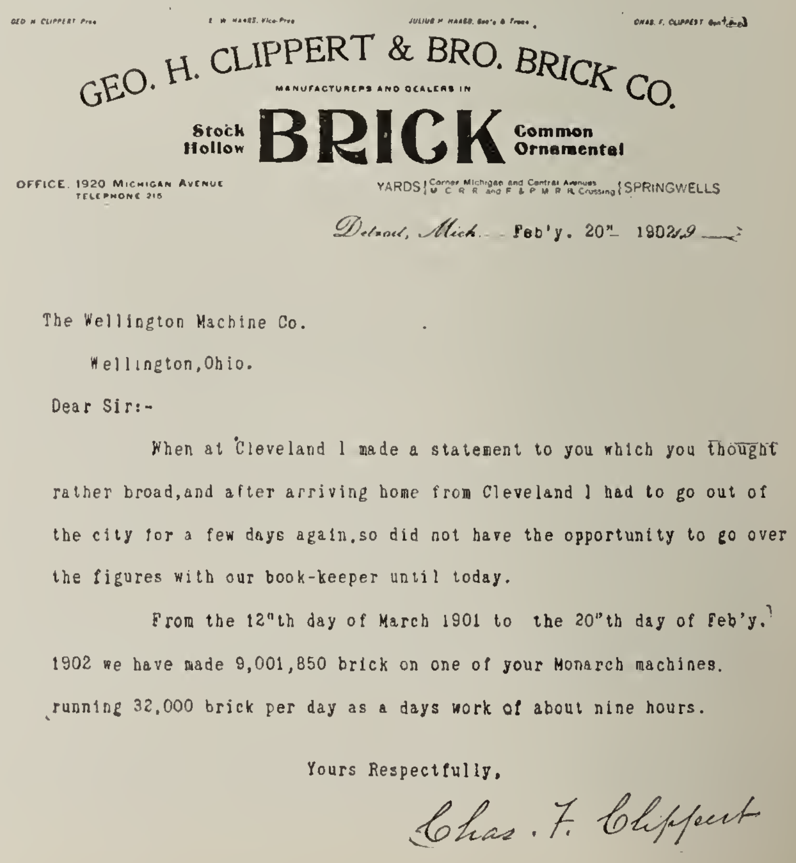
The original of these articles of association shall be deposited with the bank of deposit of this association. True copies thereof shall be made and delivered to each of the members of this association. One true copy thereof shall be kept at the office of this association.

IN WITNESS WHEREOF, We have hereunto set our hands, personally or by our duly accredited representatives, the day and year first above written.

A laughable incident occurred in this city last week. A couple from Leipsic, Germany, arrived here and put up at the Iroquois Hotel—came to see the Pan-American, and were surprised to learn that it was over. It appears that some Buffalo paper stated that a majority of the directors had decided, as it was not ready, to postpone the show till 1902. That item was copied in some German papers, and some of them have not learned the real facts as yet. Well, they had the pleasure of viewing some of the buildings, as they are not all, as yet, torn down. The Chicago Wrecking Co. is busy with a large force of men taking them down, piling up the lumber, taking nails out, loading bricks, etc., on cars, and working at it in a systematic, careful manner. The electric tower is doomed to go with the rest, as the movement to purchase it for the city has fallen through and the lights that once shown so brightly all over it have gone out forever. NORTON.

BROKE THE RECORD.

The Geo. H. Clippert & Bros. Brick Co., of Detroit, are proud of having broken the record for hundreds of miles around them in the number of brick produced in a year on a single soft mud machine. When equipping their yard they looked for the things that would give the best results without delays or shut-downs, and that their judgment was good is evident from the following letter:



GEO. H. CLIPPERT Pres. E. W. HAASS, Vice-Pres. JULIUS H. HAASS, Sec'y & Treas. CHAS. F. CLIPPERT

GEO. H. CLIPPERT & BRO. BRICK CO.

MANUFACTURERS AND DEALERS IN

Stock Hollow **BRICK** Common Ornamental

OFFICE, 1920 MICHIGAN AVENUE
TELEPHONE 215

YARDS { Corner Michigan and Central Avenues M. C. R. R. and F. & P. M. R. R. Crossing } SPRINGWELLS

Detroit, Mich. Feb'y. 20th 1902

The Wellington Machine Co.
Wellington, Ohio.

Dear Sir:-

When at Cleveland I made a statement to you which you thought rather broad, and after arriving home from Cleveland I had to go out of the city for a few days again, so did not have the opportunity to go over the figures with our book-keeper until today.

From the 12th day of March 1901 to the 20th day of Feb'y, 1902 we have made 9,001,850 brick on one of your Monarch machines, running 32,000 brick per day as a days work of about nine hours.

Yours Respectfully,

Chas. F. Clippert

Written for The Clay-Worker.

ST. LOUIS BRICK AND BUILDING NEWS.

BRICK AND TERRA COTTA manufacturers are having a good steady trade, but nothing unusual. A great many buildings are going up, but not as many as were expected earlier in the year. A great deal of figuring, however, is going on, which will undoubtedly materialize in results later.

Evidence is at hand to prove that many building projects for which plans are prepared have been shelved, temporarily, at least. Unquestionably the unreasonable price of materials has resulted in numerous improvements through the city being deferred until next fall. The figures for last month show that there has been a decided cessation of the activity which characterized the various building departments during the first three months of this year.

However, there is some construction work going on, and were it not that all building materials have bounded to exalted heights there would be many other structures of all kinds in process of erection. The enormous rise in the cost of construction has seriously militated against the completion of contemplated structures, many of which are operations involving the expenditure of millions of dollars. This extraordinary advance in the prices of all materials has been accompanied with an advance in wages to higher levels than have been reached for a decade, or perhaps ever before. This rise in wages, like that in the price of materials, is due, of course, to the pressing demand for skilled labor in all the building trades, but it has not yet reached its limit, for it is announced that in some branches of the building trades the workman are about to insist on still higher wages.

At present this demand appears to be incidentally justified by the exceptional rise in the prices of food and all other articles of domestic use. The effect of these excessive high prices and high wages is that a great many people who have contemplated building, and who put it off last year on account of the largely increased cost, are compelled by the still higher cost this year to abandon it entirely or to postpone it indefinitely, or until prices have descended to a more reasonable basis. How long the present level of high prices for labor and materials will be maintained, or whether they have yet reached their highest point, it would be idle to speculate; but the absolutely certain thing is they will be followed by a reaction which will carry with it a general decline of prices.

Most of those who are building at the present prices of labor and materials are doing so because they cannot help it, but just as soon as this urgent demand is satisfied the building business is pretty sure to slacken. Men will not build a store which costs so much that they can never hope to get a tenant for it at the high rents they would have to charge to get even 4 or 5 per cent. on the investment. For the same reason they will not build residences at ruinous costs. And there are so many people all over the country who would build if prices were lower, but will not build while prices remain at their present prohibitory level, that it is pretty safe to predict that in another year or two prices will be lower because of the diminished demand. High prices have their advantages, but when they get too high there always comes in the economic remedy that people will not buy what they cannot afford to pay for, however much they might desire it otherwise.

A statement issued by the building commissioner shows that during the month of April there were issued permits for the erection of brick buildings valued at $1,084,576; frame buildings, $61,970; brick additions, $198,008; frame additions, $9,234. The increase altogether over the corresponding month last year was $626,266.

As the result of a strike which went into effect on May 1 at Cheltenham, about 700 men are idle, and five of the largest brick and terra cotta companies are practically closed down. The companies affected are as follows: St. Louis Terra Cotta Co., 125 men; Winkle Terra Cotta Co., 200; Mitchell Brick Works, 40; Missouri Fire Brick Co., 125; the Laclede Fire Brick Co., 250. The strike was ordered by Local Union No. 57 of the International Brick, Tile and Terra Cotta Makers' Alliance. The union men claim that, in view of the increased price of the necessities of life, they should receive a corresponding increase in wages. A raise of 15 cents per day was asked for all grades of workmen employed by the above named companies. The demand was made about April 20, and as the companies refused to honor it, the strike was ordered. The president of the local union made the following statement:

"We struck because we were not granted a raise of 15 cents per day on all grades of work. The present wage scale ranges from $1.50 per day upwards, and we are only demanding our rights when we ask for an increase of 15 cents per day on a sliding wage scale. All grades of men are members of the union, and will stand together until the strike is settled. We are treating the companies fairly, and, in cases where property would be destroyed as a result of the strike, we have allowed the men to remain at work."

W. F. Scott, Vice-President and General Manager The Fernholtz Brick Machine Company, St. Louis, Mo.

Mr. J. Winkle, president of the Winkle Terra Cotta Co., does not believe that the strike will seriously affect the various plants interested. He says: "It was only the lowest grade, or common laborers, that quit work, and a number of them have come back and said that they were unduly influenced to quit work. All of the fire brick and terra cotta companies are affected in the same way. The strikers demanded a 15-cent raise per day, and my company offered a raise of 5 and 10 cents. The men would not accept this, and a few of them walked out without saying anything about it. I do not think the strike will amount to much, though it is too early yet to tell what may develop."

The representative of the brickmakers and the representative of the brick manufacturers have not yet been able to agree on a third man, who, with them, is to compose the members of a board of arbitration, which will settle the differences between the brickmakers and their employers in East St. Louis. Contractors and builders and workmen in the building trades, as well as other classes of trade and business, sincerely hope that the two representatives will agree on a third man before May 15, which time marks the limit set by the brickmakers, when, if the scale is not fixed, a general strike will be called. The strike will be disastrous to the building interests of the East Side.

The brickmakers, in their demands for a changed scale, are asking for a slight advance in salary and for fewer hours. The men, it is generally admitted, do very hard work, but the brick manufacturers say they cannot afford to increase the present scale and still meet competition. However, they have agreed to abide by the terms of any agreement the board of arbitration may arrive at.

Prices of brick still continue the same. They are: Merchantable brick, $7.25; ordinary brick, $7.75; strictly hard, $8.25; red pressed brick, $17.50; sidewalk and paving brick, $8.50.

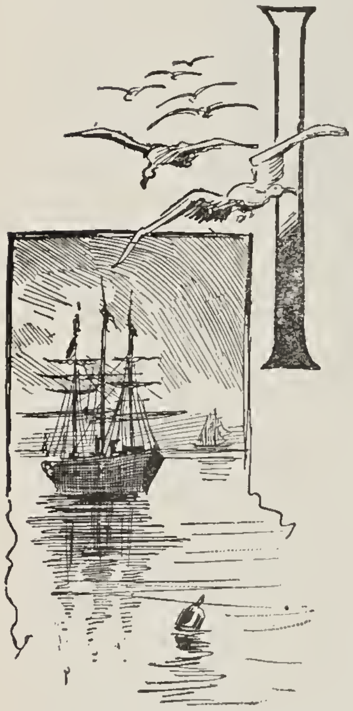
The Fernholtz Brick Machinery Co. have not yet moved to their new plant at Boyle and old Manchester road, although the building is all ready for their occupancy. The delay has been caused by the immense amount of work they have on hand, and they cannot shut down long enough to make the change. They will not move until about the first part of May. They are now working overtime in all their departments in order to get out their orders, and Mr. Scott says there is more work still coming in.

The Williams Patent Crusher and Pulverizer Co. are very busy. They are furnishing their various styles of crushers and pulverizers to brickmakers and clayworkers all over the country. Among the recent orders shipped were consignments to the States of California, Arkansas, Indian Territory, Texas, Minnesota, Alabama, Pennsylvania, Kentucky, Illinois, Indiana, West Virginia and Kansas. In fact, they are sending them to almost every State in the Union. Their new tailings grinder is also meeting with great success, as is also their new revolving steam heated clay screen, which they are placing on the market. They are also receiving a goodly number of orders for their celebrated Fernholtz patent mold box.

A SAINT.

Written for The Clay-Worker.

CUBA, NEW AND OLD.



IN THE HOTTEST time of last summer a pressing invitation came to the writer to visit the tropics, to look into the matter of clayworking by modern methods at this now and ever-to-be historic spot—Cuba. With the thermometer ranging around and above the hundred mark, this did not, emphatically not, bear the face of a cool proposition, and was politely declined, once, twice and thrice; but finally I consented, and one summer day the shores of the States gradually faded away, and for the first time I enjoyed the cool, refreshing ocean breezes, that made the trip a source of pleasure, however torrid the habitation may be afterward.

Leaving New York on a Thursday, Nassau, in the Bahamas, was the first port, reached early Monday morning. Anchoring a mile from shore, tropical verdure first greeted the eyes, and then (to the stranger) the queer low houses made a rare picture, marred only by a big, ugly hotel, probably with all the modern improvements, making an ugly blot on an otherwise charming bit of quiet tropical scenery.

The waters, so clear that small shells, grasses, and, for that matter, bright pennies, can be seen at the bottom, eighteen feet deep (the story of black boys diving for a copper thrown from the wharf and catching it every time is trite, but it is a fact nevertheless)—sponge fishing and curing, fruit packing and shipping, and the periodical advent of certain steamers, keep the town alive. Just now it is being boomed as a health resort. If quiet and a 70 per cent. colored population is conducive to health, then it is great for sure.

But coming to the tropics in the middle of a hot summer savored of a nightmare, that grew with ever-increasing intensity until Caimanera bay, on the south coast of Cuba, was reached at 9 Wednesday morning. It was hot, just hot in the sun, while sharks, big, yellow fellows, played hide and seek around the ship, as if inviting the traveler to a cool dip in the bay; but the sharks, and low-lying meadows, and hot sun of Caimanera were left behind for a run of fifty miles to the Morro, where Hobson did his little trick, that, like "Horatius at the Bridge," will make his name stand out and shine in poetry and prose as the doer of a matchless deed of daring that seems a moral impossibility when one sees the spot. Santiago bay and Admiral Schley are two names that are forever and indissolubly linked in history, and so we came into historic waters.

This is a wondrously beautiful, almost land-locked, harbor, surrounded by hills running up into 6,000 feet of sky; Sierras, indeed, faced with everlasting green of many shades; a grand setting for the city, built on a hillside, quaint with its red-tiled Spanish roofs, and walls of blue, or green, or violet, or red. Quaint and picturesque it certainly is, and will be, if only the hand of the twentieth century vandal is stayed and ugly, incongruous buildings, that are but illy adapted to the climate, are proscribed. Any good, religious artist will pray that if such a building is started some generous earthquake will shake it down and forever depress the instigator of the would-be crime.

The first night on land in these tropics was not hot, strange to say, and, stranger still, the real good, soaking hot night, so familiar to the restless laborer in New York or St. Louis, has not yet been seen. With 91 degrees as the very hottest, accompanied with cooling breezes, and 75 or 70 degrees at night, one can work by day and sleep by night, especially so if, as is often the case, one or even two blankets are demanded for the early morning hours. Such is a part of "life in the tropics," at least here, while recently all have been shivering because the cold wave brought the thermometer down to 60 degrees, the coldest known in years, and it did seem really chilly, despite the fact that but a fortnight before the writer was suffering from zero weather in Pennsylvania. It was gracious, indeed, to come to this land of the sun and 85 in the shade.

CLAYS AND CLAYWORKING IN CUBA.

But yours truly was called down to look up clay matters. This means much. There are clayworkers in the States galore—men who, every time, can make brick out of clay, shale, rock, straw, faith or gold, whatever is given them, and they are good men, too. First of all, in Cuba, he must have an ossified heart and cast-iron backbone, then a thorough course in civil, mining and mechanical engineering, with hydraulics as a post-graduate; he must be fluent in Spanish and profanity, and, above all, he must be a philosopher; he needs philosophy every hour in the day and every day in the year, with Sundays thrown in. Then, if he can find the right kind of clay, and his whole outfit works "according to Cocker," he can make brick, provided, always, he has good luck.

It has been currently reported in the States that there is no clay in Cuba. This is not true; there is clay, and lots of it, but there is mighty little sand (take it in both senses of the word). There is a pink, waxy clay that will twist and warp the ten commandments out of shape; there is a blue clay, looking like Jersey fire clay, but burning red at a temperature and with conditions that nearly fit it for shoemaker's wax; there is a yellow clay that two American friends are working at, preparatory to a lengthy rest at some insane asylum; there is a rich, sandy loam that analyzes 26 per cent. alumina, 56 per cent. silica, 6 per cent. iron, 3 per cent. lime and 7 per cent. vegetable matter, the greatest soil for raising crops and weeds the world ever saw. But, Lord! how it cracks when the sun or a gentle zephyr strikes it! Then there is a slaty shale (said not to exist on the island) which, as yet, has not been tried. So there is clay, and plenty of it, and the enterprising Yankees who are now here will soon find some way to overcome the natural difficulties, and make, by modern methods, as good brick as St. Louis or the Hudson river can boast of; but they, of necessity, must largely forget their old tricks, and be prepared to learn new ones suited to the locality, while new men, contemplating the change, had better see that they are well equipped with staying qualities, always remembering that they will be away from the base of supplies, and then be prepared to laugh at failure.

Consider, for example, clay beds located some five miles from town, only to be reached by Cuban roads and wings—roads so bad that an eight-foot pug mill had to wait five weeks on the wharf before it could be moved—by a Yankee truckman at that, educated in the quartermaster's department, U. S. A. Is philosophy needed? And still there are evidences of brickmaking on this very spot, prehistoric, where, very possibly, brick for the Cathedral were made nearly or quite three hundred years ago. Nor are the roads all the troubles one meets with. Such a thing as a "rainy season" is known. The latter part of last September it was in evidence. A three hours' rain filled a river (?) with sixteen-foot banks, and, not satisfied with that, flooded a valley, miles long, in places a mile and a half wide, with four feet of water; and this is liable to occur several times every fall. Talk about the tribulations of a brickmaker. Job never made brick in Cuba, for if he had tried it he would have just hankered for those biblical boils, which brings to mind a story of a Brooklyn man who was in dread of smallpox, then raging in his neighborhood. He went to Connecticut and found a nice farm and nice farmer, who, for a consideration, agreed to take his two boys to board until the epidemic was conquered. The boys went up on a Monday; on Tuesday they had learned to plow; by Wednesday they had every setting hen supplied with fresh eggs; Thursday they bored holes in the feed bins to let the rats out; Friday was rainy, and they tried to teach the farmer's wife how to churn without a dasher; Saturday language was current that is not fit to print, and Monday back went the boys with this letter: "Deer Sir—Enclosed is yure two boys. Please send me the smallpox."— BELCHER.

WRITTEN FOR THE CLAY-WORKER.

YOUNG MAN'S CHANCES TO-DAY.

IT IS A FREQUENT question nowadays whether a young man's chances of success are as good as in the past. This question is often asked without reference to any special pursuit or business, but it is a question that particularly appeals to the young ceramist and to the young man who is undetermined as to what is the wisest choice of occupation and the best course to pursue to fit him for some work where he will make the greatest possible success. Any young man who has reached years of discretion should be able to decide in what direction his natural ability lies and get his training along that special line as early as possible. If a young man has musical talent and no mechanical ability, it would be in opposition to the laws of nature to attempt to make an engineer of him. Not but what he might make a success as an engineer, but he undoubtedly would have achieved greater success in the line of his talent. But this only bears indirectly on a young man's chances to-day.

There is a sort of fantastic fascination that ever lingers with the past, investing the former days with a romantic chivalry which is supposed not to belong to the practical, prossaic present days. There is also a kind of mysterious glamour which halos the future, inviting men into distant days of certain achievements; but past achievements offer no criterion on which to base future calculations. The present always has had a hard struggle and always will. When the present becomes future it is ardently wooed, and when the present becomes the past it is fervently reversed; but when it is present then does it suffer, as do all ideas by personal contact.

Manners and customs of races and people change. We read in ancient history of great deeds and aspirations of men. They achieved greatness from a chivalrous point of view. Their aim was to become great warriors—to accomplish great deeds and daring feats with the sword, perchance. To-day the whole of man's energy seems to lie in another direction. It is not a question of how strong he is physically nor how many men he has defeated in battle. His greatest aim and ambition is to acquire a fortune, and men seem to vie with each other in the gigantic undertakings of later days, and their whole ambition seems wrapped up in a desire to gain superiority by possessing the greatest wealth.

Never were the educational chances for a young man so bountiful as at present. Schools, books, papers, magazines, trade literature, etc., are accessible to all. Generous endowments of the rich are placed at the disposal of colleges and universities and libraries of the nation. And never were there so many educational institutions as at present. There can be no question but what a young man's chances to prepare himself by possessing knowledge in any special line are pre-eminently greater to-day than in the past.

It may be stated that the world has never approached the present mechanical and commercial prosperity of our day. It is sometimes argued that the great trusts and corporations are reducing the chances of young men. This is undoubtedly true in part—fewer men may be required in operation, but the greater the concern the larger man is required to manipulate it.

The prime purpose of an education is to develop power to will and to think; and unquestionably men are thinking more for themselves to-day than ever before. They study, they read, they listen, they absorb and size things up and draw their own conclusions. If a man succeeds who has no education or training in any line he does so in spite of his ignorance, and not on account of it. Sometimes struggle and poverty teach men to think and to will, and the young man who is spurred on by necessity must think and act for himself if he will succeed.

If circumstances are such that a young man is deprived of pursuing a course in college, by using well the margins of his time, he can read the best books and study great principles until he attains a cultured mind, and thus reinforce his will and develop his thinking powers. There are chances for the young man who becomes master of one thing; but in the ceramic line it is possible, the writer believes, to specialize to such an extent that the confines of his usefulness and ability, from a business standpoint, are regarded by manufacturers as being so narrow that he is debarred from making a financial success and can never reasonably expect to receive only moderate remuneration in certain specialties. This condition should not exist, and every possible encouragement should be given the young man who specializes in any branch of the ceramic industry. Technical training in the iron and steel industries are highly appreciated in this country, as well as others, and it is to be hoped that ceramic manufacturers will soon come to regard the trained ceramist on the same plane, whether in the clay, cement or glass industry. Some writer once wrote, "Know a little of everything, and know everything of one thing."

Conditions remain unchanged in respect to leadership. There are few leaders, but multitudes of followers, and the young man's chances lie to a great extent in developing the qualities of leadership, by being faithful, industrious, resourceful, independent and absolutely trustworthy, and by carrying with conscientious care all the responsibility intrusted to him.

A merchant has said: "I want no man in a responsible place who cannot create more business than he can attend to." —*Success.*

Written for The Clay-Worker.

THE NEW YORK MARKET.

A FEW MORE days the brickmaking season of 1902 will be in full blast, as the date agreed upon in March by the Manufacturers' and Agents' Consolidated Brick Co. was the 5th of May. A number of yards do not drill with the company, so there is nothing to restrain them from starting except the weather, and if they could take any advantage of that sort they certainly would, they are after the pound of flesh all the time, and not doing the least thing to help sustain the prices. The weather during the first part of the month of April was discouraging. Several of the yards were ready to start molding the 15th. It took a complete turn, and there is one yard which had ten arches to burn with no washed brick in it; something remarkable, as for some years past the first pits have been washed, and often there have been three or four. Some yards molded the first week, and that was a record breaker, and probably will not be duplicated again during the summer. Clear and plenty of good strong westerly and northwesterly wind, with the thermometer for two days at 85. The brick dried well, and each yard had the center arch up on Saturday, a very unusual occurrence in April on an open yard.

The labor which is employed on the yards is getting to be of such a class that there is no dependence to be placed upon it. The Irish want to be brick wheelers, and nothing else will suit them. The reason is that it is all done by stunts, and when the two pits are set in, about 1 or 2 o'clock, the wheelers and the two setters get together and count what pennies they can muster, then find a shady spot and "run the kettle." The regular men do not have much to spend, but there is always some turnpike sailor of the same sort who has left some other yard and may have a quarter in his pocket. He spends it like a lord, and he is a great man while it lasts. The Germans who stick to the yards are of as poor a class as the others. As the yards do not all start at the same time, the one which gets to running first gets the pick, and those which hold off must be satisfied with what they can get, and it is rank as compared with the class of years gone by.

The average manufacturer of to-day is not satisfied and never will be. He seems to think that he is not treated right by those who give their time to work out some plan which will benefit him. If he is lucky enough to reach heaven he will think that the other fellow has a better seat. The present season there is quite a good deal of complaining about the number of brick he will be entitled to make. Some think they should be allowed to run more machines because Mr. So and So is allowed to, and his yard is no larger. He does not seem to think that the object to be attained is to regulate the output so that the demand will be supplied, and not have millions and millions of brick under sheds, more than the market calls for, and there is a constant temptation to the manufacturer to ship—to his own loss as well as to others. Outside of the usual growl, it will be adjusted satisfactorily.

—The Business Current—

This season has not the strength that was in force this time a year ago. The demand was active and the building department was doing lots of work in its own way, and the prospects were fair toward a good season. There was so much wet weather that, on the whole, there was a falling off in output, and many were under the impression that there would be a shortage of brick before the new brick would be ready for the market. It seems that the matter of shortage should be the last thing to enter in the calculations of the brickmaker, for he will not be troubled with buyers begging him to let them have brick.

There is a decided slump in the demand for permits to erect new buildings, and the sheds contain old stock enough to last until new brick are ready for the market. One of the yards has twenty-eight arches. The barge which freights them is now on her second trip. It takes about seven arches to load one. There were forty-two or three arches to begin on. If she is as long in making trips as the first one, there will be at least fourteen arches under the shed on July 4.

The present outlook is not very encouraging for a long season. The call for brick depends on the new buildings being erected, and there is a falling off in the number of

—Building Permits Issued.—

From Jan. 1, 1901, to April 25, inclusive, 1,618 permits were issued. From Jan. 1, 1902, to April 25, inclusive, there were 548, a falling off in the first four months of 1,070 permits for new buildings. The cost of the projected buildings last year in those months was $65,919,725. This year the cost is $26,721,144. If the balance of the year is in proportion, and it will be a miracle if it is any better, as the first three months are the banner months, the free brick which go to the market would nearly supply the demand which these figures indicate. The same old game is in force this spring as was in existence last season. The consolidated brick are allowed to lay on the barges, and only bought when others are not at hand, and then plenty of time taken to unload them. Two barges went out together on their first trip in March. One laid in the market twenty-nine days and was seven days unloading. The other was loaded with pale brick, and why such a cargo should be sent at the beginning of the season it is hard to understand, as it is quite a job to sell a barge load of pale at any time. Nevertheless it was done, and, unless the cargo was sold yesterday, it is going on six weeks since the barge left the yard. As the wages of at least two men are going on, and wharfage and watchmen's fees are 50 cents each day and night, or $1 per day, there will be a big bill against those two charges.

—Acres of Brick—

Have been laying at the foot of Fifty-second street the past two weeks. As a barge is about one hundred feet long and thirty-three feet wide, it does not take many to make an acre. When one can count seventy-two lying waiting from day to day for a buyer, it is tough on the shipper. Even that number has been exceeded, as one week there were 104, which goes to show that there is no demand. Having boats lying in market, and, when sold, being detained out of all reason, is beginning to affect, so they say, some of the weak-kneed brethren, and they have withdrawn their brick from the Consolidated Company. Some three or four Haverstraw manufacturers have cast their lot with those who know full well if the present movement fails for lack of support no such prices will rule as have for the past year, and it seems that the brickmakers are courting just such a state of things. It is rather a peculiar state of affairs when a company of men engaged in the same line of business are granted the right to begin making brick when other large manufacturers begin to mold, although all the members are supposed to start on the 5th of May. The Hackensack brickmakers started about the 15th of the month, as the North river members thought that the yards here should have the right to get in with outsiders in the Paterson market. One large yard here would like to control that trade if it could, and, if reports speak truly, has already tried cutting prices.

—A Break in the Coffer Dam—

At the DeNoyelles property, in Haverstraw, from the effects of an easterly storm, will entail a great expense for repairs. As all the clay above water had been taken out, there seemed no other way to get it but to fence in by a tight bulkhead to keep the water out. A large space which was not occupied by yards, but had been about twenty years ago, was fenced in. It required a long time to get the water pumped out, and when that was done there was a great deal of drainage which had to be taken care of. As the four yards which took clay out of the reclaimed land opened their banks, it made the work less, but for several years it was a hard-looking clay bank. It has withstood the storms for twenty years, and it has done well to last as long.

—The Brick Market.—

There is plenty of stock for the buyer to pick from—all sorts and many kinds. Like the moon, full to overflowing at times; yes, at any time more brick are in evidence than should be in the market. If at least one-half were under the sheds it would be better for the shipper; but it seems he cannot get that idea through his head. It looks as if he thought that if he kept his brick under the shed till he is notified where to send, the buyer would not know he was in the trade. The prices rule from $5.25, $5.50, $5.62½, $5.75, $6 and $6.25 top. They might as well be higher, as the buyer could not get them any less, for those who are not in the combine would not sell them any cheaper. They are billed for these rates for the next two months. The prices are right if the call for them was better; but the brickmaker must not expect the earth.

In the death of Ira M. Hedges another man connected with the brick industry is gathered home. Mr. Hedges' first connection with the trade was with the firm of Penny & Hedges. After the dissolution of the partnership he joined with Mr. Geo. H. Smith, and a year or two after, with W. H. Carr, formed the Diamond Brick Company, with Mr. Hedges as president. After working out two leases the firm dissolved. A few years after, with Mr. Smith and others, the Excelsior Company was formed, of which he was president at the time of his death. It is singular that Mr. Hedges' death should come so soon after that of Mr. Smith. Mr. Hedges was president of the National Bank of Haverstraw, and Mr. Smith was cashier since the formation of the bank, thirty years ago. He was an active business man, and whatever he took hold of was made to turn out the best returns possible.

Hackensack, N. J., April 3. A. N. OLDTIMER.

PITTSBURG AND WESTERN PENNSYLVANIA CLAY INDUSTRIES.

THE OAK GROVE BRICK CO., Oak Grove, Pa., will soon begin the erection of their plant. It will have a daily capacity of 80,000 brick. George W. Groom is the president; Edward Lansberry vice president and superintendent; Augustus H. Bostley, secretary, and Samuel H. Drinkwater, treasurer.

The Fayette Manufacturing Co., of Pittsburg, Pa., will build a large brick plant at Chester, Pa. The company operates a plant at Pittsburg, but thinks it will be better to have a plant in the eastern part of the State to supply the demand in that section, rather than pay freight from the Pittsburg works.

The Mound Brick Co., Beaver Falls, capital $15,000, has been incorporated. Directors, Harry W. Reeves, R. L. B. Reeves, Beaver Falls; Edwin S. Wrand, Beaver; William Bald, Bellevue; Harry E. McCalvin, Allegheny, Pa.

The Rochester Clay Pot Co., of Rochester, has been chartered; capital, $15,000. Directors, George A. Rahe, Albert Hamilton, James P. Kerr, John M. McClaren, Edward Willis, of Pittsburg.

The Duquesne Fireproofing Co., of Pittsburg, capital $100,000, directors, Frederick W. McKee, George H. Albertson, J. A. Frauenheim, E. J. Frauenheim, S. W. Cunningham, A. W. Duff, Charles A. Fagan, of Pittsburg, has been incorporated. The company will build a modern plant, with an initial daily capacity of 40,000 brick, at West Winfield, Butler county, Pa. The products of the new company will be all kinds of fireproofing, sewer pipe, buff brick, red pressed brick and other clay products of the company. The property of the company contains two large veins of splendid fire clay and several veins of coal, the Freeport, Clarion and Kittanning veins. There is also a stone 25 feet thick, one mass of sandstone 60 feet thick, two veins of iron ore and large deposits of fine shale. Work on the new plant will be begun at once. The company has opened general offices in the Tradesman's Building, Pittsburg, Pa.

A destructive fire at Sherwood pottery, at New Brighton, on May 8, destroyed part of the plant and two houses. The fire started in the cooper shop, but was put under control there before damaging it to any extent. It originated mysteriously. The loss amounts to between $15,000 and $20,000.

The Gloniger Brick Works, at Vanport, Pa., are putting in new machinery and building new kilns.

The Hutchison-Burns Brick Co. will enlarge their plant at Fairmont, W. Va., increasing their capacity from 12,000 to 50,000 per day.

Speer Bros., of Pittsburg, Pa., have purchased the immense plant of the Douglas-Whisler Brick Co., at Vanport, Pa. The purchase price was $45,000. They will increase the capital stock and make a number of improvements in the plant.

The Phoenix Clay Pot Works, a co-partnership of Pittsburg, and one of the oldest pot factories in the country, has passed into the control of the Phoenix Clay Pot Co., a corporation with $100,000 capital. The old company was rapidly spreading its business, and a change in its organization was deemed wise, hence the formation of the new concern. At a meeting of the Phoenix Clay Pot Co., held in its offices in Pittsburg on the 5th inst., the following officers were unanimously chosen: President, Alexander Ross; secretary and treasurer, H. I. Schwarm. The new factory of this company at Parnassus, Pa., is rapidly nearing completion, and it is expected to have it in operation about May 1.

The Kanawha and New River Fire Brick Co., of Charleston, W. Va., in which Pittsburg capital that is largely interested will erect brick works with a capacity of 2,000,000 brick per year, and will also install machinery for manufacture of tiles, fireproofing, etc. Clay will be mined and hauled by electric power.

The directors of the American Brick Co., of New Brighton, Pa., have decided to increase the capital from $50,000 to $100,000. An increase in capital will be used in larging the plant. Its present capacity will be doubled.

The Reese-Hammond Fire Brick Co. has closed a contract with E. M. Lockard, of Indiana, Pa., for the reconstruction of their works at Bolivar, Pa., that were recently destroyed by fire. The new buildings are to be of brick and stone.

The Wellston (O.) Brick and Tile Co., owned by Walter Beloat and George F. Gates, have received four carloads of their machinery, and will be in readiness to turn out brick by the middle of May.

Plans are being drawn by a Pittsburg architect for a sewer pipe factory to be erected in East Liverpool. The main building will be of brick, three stories high, and there will be not less than twenty-five kilns in the plant.

I. T. Townsend and A. H. Robinson, of Akron, O., are considering the matter of locating a clay manufacturing plant at Clarksburg, W. Va. They are owners and operators of half a dozen large fireproofing and sewer pipe manufactories in Ohio, Michigan and Pennsylvania.

Wilcox & Bolton, of Beaver Falls, Pa., have completed the erection of the buildings and kilns for a brick works at this place that will turn out 25,000 bricks per day.

W. N., J. M. and L. B. Humphrey will erect a modern brick works at Mill Creek, Pa. The plant will be operated under the firm name of the Humphrey Brick and Tile Co.

The American Sewer Pipe Co., of Pittsburg, Pa., is preparing to start its works at Lyth's Station, near Wellsville, O. The plant has been idle for some time.

The straw house of the Pittsburg Clay Manufacturing Co., at New Brighton, Pa., was destroyed May 8 by fire; loss, $3,000.

GILBERT.

VALUABLE ADDITIONS TO OLD POTTERY EXHIBIT ADDED TO PENNSYLVANIA MUSEUM IN MEMORIAL HALL.

SEVERAL VALUABLE additions have been made to the pottery exhibit in the Memorial Hall at Philadelphia, Pa., of late which have attracted considerable attention, and which is composed of an octagon vase about sixteen inches in height, and which is made of a white ware body. On the front of the vase is a full length figure of Stephen Girard in white, surrouned on every side by numerous gold ornaments. The vase was made by Ralph Bagnall Beech, who operated a pottery in about the year 1850 at a point known as Kensington, just outside of Philadelphia. The vase bears his inscription and was made under a patented process invented by himself. The gold has retained much of its brilliancy and the vessel is in excellent condition.

WRITTEN FOR THE CLAY-WORKER.

THE GERMAN CLAYWORKERS' CONVENTION.

THE GERMAN SOCIETY of Clay Ware, Lime and Cement Manufacturers in its various subdivision met as customary at Berlin, the last week in February, for its annual convention. A most instructive and extensive programme was arranged, which proved a veritable feast of technical instruction. It is impossible to include in this brief outline all of the many excellent papers which were read, but a fair idea of the scope covered may perhaps be obtained from the following very much condensed abstract:

In the section for the manufacture of front brick the first technical paper read was by Mr. Duemmler, whose subject was, "The History of the Manufacture of Face Brick in All Ages." He brought out the fact that the making of front brick was always kept separated from the making of common brick. Worthy of special mention is the highly artistic work of the Arabs in Spain, the manufacture of brick and tile, glazed and unglazed and the magnificent brick architecture of eastern Prussia during the middle ages, in which the use of rough and smooth brick was most artistically combined. Mr. Duemmler is strongly in favor of perforated brick on account of the many obvious advantages which they offer. At the conclusion of the paper a good many photographs were shown, illustrating the various architectural effects obtainable with the use of front brick.

The next paper was read by Architect Vogel, who discussed the modern tendency in architecture, with special reference to the use of face brick and terra cotta. It was his opinion that the pronounced modern style dates back only to the Chicago Exposition of 1893. In modern architecture uniformity of color is not desirable, nor a smooth surface. The use of terra cotta opens an enormous field for the architect. Of special importance is the use of proper mortars, which should be prepared by the brick manufacturers.

Following this paper the section allowed 500 marks for a pamphlet which is to show the advantages of face brick over other materials, and 1,000 marks for architectural designs of artistic brickwork. The pamphlet is to be sent to all dealers and architects, and the co-operation of the German Society of Architects and Engineers is to be requested. Special stress is to be laid on the advantages of clay brick over lime-sand brick.

The next technical number was a paper by Mr. Kuehn on the standard requirements for a good front brick. In testing the brick he recommended that the specifications of the royal testing station be used. A good face brick should not absorb more than 5 per cent. of water and should at least stand a compression of 200 Kg. per square centimeter. The bending test is applicable in cases where the brick are projected from the wall and are to support loads. Brick containing lime pebbles are to be rejected; this applies also to the sulphur compounds, especially iron pyrites. A face brick should invariably be proof to the action of the weather. Sulphates contained in the clay should be rendered harmless by the addition of barium. Buff brick should be burnt especially hard in order to avoid the appearance of the green efflorescence due to vanadium. Variations in dimensions should not exceed 1-25 of an inch. Perforated brick are to be preferred, because they are burned harder.

In a discussion referring to the preparing of clays by the wet pan the fact was brought out that this machine is not satisfactory in working a mixture of two clays of different physical characteristics, for instance, a shale and a soft clay, but is a useful machine when only one clay is to be prepared.

Mr. Benfey read a paper on figuring on front brick bids and calculations of cost in construction work of all sorts.

Mr. Wanner spoke about a new pyrometer, in which the temperature is determined by measuring the intensity of the light emitted and comparing it with a standard intensity. A temperature reading can be made in a few minutes. The instrument is comparatively cheap and easily handled, it being constructed like a telescope.

A report was made by Mr. Kreiling on the German patents granted in the past year, referring to inventions of especial importance for the front brick industry. He reviewed about 110 patents.

In the general convention the papers and discussions were of no less valuable character.

The first technical paper was a report by Mr. Glueck on the pamphlet published by the society on efflorescence, and it is his desire to make the booklet as complete as possible, so that it may be used to decide disputes before court. It is especially necessary to fix a lower limit for the content of soluble salts allowable in brick, which is to be determined by examining first-class bricks from reputable works. The conditions of porosity, strength, etc., are also to be considered. The sum of 1,000 marks was allowed for carrying on this work. The amount of 1,500 marks was granted for the publishing of the report on the determination of the injurious character of the waste gases from continuous kilns, which, it has been claimed, tend to destroy vegetation. This matter has repeatedly been brought before court, and hence requires careful attention.

The report on the brickmakers' school at Lauban was read, and it was recommended to employ an additional teacher to give instruction in machine construction. The annual contribution of the society to the school is to be raised from 2,000 to 4,000 marks.

The sum of 1,200 marks was also granted to be used in rewarding faithful workmen who have been employed in one establishment for a number of years. The reward is to consist of a cash premium, a medal and diploma issued by the society.

The amount of 500 marks was allowed for prizes to working men for the designing of new money-saving appliances.

The next paper was read by Mr. Witte, on "The Theory of Drying," in which, however, nothing new was brought out. He advocated the carrying out of elaborate experiments by the society for investigating clays in regard to their behavior in drying.

Mr. Bock spoke on "Capital and Technical Knowledge," in which he stated the various relations of the owners to the superintendents and managers.

Mr. Diremberger stated the advantages of electrical power and lighting, and gave a thorough description of the path of the electric current from dynamo to motor. He also discussed the conditions of elastic installations with special reference to the danger of fire.

Mr. Ballewsky spoke on the advantage of using superheated steam engines, describing the latest engines adapted to superheated steam, superheaters, etc. An engine working with superheated steam requires only one-third the fuel necessary to run a good engine of the ordinary type. A compound engine without condensation, but using superheated steam, works much better than a compound condensing engine of the usual construction, and the durability is the same.

The firm, Siemens & Halske, was represented and produced data on electric haulage. The advantages of electricity were duly stated.

In connection with the subject of power Mr. Dannenberg stated that he uses two benzine motors of six-horse-power each, which use in ten hours benzine costing from 3 to 4 marks.

The question of elevators for passengers and freight was thoroughly discussed, and the various constructions considered.

This was followed by the description of some American brick machines, a roofing tile cutter and an improved turntable.

In the third session the treatment of waste gases from continuous kilns for rendering them harmless for vegetation was elaborately discussed by Prof. Wislicenus, Prof. Ramann and Dr. Kosmann. The injurious gases, sulphuric acid, fluorine and fluo-silica acid are best treated by passing them through a chamber in which they are brought in contact with water, the latter absorbing the injurious constituents. The steam from the water of the clay is specially active in producing the above gases.

Dr. Fiebelkorn showed the advantage of geological maps in looking up clay deposits. By using maps, such as exist in Germany, combining topographical with geological data, the clayworkers may obtain some extremely valuable information.

This paper was followed by a paper by Dr. Kosmann on "The Origin of Clay," in which he showed that clays are not necessarily derived from feldspar, but may originate from other aluminous silicates in various rocks. He thinks that the plasticity of clays may be due solely to hydration.

Mr. Maeckler, in an elaborate paper, discussed the influence of magnesia on the behavior of clays. The effects of magnesia have not been studied so far to any extent, and he made it his task to collect more definite data in this respect. He thus determined that clays containing magnesia in place of lime do not vitrify and shrink so suddenly as the lime clays, or, in other words, vitrification and fusion are much more gradual, and hence the shape of the brick is retained much better. The bricks made of clay mixed with magnesia showed at cone 1 a glassy structure, while the clay free from it was porous and the lime clay had melted. The magnesia does not bleach the red color of bricks as much as lime. On mixing lime and magnesia with kaolin it was found that lime caused the kaolin to shrink and become dense at cone 16, while magnesia produced a dense structure at cone 1. Dr. Maeckler, therefore, recommends the production of magnesia white ware, which becomes hard at a low temperature, being more dense than bodies containing lime and requiring a lower temperature than feldspar white ware bodies. By adding magnesia as magnesite, or even dolomite, the quality of many clay bodies is much improved.

Mr. Loeser read a paper on the German lignites to be used as fuel in the clay industry. He claims that by using the proper method of firing the highest required temperature may be produced.

The next topic was the use of lignite in the face brick industry, the discussion of which was led by Mr. Hotop. He says that this fuel is used to the best advantage by converting it into producer gas. The latest gas-fired continuous kilns have proven to be a complete success, and high temperatures up to cone 14 are easily produced. By introducing the gas through perforated clay pipes a most intimate mixture of air and gas is produced, and hence better combustion results. In one case the cost of fuel was 60 marks for 1,000 bricks of the large German size and at the high cost of German fuel. The gas must, however, be freed from its water content by condensation of the steam in a flue.

This was followed by Mr. Cramer with a paper on the efflorescence produced in the kiln in burning. This he attributes invariably to sulphates, which come from various sources. The continuous kiln is especially apt to produce sulphuric acid vapors. The only reliable means of preventing efflorescence is the use of barium and firing with alternating oxidizing and reducing kiln conditions, since reducing gases tend to expel the obnoxious sulphuric acid.

Mr. Nicolas spoke on a new method of drying brick by using the radiated heat from continuous kilns.

Dr. Hecht reported on some new methods of decoration. One of the new methods consists in treating the surface of calcareous clays with dilute hydrochloric acid. In this way the surface becomes uniformly roughened, resulting in a very pretty effect. This method is patented by Oscar Gerlach.

Another decorative effect is the treatment of glazed or vitrified ware with a sand blast. By applying designs cut in specially treated paper on the hard surface, the portions of the surface not protected are attacked by the sand blast, bringing out the design quite prominently. Also, by applying a thin glaze over a glazed ground and removing the upper layer by the sand blast, very pretty effects may be produced.

The question of fireproofing received a great deal of attention, and a commission was appointed to look into the best kinds of fireproofing. Porosity, it was decided, is more important than refractoriness.

A great deal of work was done by the section of fire brick manufacturers. In this section Dr. Fiebelkorn showed a specimen of crystallized kaolin, obtained through the kindness of Prof. Orton, of Columbus, O., which was donated to the Columbus school by Mr. Geijsbeek, of Golden, Col.

Mr. Cramer made an elaborate report on the relation between the vitrification and softening of clays. He proved that the addition of quartz to clay does not make it stand up better in the fire; but, after all, each clay behaves according to its particular chemical and physical composition.

The work on the behavior of quartz in burning and the effect of slag on acid and basic brick is not yet completed.

Mr. Cramer also read a very instructive paper on pyrometers. He gave a classification of pyrometers into the following division:

1. Instruments depending on the expansion of solids on heating.
2. Based on electrical phenomena.
3. On the diffusion of heat.
4. On the change of state (solid to liquid).
5. On pyrochemical processes.
6. On optical phenomena.

A new pyrometer is that of Hempel, in which the spectrum of the light emitted from the kiln is measured. The higher the heat the longer the spectrum. The reading can be made direct and the instrument is very simple. The difficulty, however, is in observing the end of the spectrum accurately, as sometimes it is not distinct.

The convention of this year, with its various sub-meetings, was one of the most successful ever held, and the society is in splendid condition, both as to membership and financial resources.

WRITTEN FOR THE CLAY-WORKER.

CAPITAL NEWS.

THE CLAY-WORKER SCRIBE RETURNS FROM A WINTER IN THE SOUTH—BUSY NORFOLK AND NEWPORT NEWS VISITED—THE BRICKMAKERS AND BUILDERS OF THE NATIONAL CAPITAL ARE PROSPEROUS—A GOOD SEASON IN PROSPECT.

AFTER HAVING, for some months, been soaked with the salt sea on a Southern shore, and wooed by the whispering pines in the same interesting country, your correspondent came back to the old stamping ground, the D. C. My return trip was over the route followed when going South, an account of which was given in The Clay-Worker.

It was my desire to get into the Dismal Swamp country while returning, but was "switched off" by circumstances in another direction, for which I was sorry; for I could—had I gone into the dismal swamp—told some fine stories about wild animals, snakes, etc., and also told what brickmakers were doing there. Though, I suppose the principal employment of the dismal swamp brickmaker is the production of brickbats for use in killing the snakes.

Speaking of snakes reminds me of a story told by a preacher's wife (a positive fact) who lived in the Dismal Swamp country. Well, the story set forth the fact that, in snake season, it was necessary for people traveling in this swamp to carry umbrellas hoisted, in order to protect themselves from snakes, which fell from the trees.

Business at Norfolk and Newport News—both of which places I visited—was good. Building was going on, and, of course, brick were being made and sold. Norfolk, especially, is moving ahead, particularly in its shipping industry, and a few years hence will see it ranking in this interest with the greatest of our cities, excepting New York.

—Among the Washington Brickmakers.—

The District of Columbia is again on the boom, in the brick and building business. I visited Mr. Theodore Holbrook, president of the Standard Brick Co., and found him very busy. He said that the New Washington Brick Co., of which he is also president, will this season turn out about 30,000,000 brick, and find market for all the product. All the other companies are busy, and making money. Prices for brick are about the same as those of last year.

There has been some little change in the make-up of the Standard Brick Company's list of patrons—those for which the Standard sells brick. This list now consists of West Bros., W. T. Walker, New Washington Brick Co., Virginia Brick Co., Mertens, A. & P., and the Hydraulic Co.

The Jackson Co. and John Miller withdrew from the Standard Co., and now sell their own product.

But whether the Washington brickmaker "goes it alone" or otherwise, he will have little to complain of, in the way of business done, at the end of the season. And the builder evidently will not be "left." And he should not when money is so plentiful that demands for it do not equal the supply, while rate of interest is reasonable—5 per cent.

The buying and selling of houses and lands here took on a wonderful impetus this spring, the sales running from a few thousands up into fair sized fortunes. The new apartment house and the individual structure both are much in evidence, and represent large sums thus invested. One of the former class it is very probable will be built by Mr. John Hay, Secretary of State. This house will cost between $200,000 and $300,000, and will be one of the finest in the city. The situation of the building will be on Connecticut avenue and L street, a very fashionable location. It will cost the "roomer" in this apartment house a round penny for a residence there, but then the elite renter will have the satisfaction of knowing that the author of "Little Leather Britches" is his landlord.

Evidently Mr. Hay is a good business man, and knows that room renting in Washington pays the room owner—the apartment house feature in this city surely pays the brickmaker, apparently, from the huge piles seen looming up in so many localities.

In keeping with this Secretary of State house idea, I may here state that the Italian embassy here will have a new building, to be begun in the near future. The Senate at Rome has recently made appropriation for this purpose. Like Mr. Hay's building, the Italian edifice will no doubt be located in the bon-ton neighborhood. Such is the fitness of things.

—Government Buildings.—

Although there are many new building enterprises on foot, there are a number of those started last year still unfinished, though nearing completion. Among the latter are the Government Printing Office and the City Library. The first is at last in a "walled state," and is house-looking, but such a peculiar-looking edifice—made so by the scaffolding, which covers the outer wall sides in a close network of timber.

The library is having its roof put on, and ere long will offer its store of printed knowledge for the profit and pleasure of Washington's reading people. The edifice is really a beautiful specimen of architecture; but, of course, is inferior to the Congressional Library. But, as the government knowledge preserver cost over $5,000,000 more than that of the city, there should be a vast difference in the two structures, and Congress is still giving money for its library. The architects, Smithmeyer and Pelz, who furnished plans for it, and have waited long for their pay, will probably soon get $75,000 for their work.

It is also probable that Congress will appropriate for the long-looked-for municipal building for this city. The amount will be about $1,500,000, one-half to be given by the city. There is a vast quantity of air being used up by numerous people, who are disagreeing about the proper location for this building, and that item would not make so much difference if Congress wouldn't use so much of the people's money in giving a municipal structure, which does not cut much figure generally—outside of the Capital City.

Another big appropriation which Congress will be urged to make is one for beginning the Memorial bridge. This, however, is of national, historical interest, and will meet with general approval. A new feature in this matter is the recent movement to make popular the "bridge idea" by forming a committee on ways and means, to obtain the co-operation of many throughout the country, in asking Congress to give the necessary funds. Grand Army men generally will take intense interest in the matter. The booklet which will be issued for the forthcoming reunion will be devoted to Washington and vicinity—scenes, forts, camps, hospitals, etc.

The Memorial bridge will cross the Potomac river at points near the Museum of Hygiene grounds and Arlington. The first mentioned place is of historic interest, and is a good starting point for a bridge which will commemorate American war events, for there General Washington once camped, and from the wood-crowned hill looked over the site of the city where later he found his work as President. He also wished the hill site as a place for an American university. This desire was never realized, but the location was used for a naval observatory, and later for the Naval Museum of Hygiene, thus in a measure being connected with matters pertaining to war.

This historic feature in Washington should interest Grand Army men, and all Americans, for that matter.

Another bridge for the District of Columbia is one in the construction of which brick were used. This bridge is across Rock creek and on line with Massachusetts avenue extended. The structure is new, and is composed of concrete with granite ashear facings. The roffits of the arches and the spandrel walls between the faces of the bridge are faced with light-colored brick. The cost of this bridge is $225,000, nearly as much as the amount required to build Cabin John bridge, the longest single stone arch in the country, the next longest in the world.

—Brick vs. Cement Walks.—

In the matter of using brick for sidewalks in Washington there is a new excuse for discarding them and giving preference to cement. I will quote the last District of Columbia report: "The amount of brick walk laid has steadily decreased from year to year. The first cost of brick walk is but little less than one of cement, while the advantages of the latter are incomparably greater. It is almost impossible to obtain a smooth brick sidewalk in Washington on account of tree roots, which grow up under the pavements and displace the bricks. The cement walk, however, is not so easily displaced, although with some variety of trees—notably, the Carolina poplar—the surface growth of roots is often sufficient to lift even the heavy blocks of cement. Largely on this account, as well as on account of other undesirable qualities, the Carolina poplars are removed when new sidewalks are laid contiguous to them, and a better kind of tree planted in their places."

Why not remove the brick "uprooters" or why plant them? I have seen not a little uprooting of cement—also of asphalt—by trees. But the "uprooting" of brick in Washington seems to be given more attention by man than by trees.

The number of square yards of sidewalk laid in the District of Columbia last year was: Of cement, 67,176; brick, 4,035. Price of cement, $1.05½ and $1.18¾ per square yard. The number of square yards of vitrified block laid (in alleys) was 12,000.

Although brick have not cut a great figure for Washington streets and sidewalks, they show up well in the matter of buildings. According to the report cited, the number of permits issued during the last fiscal year was, for brick dwellings, 571; apartment houses, 126, and other brick structures brought the total up to 786. The value of all buildings, etc., was, as rated in permits, $6,194,080. The greater number of improvements went to the northwest section of the city.

In his report the building inspector says: "Generally the structural features of buildings are far superior to those that prevailed several years ago, due to the more exacting details of the regulations and the supervision and construction rendered by this department." In connection with kinds of improvement, he says:

"In apartment house construction $2,183,150 have been expended, while in the same period the erection of dwelling houses has amounted in valuation to $2,088,686."

By this it will be seen that the apartment house has the "call on the dwelling house." From the immense size of many of these apartment structures one may ask: Are the people of Washington going back to the cliff-dweller's style of living?

Washington, D. C., May 10. NICODEMUS.

NEW OWNERSHIP OF WALKER GEAR PATTERNS.

IT WILL BE of interest to engineers and users of gearing generally to know that the H. W. Caldwell & Son Co., of Chicago, Ill., have recently purchased the entire equipment of gear, patterns, molding machinery, gear cutters and all other appliances pertaining to the power transmission business of the Walker Manufacturing Co., of Cleveland, O.

The Walker gears have for many years sustained a reputation for excellence and correctness of design. The Walker system of designing gear teeth is generally recognized as founded upon correct principles. The general satisfaction that these gears have given to users, as evidenced by many testimonials and the fact that they are preferred by many mechanical engineers, has established for these gears an enviable reputation. The Walker pattern list is probably the most complete in existence, and from its wide variety it is possible to find almost anything to meet the requirements of any situation where gears are to be used.

The Caldwell company state that they are prepared to furnish gears from the Walker patterns promptly, and that they will maintain the high standard of excellence established for these gears by the Walker company.

Another unfortunate oiler in a Pacific coast mill was caught in the act of putting on a belt, and instantly killed. In view of the many accidents from this cause, it does seem as if those in charge of belting would exercise more care than is usually taken. The margin between safety and injury is so narrow that nothing short of eternal vigilance will suffice in the handling of belting on running pulleys. The surer one is that he can slip on a belt with safety while the pulley is moving, the more apt is he to get caught in the act at a most unexpected time. The rule for putting a belt on a running pulley is a paradoxical: To do so safely, stop the pulley.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Good Place to Start a Yard.

Publishers Clay-Worker:

In reply to yours of the 10th, inclosing bill for subscription to The Clay-Worker, would say that I am not now engaged in the manufacture of brick, having been compelled by physical disabilities to retire some time since. But I still enjoy reading The Clay-Worker and watching the progress of manufacture and improvements in machinery. There are no brick manufactured in this town at present. There is a first-class opening for some party to start a small plant, with an assured and growing market for the product. Municipal authorities are now making arrangements for paving one of our business streets with vitrified brick. Work will begin in a few days. Inclosed find my $2.00. GEO. C. DAVISON.

Tyrone, Pa., May 13, 1902.

Brick Roadways Best.

Editor Clay-Worker:

I have been studying the article in the April Clay-Worker by Prof. Ira O. Baker on the subject, "Traction on Wagon Roads." I am sorry that I am not sufficiently acquainted with engineering terms and expressions to appreciate fully the value of Prof. Baker's paper. We ordinary "mudlarks" are not supposed to be up in scientific terms, but Prof. Baker's paper makes it clear even to my mind that, in plain terms, heavier loads can be hauled over brick-paved roadways, with less power than over other pavements. I ride a bicycle and have long been of this opinion. I know from the effort required to propel my wheel that a brick pavement is easier to ride over than asphalt, wooden block or granite pavement. I am glad that Prof. Baker has demonstrated this in a scientific way. I think that it would be a good thing for the advocates of good roads to cut out Table VI of Prof. Baker's paper and paste it in their hats. It proves clearly the advantages of brick pavements over asphalt, and if Prof. Baker would come over into Ohio, where we have better brick pavements than they have in Chicago, we believe he would find a much greater difference in favor of brick roadways. I, for one, feel that Prof. Baker is entitled to a vote of thanks for what he has done in this matter. A BUCKEYE.

The Boom Reaches Maine.

Editor Clay-Worker:

The eastern Maine brick manufacturers will persist in sitting in darkness, admiring the crack in the roof of the cave and imagining it to be the sun. They are beginning now to awaken slowly to the fact that the real sun is shining in a fair and progressive world outside, but they haven't got out of the second-hand end of the improvement band wagon yet. The last of the mud yards in the vicinity of Bangor (where at one time there were twenty-five or thirty) is working out its lonely existence for several weeks past. Three other yards are in operation: W. S. Hellier, Bangor, with two Martin sand machines; William Burke, Brewer, with one Martin sand machine, and Hugh O'Brien, of Brewer, with two Martin machines. O'Brien is installing a steam brick plant on his premises, which will run out 50,000 side-cut bricks a day and will be ready in a few weeks.

The weather is a continuous sandwich of one dry day between two wet ones, spiced with changes from August humidity to polar severity.

Brick have been selling for $7.75 per thousand. Mudyard hands are getting $40 a month and board. Men are scarcer than ever. Operators are bothered to find any kind of men.

Maine never boomed as it is booming now, from end to end, in city and country. The output of brick will be larger than for many years. Send me an N. B. M. A. badge. I don't deserve it, but I want it. DUNN.

A Good and Effective Medium.

Publishers Clay-Worker:

We are pleased to report that the volume of business which we are doing this year is greatly in excess of what was done during last year, and we have no reason to complain for lack of business. We may say that we attribute a considerable portion of this business to orders received through the medium of the Clay-Worker, as it seems to reach the clayworking trade in all parts of the country. THE CLEVELAND CAR CO.

Cleveland, O., May 1, 1902.

Can't Keep Up With the Demand.

Publishers Clay-Worker:

Yours of recent date to hand. We manufacture every month one million brick, one-half dry press, both buff and red, and one-half stiff-mud, impervious face red, and find a market for every one, and more if we could make them. We found building this season about sixty days behind any year for three years for our class of goods, but the market has opened up now, and it is impossible to load brick fast enough to suit the trade. We make a stiff-mud brick which we think is far superior to any such class of brick made in this country, or even the world. They have the appearance of dry press brick, and so far as durability is concerned, they are far superior. We burn our brick extra hard, making them nearly impervious to water. If you would accept samples, we would be pleased to send you samples, charges prepaid, of our stiff-mud impervious face, so that your readers and your friends could see the class of goods we put out. We have just commenced to manufacture this class of goods. Herewith please find voucher and check for $2.00. Kindly receipt and return.

CAYUGA BRICK AND COAL CO.

Cayuga, Ind., May 13, 1902.

The Chicago Brick and Building Situation.

Editor Clay-Worker:

This will have to be a short letter, for we are all too busy to write about our doings. The building boom is on and the demand for building material of all kinds is simply immense. I will miss my guess if this year's building operations in Chicago do not exceed in the aggregate those of any previous year in the city's history.

The Illinois Brick Co. is running all its yards, and making additions to a number of them in order to increase its capacity. The independent companies all seem to be doing well. The American Brick Co. especially has had more than it can do. I was told that they now have orders on their books for 41,000,000 brick, to be delivered this season. Their plant is running night and day. That is, they are running two shifts of eight hours each, making in all 320,000 brick per day.

A new plant is being built at Glenview, seventeen miles out, on the Chicago, Milwaukee & St. Paul railroad, by Harmes & Brockman. They are putting in a complete Chambers outfit. Another North Side yard is being built at Lakeview. It will be known as the Lakeview Brick Co.

D. V. Purington and wife will leave the latter part of the month for a visit to Maine, where he was born. Now that Mr. Purington is no longer connected officially with the Illinois Brick Co. he is taking life easy. There is no danger of his getting rusty, however, for he still has the active management of the Purington Paving Brick Co., and a concern that turns out sixty cars of brick a day can keep even a man of Mr. Purington's energy from getting "stale."

The brick market has taken a slump. Prices are now ranging little above the $4.00 mark. While I have not bought any myself, I understand brick are being sold for from $4.25 to $4.50 delivered. There is not much encouragement in this for the building of new plants.

The Simpson Manufacturing Co. went into the hands of a receiver the latter part of April, Charles F. Davies, 95 Dearborn street, having been appointed to wind up the affairs of the concern. Mr. P. L. Simpson has established himself at

1763 Monadnock Building, and is again starting out for himself under the firm name of the Simpson Engineering Co., and is prepared, he says, to fill orders for Simpson presses, pulverizers, screens, etc.

The city of Chicago operates a brick plant of its own. It is run under the direction of the superintendent of the House of Correction, and is worked by convicts. Fifty thousand brick a day are made and are used for city work of various sorts.

The Chicago Brick Machinery Co. have had a very satisfactory spring trade. Genial John Moroney was heard to remark recently that he wished he had been born twins that he might be in two places at once and thereby sell two Berg outfits where he now sells one.

Chambers Bros. Co.'s local representative, Davis Brown, is proving equal to his opportunities, and they have been numerous since the first of the year. Chambers machinery was never more popular in Chicago and vicinity than it is now.

Chisholm, Boyd & White are running their immense shops at Fifty-seventh and Wallace streets to their full capacity. They have orders ahead that will keep them going steadily all summer long. H. J. Flood now directs the company's affairs and is one of the busiest men in the Windy City. It is lucky for him and the company, too, that he has an immense capacity for hard work.

Chicago, May 15, 1902. FAX.

WRITTEN FOR THE CLAY-WORKER.

POTTERY NEWS.

CONSOLIDATION IS AGAIN in the wind, and from all appearances it looks as if at least a part of those now talked of would be a "go." In East Liverpool, O., about the most promising one is that talked of between the Knowles, Taylor & Knowles Co., the Edwin M. Knowles China Co., the Taylor, Smith & Taylor Co. and the Homer Laughlin China Co. The Knowles, Taylor & Knowles Co. operate the largest plant in the world, and the Laughlin plant comes next, and is the most up-to-date and neatest plant in the world. The Knowles, Taylor & Knowles Co. operate thirty-one kilns and the Laughlin people twenty-eight. It is probable that the consolidation will be a "go."

The Smith-Phillips China Co., of this city, are erecting another kiln, making the capacity of their works six kilns. The company are also erecting a new seggar house and removing their grog pan and other seggar machinery into the new quarters. They have enjoyed a very good run of business since taking hold of the plant they now have about a year ago, and are running it to its fullest capacity.

All of the machinery has been shipped from East Liverpool to the new clay mines being opened up at Henry, Va., by the Blue Ridge Kaolin Co., of which D. E. McNicol, of the D. E. McNicol Pottery Co., of this city, is president. C. N. Forster, also of this city, will have charge of operations at the mines for the time being. Mr. Forster is also interested with Mr. McNicol. The clay deposits at this point are very large and the clay is of an extremely fine nature. The machinery for the new mines being opened up in Wisconsin by W. S. Clow, of the Illinois Zinc Co., at Peru, Ill., is also nearly ready for shipment.

The stilt and pin works of Burgess & Co., of East Liverpool, will soon be removed from their present location and will go to the company's new site in the East End. The new works of the concern will be located in what is known as the Supple Land Co.'s tract, and will be just above the other claywork-ing establishments located in that part of the city. The new works will be up-to-date in every particular.

The Golding & Sons Co., of this city, have consolidated with the four other mills under the same name, and which are located at Trenton and Wilmington, N. J., and Hockessin, Md. It is probable that other people in the same line of trade, and who own mills located near these points, will also be taken in in the near future. The consolidation will make no change in the management or general run of the business whatever, but will run along in the same manner as heretofore. The concerns grind flint and spar for pottery use.

Work has been started on the new works of the East Liverpool Seggar Co. It is probable that the works will be ready to run within the next sixty days. All of the machinery has been installed, and the building of the kilns is all that is holding them back.

The C. C. Thompson Pottery Co. are erecting new kilns and decorating kilns at their already extensive works. The company, up to the present time, have been unable to keep up with their orders, but expect to be able to successfully meet the trade with their increased facilities.

The National Furnace Brick Co., with offices in this city and works at Rogers, O., will start up in full blast next week. The company have been running along lightly for the past three weeks, but will start in full at the time given above. They have been somewhat delayed by the erection of their kilns. The works were erected last year, but were completed too late to do any business. They will make only a strictly high-grade hand-made brick.

The Colonial Sign Co. has been incorporated at Akron, O., with a capital stock of $25,000, to manufacture porcelain signs. The company is incorporated under the laws of the State of Delaware. The signs were perfected by G. D. Chapman and C. K. Quine, who are members of the new concern.

A small pottery owned by Harvey Bolen, and located in what is known as Putnam, Zanesville, O., was destroyed by fire on April 17. The plant was not operated by Mr. Bolen, however, but had been leased by Munch & Stroop, who were operating the same. The fire was caused by a stove which had been used for heating purposes and which became overheated. The pottery was a two-story frame building, and was damaged to the extent of about $2,000, which, however, was entirely covered by insurance. The loss to the stock was not great, as the stock was very low.

There is a movement on foot in Trenton to erect a monument to that well-known deceased Trenton potter, John Hart Brewer.

The Akron Roofing Tile Co. has been incorporated at Akron, O., with a capital stock of $100,000. The new concern will take over the former business of J. C. Ewert, who will retire. Mr. Ewert was engaged in the manufacture of this class of goods in Akron for many years.

The H. E. Manon brick works, located at Defiance, O., have been sold to J. C. Neff & Co., of that city, who will continue to operate the same.

Extensive repairs are being made at the Coleman works of the United States Fireproofing Corporation, which are located near Lisbon, O. The company is putting in first-class shape all of the plants controlled by it. The H. A. Thompson works, located at Salineville, O., have been sold to this company by their former owners, H. A. Thompson & Co. The plant is equipped for the manufacture of brick only at the present time, but this will be changed at once into a fireproofing factory.

Contracts have been awarded for the erection of the buildings of the new five-kiln white ware pottery to be erected at Crooksville, O., by the Crooksville Art Pottery Co. The contract for the buildings was awarded to parties located within that city, while the contract for the erection of the kiln was awarded to Gamble & Surles, of East Liverpool. The order for the machinery was placed with the Paterson Foundry and Machine Co. The company expects to have the plant in operation by Sept. 1. It will be one of the most complete and up-to-date factories in this country.

The Zanesville Art Pottery Co., of Zanesville, O., are getting well under way, and are now firing their first kilns after the disastrous fire which entirely destroyed their works about one year ago.

The Ashwood Pottery Co. have leased the plant of the Chittenango China Co., located at Chittenango, N. Y., and will engage in the manufacture of fancy terra cotta.

The Chelsea plant of the Union Potteries Co., located at New Cumberland, W. V., is rushing things hard, and has all that it can take care of. This plant was shut down for several years, and did not turn a wheel, not a piece of ware being made during all that period. However, since the Union company took hold of it, about a year ago, the plant has been run steadily ever since, about three hundred men being employed. The pottery contains eight kilns, and it is reputed to be one of the best plants in the country.

The Ohio Stoneware Co., at Akron, O., is installing some new machinery, which will consist of an entirely new clay-washing outfit and a new engine and new boilers. Some slight additions will also be made to the plant.

S. A. Weller, the Zanesville, O., potter, has moved into his new offices, which are located in the new buildings recently added to pottery No. 1. The offices are elegantly fitted up in bank style, and certainly do the pottery credit. The sample rooms recently fitted up by Mr. Weller are also very nice. The goods made at this plant are of a very fine class, and are of the Rookwood nature. In fact, they are recognized as the only competitor of that well-known company. TOM POTTER.

Written for The Clay-Worker.

A BRICKYARD BOUT.

By Brick-a-Bat.

DID YOU EVER NOTICE that on brickyards in the South nearly every one has a negro who is what the other negroes call the "boss's pet"? Just how much of a pet he is would be hard to tell; but one thing sure, you will find him. Every one has something to say to him, and if a joke is to be played he will be the victim, and if the boss has a shirt to give away he is the recipient also.

He is quickly and accurately spotted by the other negroes, and while he has a certain influence with them, nevertheless they have little love for him, and once in a while he has to defend his "position," though it is not often you find any negro who dares to fight him.

On our yard Arthur was the lucky one. He was quick, intelligent and apt at his work and had a ready tongue, which was his main stay and served him well.

We all liked him, as he was ever ready to do our bidding and helped to pass many a dull hour by his comic wit and really surprising repartee.

But even his power had its limit, and he came to grief one hot afternoon. He was trucking from the machine, and as space was scarce we were hacking on the low combusting chambers of our hot floor dryers. Arthur and the hacker had been "fussin' an' kussin' " all day long. Amos had taken a great deal as he hesitated to hit the "pet," but being a large, well made young fellow, he was confident he could whip Arthur, only he feared some complication might set in and all would not end as expected. Arthur saw him hesitate, and believed should he at last take courage and jump on him, the machine boss would at once step up and part them. Arthur had no little fear of being whipped, though he was not certain if the fight should be allowed to take its course.

Late in the afternoon he became so overbearing that Amos laid aside all prudence and closed with him on the narrow combustion chamber.

They sparred and made a few upper cuts, and with much loud "kussin' " Arthur hoped to have the boss come at once to his relief, but, to his consternation, he said, "Here, John, truck in Arthur's place and you, Joe, hack for Amos. I've heard enough talk out of those two negroes and we'll just let 'em fight it out."

Now, the boss knew Amos could whip Arthur, and he wanted to learn him a lesson. Could you have seen the expression on Arthur's face as he listened to the words of the boss you would have seen a look of confidence give way to one of fear.

It was about all he could do now to defend himself, and it was evident to all that he would soon be whipped. He made a desperate effort, for it would not do for this common laborer to get the best of him.

He looked over his shoulder, hoping to see the superintendent coming, as news of a fight went like fire over the yard.

To himself he was saying, "He must come quick or I am gone for good. Next time I'll hold my tongue."

Again he looked over his shoulder and Amos came near knocking him down by landing his right fist on Arthur's shoulder, but that was all right, for Arthur saw the superintendent hurrying by the engine room and in a minute he would be on the scene.

So he rallied his waning strength and rushed at his adversary in a dangerous manner, quite surprising to the many "on lookers" who had not seen the approach of the superintendent.

Arthur became so reckless in his fighting that he did not heed the superintendent's command to desist, and a stray lick hit the peacemaker on the head and knocked his hat in the air. The superintendent grabbed him by the shoulders and threw him over into the pit, some eight or ten feet below. Arthur gathered himself together and with all his old-time self possession and dignity said "Its a good thing you come, for I was just going to teach dat nigger how to sass his betters."

A FROST FOR CANADIAN BRICK MANUFACTURERS.

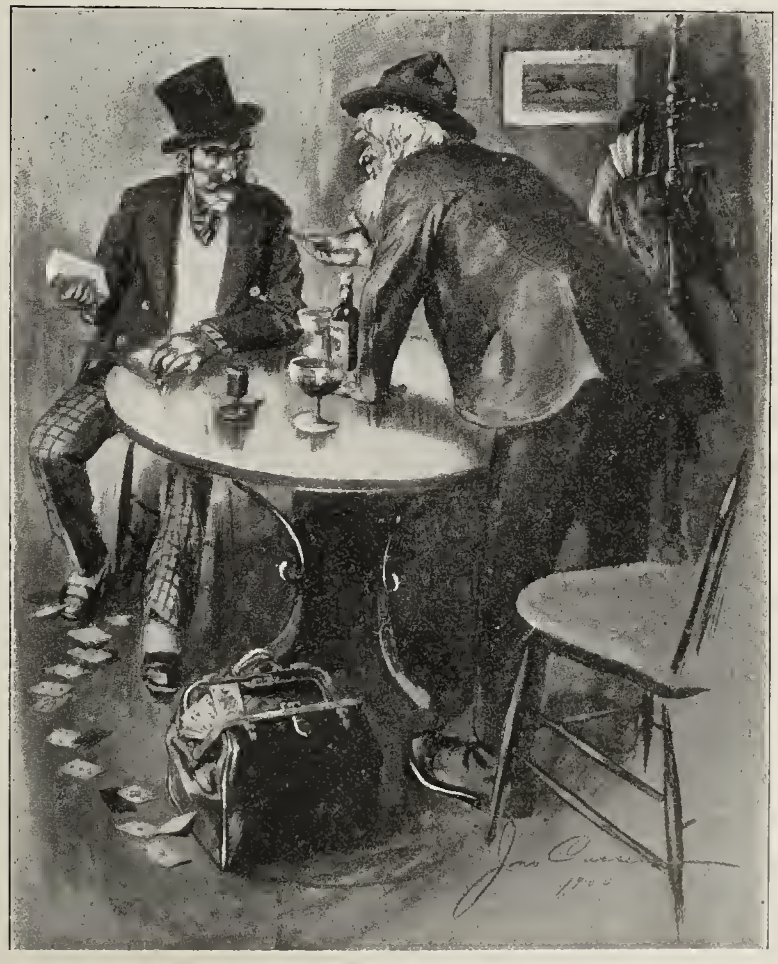
The brick manufacturers of Ottawa, Canada, suffered a severe loss from frost recently. Nearly all of the yards had started the 1st of May, and thousands of brick were frozen. Alex. Graham, of Ottawa East, lost 150,000 brick, having started about a week before the others. The Ottawa Brick Manufacturing Co. was the next heaviest loser, 120,000 being destroyed. King & Mulligan lost 75,000 and Thomas O'Reilly 75,000. These three manufacturers have yards at Hog's Back. Odell Bros., at Ottawa East, were the safest, losing only 30,000. They began operations a little later. Ballantyne & Conn, of Billings' Bridge, lost 100,000 brick and had the water pipes and pump badly damaged by frost. There is a big demand for brick among builders and the first on the market would have claimed a high price.

AFTER A SINGLE INSERTION.

In a recent letter F. W. Dennis, Atlanta, Ga., inventor and builder of the New South and Florida up and down draft kilns, says: "I wish I had commenced advertising in The Clay-Worker years ago. I am getting more inquiries than I ever dreamed possible."

No matter what you pay a certain paper for advertising, if it brings a fair profit it is cheap.

Trying to do business without advertising is like trying to navigate a ship without a compass.



Bunco Steerer—That 'ere gold brick, Podner, represents two years of hard toil in the Klondike!

Farmer Greene—Shake, old hoss! I've got one that represents six months' hard toil in Moose Medder! You ain't the only guy that's got stuck on 'em.—Puck.

THE MOST EFFICIENT OUTDOOR SYSTEM FOR HANDLING AND DRYING BRICK

BRICKMAKERS who are operating summer yards, drying by the outdoor system, will find it decidedly to their advantage to investigate thoroughly the method and system introduced by the Scott Patent Brick Car Co., Knoxville, Tenn., whose ad. appears on page 600 of this magazine. Those who are using this system insist that it is the best and most efficient system of handling and drying brick on open yards. It embraces a perfect car system, by which the brick are conveyed from machine to yard and yard to kiln on pallets, thus obviating the necessity of handling the individual brick. By this system the brick are not touched after being taken from the machine until tossed to the setter in the kiln.

The inventor of the Scott system is a successful brickmaker of many years experience. Knowing the needs of the business, he has with rare inventive skill contrived a system by which with but two cars the entire output of the machine may be handled easily and quickly. While the Scott system has been offered to the public less than a year, it is already in successful operation in some of the largest plants in the country and in almost every State in the Union.

This system gives every advantage of an artificial dryer without the first cost or daily expense. This outfit consists of two elevating and lowering brick cars for a thirty to forty-thousand-daily-capacity brick plant. Two of these cars will take the place of 500 common cars. They are superior cars, made of channel steel, with 18-inch roller-bearing wheels, with movable deck, which is raised and lowered by a compound lever. From two to five hundred brick are placed on a pallet, the car is then run under the said pallet, the lever being lowered, raises the pallet and brick off the rest; the load then being on the car, said car is run on the yard, the lever raised, which places the pallet and brick on the rests, where they are left to dry. After they are dried they are picked up by another car in the same way and taken to the kiln.

This car system is being universally adopted all over the country, and we have yet to hear of anything except perfect satisfaction. We advise our readers who are interested in this matter to write the above named company, who will take pleasure in giving details and any information that may be desired. They are of the highest commercial standing, with a known reputation for business integrity and fair and honorable dealings, and we can assure our subscribers that their inquiries will receive the same courteous treatment and businesslike replies as have characterized their transactions heretofore.

DICKEY CLAY MFG. CO.'S NEW PLANT TO BE LOCATED AT CHANUTE, KAN.

Walter S. Dickey, president of the Dickey Clay Manufacturing Co., closed a contract April 26 for his company's new Kansas plant and purchased 148 acres of land adjoining the city limits of Chanute. Within thirty days work will begin on the construction of what will be the Walter S. Dickey Clay Manufacturing Co.'s largest plant. It will be just south of Chanute and spurs from the Atchison, Topeka & Santa Fe and Missouri, Kansas & Texas railways will run through the plant.

"It is a fine location," Mr. Dickey writes. "We have two gas wells on the farm. The city of Chanute has given us a favorable contract for water from the city water works plant. The material for making the finest kind of tiles begins at the grass roots and extends down I don't know how far. We have dug through 60 feet of it and it will be a long time before we can use up that much material. Our first mill will be capable of grinding from 300 to 500 tons of shale daily. That in full blast would work from 150 to 200 men. The plant there is one that will grow rapidly, and I don't want to make any estimates of the number of men who will be employed in our factory because it will all depend on the business.

"We will make building brick, vitrified paving brick, fireproofing, hollow brick for interiors of buildings and farmers' tiles. As soon as we get started we will make two things that will interest every farmer in the West, particularly in the country where there is prairie grass. They are tile fence posts and cattle guards. The upper parts of the fence posts will be iron pipe, of course, but the part that goes into the ground will be burned tile. This will be our biggest plant. Fuel costs us nothing. There is a good supply of water at reasonable terms and the best shales for our purpose in the country. I think we have made a good bargain."

OHIO VALLEY POTTERY GROWTH.

INTERESTING FIGURES SHOWN BY TWELFTH CENSUS REPORT.

THE FOLLOWING comment on the pottery industry of Ohio appears in a bulletin just issued by the Census Office:

"There were 248 establishments engaged in the manufacture of pottery, terra cotta and fire clay products in 1900, with 11,870 wage earners and products valued at $11,851,225. In 1890 there were 125 establishments, 4,606 wage earners and products valued at $5,047,501. The increase in the value of products during the decade was $6,803,724, or 134.8 per cent. The pottery products were valued at $6,994,805, and the terra cotta, fire and other clay products at $4,843,615. Ohio rose from second to first rank in this industry between 1890 and 1900. In the latter year the total value of its pottery, terra cotta and fire clay products constituted 26.8 per cent. of the total for the United States. The rank of Ohio in this industry is due very largely to the development of its extensive deposits of suitable clays. The value of special technical training is appreciated and a department of ceramics was established in the State University at Columbus in 1894.

"The manufacture of white ware, the most important of the several branches of the industry is carried on chiefly in the city of East Liverpool, on the Ohio river, in the eastern part of the State. This city is unique in the United States, in that its industrial activity is confined almost entirely to the manufacture of pottery. Of the 4,473 wage earners employed in all industries in this city in 1900, 3,900, or 87.4 per cent., were employed in the pottery manufacture.

"The manufacture of yellow ware has been carried on at this point since 1839, but the manufacture of white ware began in 1872, and has become the more important branch of the industry.

"In 1900 the white granite ware and semi-vitreous porcelain made in East Liverpool amounted to $2,808,445, or nearly 50 per cent. of the total amount manufactured in the United States.

"The manufacture of white ware does not have the advantage of suitable clays near at hand, the clays used in the manufacture of this class of goods having to be freighted quite a distance, the remarkable development of the manufacture in East Liverpool between 1872 and 1892 being chiefly due to the fact that it is much easier to obtain skilled labor in that city than elsewhere. Zanesville, Roseville and Akron, O., have always been important centers for the manufacture of a certain class of goods, and this center has been growing until at last we are to have a white ware plant at Crooksville, O., a great stoneware town located fourteen miles from Zanesville, O. The name of the new concern is the Crooksville Art Pottery Co., and their plant will be completed about September 1.

William Bell, general manager and treasurer of the Bell Pottery Co., Findlay, O., died in that city May 12.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

NINETEENTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

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One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

Foreign subscriptions 65 cents additional.

☞Subscribers when ordering a change of address should give both the old and new address.

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

27 Monument Place.] T. A. RANDALL & CO., Indianapolis.

XXXVII. MAY, 1902. No. 5.

CURRENT COMMENT.

In almost every large market the demand for brick is fully equal to, if not a little beyond, the local supply. If brickmakers will be neighborly, co-operate with one another and keep up prices, this ought to be a very profitable year.

* * *

In another column we publish the form of agreement under which the Buffalo brickmakers have operated successfully for some years. What works well at Buffalo ought to answer a good purpose in other localities. Organization is the thing. In one form or another it should prevail in every clayworking center, that there may be a balance on the right side of the ledger at the end of the season.

* * *

A recent trip East afforded an opportunity for a little study of the brick architecture of that section, and we must say we were somewhat disappointed in the character of the brickwork. It is not up to the high standard which prevails in most Western cities. More care and more skill is exercised in important structures in the West than appears to be the case in Eastern cities.

* * *

The correspondent who, over the signature of "A Buckeye" calls attention to Prof. Baker's able paper in the April Clay-Worker on "Traction on Wagon Roads" is correct in his summary. The results of Prof. Baker's experiments prove that, stated in plain terms, it is easier to haul a given load over a brick paved roadway than over any other. A good many people think that because an asphalt pavement appears smooth to the eye that it affords easy hauling. This is wide of the truth and especially in hot weather, when the asphalt softens under the heat of the sun.

* * *

The postponement of the St. Louis Exposition to 1904 and 1905 is a wise move, and one that was pretty generally expected. It will enable those at home and abroad both who desire to make exhibits to plan and provide for better displays than could possibly be made at an earlier date.

* * *

The National Drain Tile Co. is the name of a new Indiana corporation which will have headquarters at Terre Haute. The company has $150,000 capital stock, all paid in. They are now building a large tile factory near that city, in connection with which they will also operate the plant of the Summitville Tile Co., at Summitville, and the Montezuma plant, formerly operated by the same concern, and the large tile factory at Hillsdale, Ind. Samuel C. Cowgill is president of the new company and those associated with him are J. M. Powell, of Orestes, James Luther, L. R. Whitney and Sylvanus Free.

* * *

According to newspaper reports, plans are now under way for the formation of a large brick consolidation to take over various brick plants in Canada. The new company will have a capital of half a million dollars, and the location of its head office will be Ottawa, the capital being the most central location. It is understood the new company will be known as the Dominion Supply Co., Ltd., and will deal in all kinds of building materials. Full details have not as yet been determined, but incorporation papers are now being prepared. A number of American capitalists are understood to be interested in the project.

BOSTON BUILDING REGULATIONS.

The building regulations of Boston are certainly the best in this country. They are intelligent and thorough from all standpoints. Not only do they call for a good class of construction, but the expression is such and the definition so clear that no one can misunderstand them. Within the near future we shall undertake to make minor extracts, which will indicate the clearness and thoroughness of the Boston document relating to their building regulation.

A new department is to be installed in the Massachusetts Institute of Technology of Boston, which will take up the question of insurance engineering. The idea is to educate young men and young women who will be familiar with everything which relates to the cause of fire loss and the means of reducing it. This department will be practically supported by the manufacturers of New England, and all the materials and documents of the Manufacturers' Mutual Insurance Association of New England will be turned over to this new department. Mr. Edward Atkinson, president of the Mutual Company, will be instrumental in establishing this important work.

A personal examination of the building situation in Boston and other Eastern cities justifies a general statement that they are probably doing more work and using more building material in proportion to population than any other city in the East. Building work in Boston is being well done, as far as its absolute structural features are concerned. The work there is being done with the idea that it must pay a very low rate of interest on the investment. It is being done with cheap money. Three and a half and four per cent. for mortgages that are made or bonds that are issued. Therefore, the work is well done, with a view of reducing the cost of maintenance and the cost of repairs. It is very instructive to one interested in this sort of thing to study the modern structures of the East. It is a matter that we must come to and will surely meet the necessities developed by the low returns which come from ordinary investments. Low rates of interest and good construction must join hands. L. H. G.

TRADE LITERATURE.

BRICK AND TILE YARD SUPPLIES is the title of an interesting little catalogue bearing the name of the Arnold-Creager Co., New London and Cincinnati, O. The business of these two concerns has been consolidated and will hereafter be conducted under the direction of D. J. C. Arnold. The catalogue illustrates the various supplies for brickyards, sewer pipe and tile works, and includes dump carts, clay carts, tempering wheels, brick trucks and barrows, dumping tables, brick molds for hand and machine yards, kiln castings, etc. Write for a copy, mentioning The Clay-Worker.

* * *

ENGINES AND BOILERS is the title of an exceptionally handsome catalogue received from the Frost Manufacturing Co., Galesburg and Chicago, Ill. It is illustrated with beautiful half-tone cuts of their various styles of engines and boilers, which are made in sizes and capacities to meet the needs of all kinds of manufacturing. If the reader is in the market for a boiler or engine of any capacity, he ought by all means to get a copy of this catalogue. It can be had for the asking. Address the Frost Manufacturing Co., Chicago, Ill.

* * *

1902 BRICK MACHINERY is fully illustrated and described in an attractive catalogue issued by the Wellington Machine Co., Wellington, O. All iron and steel "Monarchs," steam-power "Quakers," are pictured, as are also their improved clay disintegrators, mold sanders, brick trucks and other brickyard supplies. One cannot look through the long list of brick manufacturers who are using Wellington machines without realizing that these "Monarchs" and "Quakers" are meeting the requirements of the trade. A copy can be had for the asking.

QUESTIONS AND ANSWERS.

—A Problem in Fuel Values.—

It is almost an everyday occurrence for the editor of The Clay-Worker to receive requests for information upon various features and phases of brick, tile and pottery manufacture. These inquiries usually come by mail, but occasionally they come by wire. The following is a copy of a telegram recently received:

"Can you tell me how much clay a ton of soft coal will burn in the manufacture of sewer pipe and tile, including the coal used for steam purposes in the mill proper? Answer at my expense."

We replied promptly that the specific information desired could not be given exactly. Being curious to know how practical clayworkers would answer the question, it was submitted to a number who are considered authorities on such subjects, and we submit some of the replies received. As might be expected, Prof. Orton comes the nearest to giving the precise information desired. He says:

"Under average conditions, that is, average coal, average red burning shale, or No. 2 fire clay, and kilns of ordinary size, fired to about cone 1, I figure one pound of coal will burn about five pounds of clay, including steam power and drying."

Another well-known technicist replies as follows:

"I do not think it is possible to give even an approximate answer to your question. No two clays are exactly alike, and when steam is to be reckoned also the problem is still more complicated. As a rough guess, I should say it would take three tons of coal to produce a ton of clay ware, at least. I have no data to work from and the matter involves considerable calculation."

A sewer pipe and tile manufacturer of many years' experience says:

"There are too many things to take into consideration to enable me to estimate the amount of coal required to burn a ton of clay."

Another equally extensive manufacturer of sewer pipe writes:

"Coal differs so much, as well as clays, that the question cannot be answered except in a very general way. A great deal depends on the clay, but we must also consider the style of kiln and the man behind the shovel firing the kiln. Then, too, different sizes of pipe require a different amount of fuel. For instance, 36-inch sewer pipe takes nearly 50 per cent. more fuel than four or six-inch pipe."

W. S. Ravenscroft replies as follows:

"The nature of the clay and the quality of coal would each enter into such a question, but assuming that conditions are averaged with each, as well as with the kiln, I should say three ounces of coal to a pound of clay. I think this can be lessened, but not with the present usage. I should, therefore, reply as follows: Assuming clay, coal and kiln of average grade, figure three ounces of coal to one pound of clay."

Mr. Eudaly's estimate:

"Too much depends upon the character of the clay and coal, the kind and size of kilns and fire boxes, the size of the pipe and the thickness of the green shells, the dryness of the pipe when set, the method of setting, together with the skill of the fireman, for anyone to make a definite statement. Under ordinarily favorable conditions and circumstances, I should say, one ton of coal will burn from two and one-half to three tons of sewer pipe. This, of course, will not include the amount of coal used for steam power."

How the question appeared to Charles T. Harris:

"Suggests to my mind for an answer the repeated remark of the comedian in Florodora: 'You don't know, I don't know, nobody knows.' The question makes me think of some of the foolish arithmetical problems of my boyhood, as to there being so many people in the room, how large is the room? Of course, it will depend upon the size of the people and how closely they were packed together. Your question does not give any data whatever for a proper solution of the problem. There is much difference in the steam-making coefficient of soft coals and also of burning efficiency. There is an immense amount of difference in the heat required for right results on different clays and of the product referred to. I am not a clairvoyant nor a mind-reader, and so pass the question up. What are you driving at, anyway?"

D. V. Purington's guess:

"Too much depends on kind of clay and kind of coal to make definite reply. Is clay to be measured or weighed? It is evident that the information is asked by a person having no knowledge of clayworking or burning. To obtain such knowledge he should be willing to pay for expert testimony, and if he contemplates going into the business he could afford to pay liberally."

A veteran "Buckeye" burner's views:

"Ye gods, what a question! I think I should be tempted to answer it as follows: 'Go to, thou H-born idiot of antiquity. Go dry thyself thoroughly, stuff thyself into a barrel of coal oil, like unto a wick in a lamp, ignite thy tow head, and let the light of thy ignorance illuminate the world. Wire absorption of coal oil per cubic inch of darkness dispelled.'

"Orton hasn't anything to do, and I think he should take up such simple little questions as this and give us some information on the subject. He might select, let us say, a million samples of clay and a few hundred varieties of coal and make an analysis of each and then determine how much of each kind of fuel for each variety of clay will be required in every kiln that consumes less coal than every other kiln. A few thousand pages of tables covering this question would be valuable information for us engaged in the business.

"I am reminded of an incident at the Indianapolis Convention. We were discussing the continuous kiln, and I remarked that we could burn bricks in our continuous kilns with 600 pounds of coal per thousand. Captain Crafts retorted that he burned his bricks with 400 pounds of coal, and he did not have a continuous kiln, either, and if the continuous kiln took 600 pounds, he did not want it. Good for Captain Crafts.

"We have kilns on our yard which burn with 600 pounds of coal and others which require as much as six tons per thousand brick, beside some in which we use an intermediate quantity. We count them all good kilns, and do not wish to replace the high-fuel kilns for the low-fuel ones, nor vice versa.

"I visited a yard a few years ago which, by the way, was for sale, and the strongest argument to induce the sale was that the material contained so much oil that all you had to do was to start the fire and the material burned itself. And this reminds me that if some one could secure a piece of territory where the big wells in Texas ran to waste he might find enough oil-soaked clay to run him several years, and furnish both fuel and clay at one handling.

"In filing your letter I discovered your letter of February 7, which I did not answer. It did not reach here until after I had left for the Convention, and I did not receive it until my return, about the 15th. I hunted for the January Clay-Worker, but could not find it, and this is usually the state of affairs with The Clay-Worker. Some of our boys capture it when it comes in, and it passes from hand to hand, and by the time it gets back to me, if it ever does, it is pretty well worn out. I have no trouble in finding every other trade journal about my desk, but never a CLAY-WORKER, although we take two copies."

OBITUARY.

W. C. SIBLEY, AUGUSTA, GA.

William C. Sibley, father of Jno. W. Sibley, treasurer of the N. B. M. A., died at his home in Augusta, Ga., April 17, in his seventieth year. Mr. Sibley had been a resident of Augusta for many years, where he was well known and loved by almost the entire populace. His widow and seven children survive him.

N. M. RITTENHOUSE, BALTIMORE.

Nicholas M. Rittenhouse, president of the Baltimore Terra Cotta Co., and a prominent citizen of Baltimore, Md., died at his home in that city of Bright's disease, from which he had suffered for a number of years. Mr. Rittenhouse was fifty-eight years of age, and had lived in Baltimore since the close of the civil war.

THOMAS E. FERRIS, CATSKILL, N. Y.

The death of Thomas E. Ferrier, one of the pioneer brick manufacturers of Catskill, N. Y., occurred April 21. Mr. Ferrier was eighty-one years old, and had been engaged in the brick business thirty-six years, being, at the time of his death, an active member of the firm of Ferrier & Golden. In commenting on his death a local paper says: "He will always be remembered as a sterling business man, a friend and supporter of every public enterprise, and one who was always willing to exert his influence for the benefit of the village in which he lived."

Death of One of Pittsburg's Pioneer Brickmakers.

Thomas Sankey, one of the oldest and most prominent business men of Pittsburg, Pa., died at his home, Carson and South Thirty-second streets, April 24, after an illness of several months, from heart disease. Mr. Sankey was a member of the firm of Sankey Bros., brick manufacturers, on the South Side. About six weeks ago, with his wife and Mr. and Mrs. William Sankey, he went to Palm Beach, Fla., in the hope of regaining his health. He did not improve and, on the advice of his physician, returned to his home about three weeks since. Mr. Sankey was born in Pottsville, Pa., fifty-nine years ago, and over thirty-five years ago moved to Pittsburg, where he was prominent in business until his death. Mr. Sankey is survived by his wife and five children. William Sankey is his only surviving brother.

BURNED OUT A SECOND TIME.

A fire, which started in the drying sheds at B. W. Bennett's brickyard, at Muncie, Ind., April 23, resulted in a loss of $4,000, fully covered by insurance. This plant, which is one of the largest in eastern Indiana, had only been in operation about a week. The plant was totally destroyed by fire in December last and had been reconstructed with new machinery. This time the chief loss was on the dryer and dryer cars. The brick had hardly cooled when Mr. Bennett had the work of reconstruction under way. He hopes to be in full operation again within a month from the date of the fire.

LISTEN!!! WE HAVE MOVED!!!

It gives us great pleasure to say to our friends that we are now in our New Factory at Boyle Ave. and Old Manchester Road, with three times the capacity and all improved facilities. We are at your service.

Let us "show" you.

THE FERNHOLTZ BRICK MACHINERY CO.,

Boyle Avenue and Old Manchester Road, St. Louis, Mo., U. S. A.

See ad on page 521.

Written for The Clay-Worker.

BRICKS—WALK WITH STICKS.

BATS—LIVE IN FLATS.

Brick, brick,
Brick that will stick
Upon the market and sell,
Brick, brick,
Long, wide and thick,
Those that suit contractors well;
Corners all square,
Heavy and fair.
Surely with one surface slick,
Such as these we
Burned want to see,
   Brick,
      Brick,
         Brick!

Bats, bats,
To throw at the cats,
Ever come out of the kiln,
Burners are fired.
New ones desired,
Places that someone must fill;
Makers go broke.
Diamonds in "soak,"
So they move into flats;
They swear in mind,
When e'er they find,
   Bats,
      Bats,
         Bats!

—Zellard Edison Buell.

SI'S SIGHT SEEIN'.

Ma, thar ain't no use in tryin',
  I kain't make a brick no more;
I've been to thet modern brickyard,
  An' I know my days 're o'er.
Ma, they hain't got no ol' plunge mill,
  Thet runs 'ith a hoss, like mine,
But they work clay 'ithout wettin',
  An'—by gosh; they do it fine.

An' the'r dirt goes through a grinder,
  An' some screens thet jump an' shake,
An' th' bricks—say, Ma, th'r purty—
  Not th' kin' I ust 'er make;
Th'r s' sq'ar an' s' sharp cornered,
  'Ith th' sides s' slick they shine,
An' it punches 'em right at yeh,
  An'—by gosh! it does it fine.

An' instead uv jess a lettin'
  'Em t' dry out in th' sun,
'Ith a kiver on when rainin',
  Liken to we've al'ays done,
They jess pile 'em on a wagon,
  Kin' uv keer built fer thet line,
Thet does take a hul blame keer load,
  An'—by gosh! it does it fine.

But, Ma, wait; I ain't through telling'
  How 'em fellers do make brick,
Fer they don't use wood fer burnin'—
  No, Ma, not a dad blamed stick;
But use oil, thet spits an' sputters,
  An' it makes th' arches shine,
Fer she blows, and keeps a burnin',
  An'—by gosh! it does it fine.

—ZELLARD EDISON BUELL.

TIRED.

Forward, turn forward, O Time, won't you please?
Make an old man of me; give me my ease.
Give me an office with ten or twelve clerks,
Where I can be boss while the other chap works;
I want a home with its peace and its joy;
To comfort my old age I want a smart boy;
I want to eat on my own chinaware—
No hungry diner just ready to swear—
To linger and chat while the coffee we sip;
Give me a tip, mister, give me a tip!
Tired of the hollow, the base, the untrue,
Worn out with serving the long days through.
No one to care if I don't draw my pay,
Nobody anxious to greet me to-day;
Weary of hearing the old fogies say
How hard was the path to success in their day;
That the modern young man has an easy, soft snap—
But how well you're doing they don't care a rap.
Tired of this struggle to please every one,
Trying to be just the same, rain or sun;
Watching to keep a stiff upper lip—
Give me a tip, mister, give me a tip!

—C. E. W.

TABLE OF CONTENTS.

American Brick Architecture 529
Art Pottery 531
The Leaning Tower of Pisa.. 532
Ohio's Oldest Paving Brick Plant 532
Laminations in Clay Wares.. 534
Light and Heat................ 536
The East Coast of Florida and Its Building Material.. 538
Buttonhole Talks 539
Brick Pavements 540
Some Fire Clay Products.... 542
Something New for Clay-workers 542
The Brickmakers of Philadelphia Are All Busy........ 543
Young Man's Chances To-day 549
The German Clayworkers' Convention 552
New Ownership of Walker Gear Patents 554
A Brickyard Bout 565
A Frost for Canadian Brick Manufacturers 565
The Most Efficient Outdoor System for Handling and Drying Brick 566
Ohio Valley Pottery Growth 566
Obituary 569

CORRESPONDENCE:

By the Light of the Kiln Fire 537
High Wages and Dull Times 537
Iowa Brick and Tile News.. 544
Buffalo Brick and Building News 545
St. Louis Brick and Building News 547
Cuba, New and Old........... 548
The New York Market........ 550
Pittsburg and Western Pennsylvania Clay Industries 551
Good Place to Start a Yard.. 555
Brick Roadways Best......... 555
The Boom Reaches Maine... 555
A Good and Effective Medium 555
Can't Keep Up with the Demand 555
The Chicago Brick and Building Situation 555
Pottery News 556
Pacific Coast News............ 576

EDITORIAL:

Current Comment 567
Boston's Building Regulations 567
Trade Literature 568
Questions and Answers....... 568
Editorial Notes and Clippings 572

MISCELLANY:

Burned Out a Second Time.. 569
Dickey Clay Mfg. Co.'s Plant to Be Located at Chanute.. 566
Brick Walk with Sticks...... 570
Tired 570
Si's Sightseein' 570

Index to Advertisements on Front Inside Cover Page.

FINE FARM LANDS.

Wisconsin is noted for its fine crops, excellent markets, pure water and healthful climate.

You can buy a farm on easy terms in Wisconsin along the line of the Chicago, Milwaukee & St. Paul Railway for less than you can rent one for three years in any of the Eastern States. Now is the time to invest.

Address F. A. Miller, General Passenger Agent, Chicago, Milwaukee & St. Paul Railway, Chicago, Ill.

A CHARTER SUBSCRIBER'S GREETINGS.

Editor Clay-Worker.

Please find $2 to pay for Clay-Worker for 1902. I am a charter subscriber to the paper.

We make common red brick only, use steam power Quaker machine and put out 1,200,000 in 1901 and expect to put out 1,800,000 in 1902. We use soft wood for fuel. Price of brick averages $5.50 at the kiln. We pay the men what there is in a job and such a thing as a strike is unknown at these parts. We will build two new kilns and one new dry shed in April. Everything is locked in ice now. I just now run across a little item in one of my notebooks: April 1, 1899—Farmers hauling one cord of green wood at a load on sled; temperature 12 degrees below zero. I expect it is warmer than this where The Clay-Worker is published. GEO. H. JENKINS.

Monona, Iowa. February 18, 1902.

ENJOYS EVERY FEATURE.

Editor Clay-Worker.

Copies of The Clay-Worker received. I am surprised and delighted, as it is so much more interesting than I had thought a clay journal could be made. The material (paper), to begin with, is good and the printing first-class, all of the mechanical work unsurpassed, and then the reading matter is so good that one must read it clear through. Don't leave out the funny part; it does one good to laugh. Was much amused at Charles Lederer's caricatures on pages 28 and 29, especially the last, No. 14; think I shall have it framed.

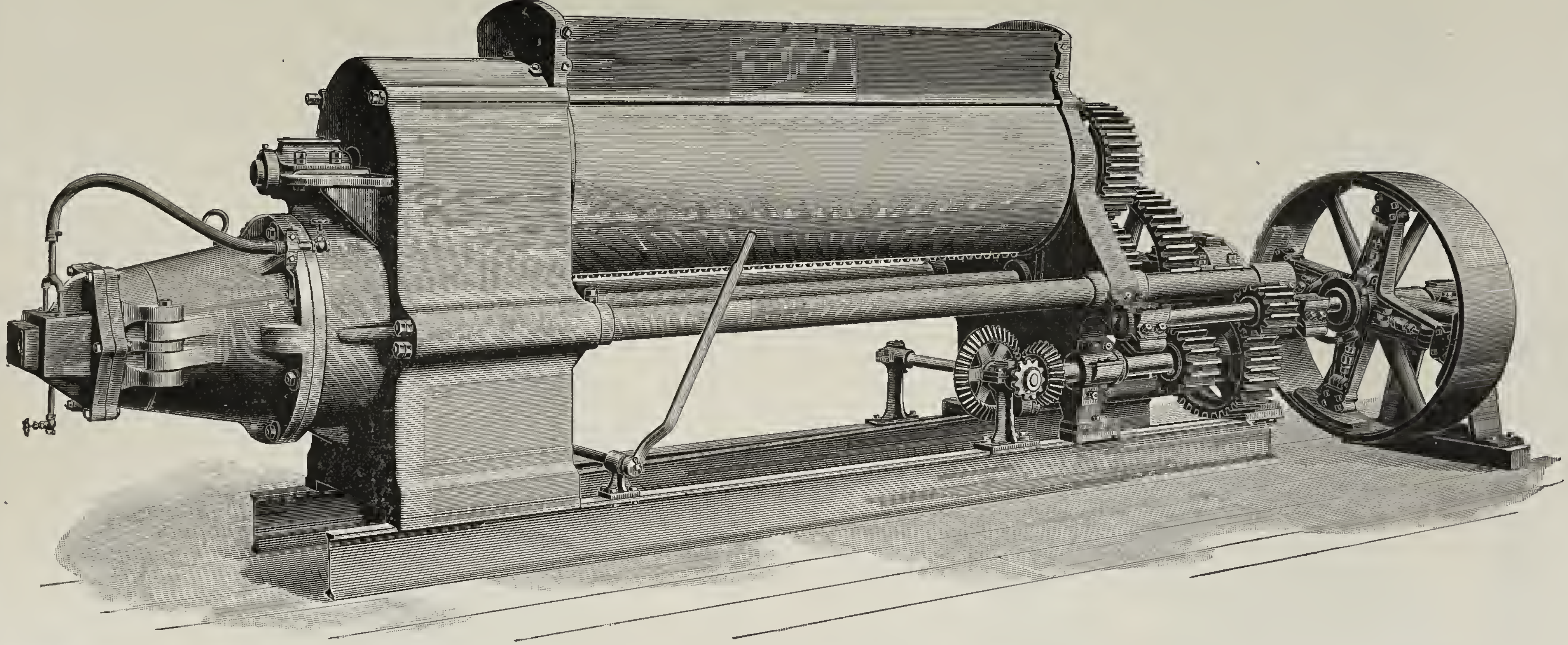
Wishing you continued prosperity, I am,

Sincerely,

Summit Grove, Ind. JAS. HARRINGTON.

THE HEAVY
BRICK MACHINERY

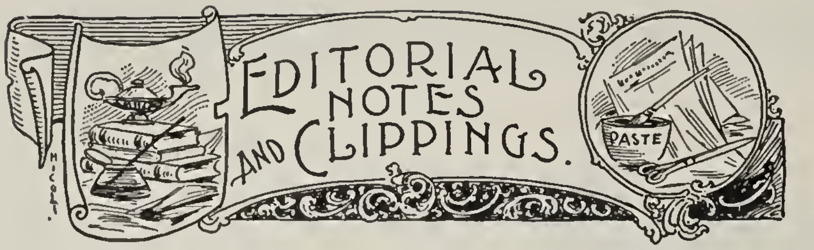
Is made by Raymond. ❧ It is not as Cheap as some others, but it lasts. ❧ It has Staying Qualities. ❧ You Avoid Expensive Break Downs, and Incidentally Break ups by using it. ❧ ❧ ❧ ❧ ❧



WE DON'T MAKE all the Brick Machinery sold in the U. S., but those who use it say it is the best. We have every reason to believe this is true because that is just what we try to make. We can attribute the unprecedented demand for our machinery to no other reason than the fact that it is strong and heavy and satisfies the trade. Users of our machinery are our friends because they get good value for their money.

The C. W. Raymond Co.
DAYTON, OHIO, U. S. A.

NEW YORK OFFICE: 39 and 41 Cortlandt Street.



EDITORIAL NOTES AND CLIPPINGS.

Paul Kaylor has started a new brick plant at Churubusco, Ind.

A. E. Paris and J. Boyer will operate a brickyard at Bunch, Iowa.

A. J. and Ezra Peltier will start a new brickyard at Aitkin, Minn.

Charles Buchwald will operate a brickyard at Marshalltown, Ia.

W. Robinson and B. Bishop are building a new brick plant at Inman, S. C.

A. E. Anderson is making improvements in his brick plant at Winona, Minn.

The Taylor Bros. Brick Co. have filed articles of incorporation at Redlands, Cal.

F. M. Phillips has sold his brick and tile factory at Newton, Ia., to Joseph Holdsworth.

The Greer-Beatty Clay Co. has been chartered at Magnolia, O. Capital stock, $50,000.

Port Angeles, Wash., is to have a new brick plant, in which Col. James Coolican is interested.

John W. Warner, of Caro, Mich., will operate a brick plant at Cheboygan, Mich., this summer.

The Laurel (Miss.) Brick and Tile Co.'s plant was damaged to the extent of $500 by fire recently.

O. Duclas, of Little Falls, Minn., has purchased the brickyard of J. F. Jagger, at Wrenshall, Minn.

F. S. Clark, 434 North Lake street, Warsaw, Ind., is in the market for a limited supply of roofing tile.

J. Grant Miller has purchased land at Burnside, Ky., on which he will erect a first-class brick plant.

H. O. Wylie will establish a brick plant at New Concord, O., that will have a daily capacity of 20,000 brick.

E. P. Younkin is rebuilding his brick plant at Meyersville, Pa., in order to increase the capacity of the same.

The Trimble Brick Co. is the name of a new incorporation at Hogansville, Ga. The plant is already in operation.

The Michigan Brick Co. is the name of a new concern at Vriesland, Mich., of which H. D. Langeris is general manager.

The Moseley Brick and Shingle Co., of Kinston, N. C., has been incorporated by H. E. Moseley, F. F. Brooks and R. E. Bland.

The Champlain Brick Co., Troy, N. Y., sustained a loss of $1,000 by a fire which started in the kiln sheds, early this month.

S. A. Amadon and I. N. Quimby have purchased the brick plant at Manchester, N. H., formerly operated by Amadon & Smith.

Robert Mercer, an employe of the Sheridan Brick Works, Brazil, Ind., was instantly killed by being buried under a mass of shale.

The Waterbury (Vt.) Brick Co. has bought G. E. Moody's brickyard. F. C. and E. E. Evans are interested in the new company.

The Southern Kaolin Mining Co., Bryson City, N. C., advise us that they wish to purchase two second-hand filter presses of medium size.

The State of Wisconsin has purchased a tract of land at Green Bay, Wis., on which a brickyard will be established. The plant will be operated by inmates of the Green Bay Reformatory.

Jacob Abraham & Son have recently started a new brick plant at Moline, Ill., of 40,000 daily capacity, equipped with machinery from the shops of the Henry Martin Brick Machinery Manufacturing Co., Lancaster, Pa. Mr. H. H. Thomas, the Indianapolis representative of the Martin company, superintended the starting of the plant, which was satisfactory in every respect.

I. Warren, of Elkhorn, Neb., and O. F. Johnson, of Org, Minn., contemplate the establishment of a brick plant at Worthington, Minn.

Winchester, Ind., has a new brick industry, the Winchester Brick Co., with a daily capacity of 50,000 brick. George W. Deem and C. A. Kelley are interested.

Mr. William Stimmel, of Kutztown, Pa., is equipping a new plant for the manufacture of soft mud brick. He has already placed his order for Martin machinery.

The McHenry (Miss.) Brick Co. has been incorporated, with $15,000 capital stock. The incorporators are F. W. Fatheree, W. E. Merrill, J. Leggett, Jr., and others.

Articles of incorporation have been filed by the Elkhart (Ind.) Brick Co. The incorporators are Lewis, Jno. and Andrew Franks, F. A. Walter and S. W. Kern.

Andrew Barr, Jr., is installing new machinery in his brick plant at Champaign, Ill. When the improvements are completed he will have a capacity of 21,000 per day.

A number of colored men are interested in the formation of a co-operative company to manufacture brick at Topeka, Kan. P. B. Moore is at the head of the enterprise.

A suit was filed April 26 in the United States Circuit Court at Indianapolis, Ind., by the Standard Dry Kiln Co. against the National Dry Kiln Co., for infringement of patent.

The Coosa Brick Co. has been organized to manufacture brick at Riverside, Ala. An immense plant will be built, that, when completed, will give employment to one hundred men.

Andrew Currier, who formerly owned a press brick plant at Stillwater, O. T., has purchased a large tract of land at Guthrie, O. T., on which he will erect an immense brickmaking plant.

The Anderson (Ind.) Foundry and Machine Works write that trade is first-class with them, and they are selling all they can make, both in the tin-plate machinery and brick machinery line.

The National Dry Kiln Co., Indianapolis, Ind., advise us that their business has grown to such an extent that they are building shops which they will equip with special machinery for building brick dryers.

The men employed at the Merwin Brick Co.'s plant, at Berlin, Conn., struck recently for an increase of $2 on the month. After being out one day, they compromised on an increase of $1, and went back to work.

Louis Sachs is to start a new tile plant at Jonesboro, Ark. Mr. Sachs is a practical farmer, and, having demonstrated the benefits of tile drainage to his own satisfaction, he will manufacture tile for his neighbors.

Fred, Charles and Henry Vogelmeier have formed a partnership and will be known as the Vogelmeier Bros. They have bought a tract of land at Newark, O., on which they will erect a brick plant of 40,000 daily capacity.

Dr. W. B. Christopher, of Union, N. Y., is embarking in the brick business this spring. The Martin style "A" machine will be used in this plant. The Doctor expects to have a good run of business for soft mud brick this year.

W. H. Houser's brick plant, near Charlotte, N. C., was burned to the ground the 6th inst. Mr. Houser thinks the fire was started by an incendiary. The loss is placed at $6,000, almost covered by insurance. The plant will be rebuilt.

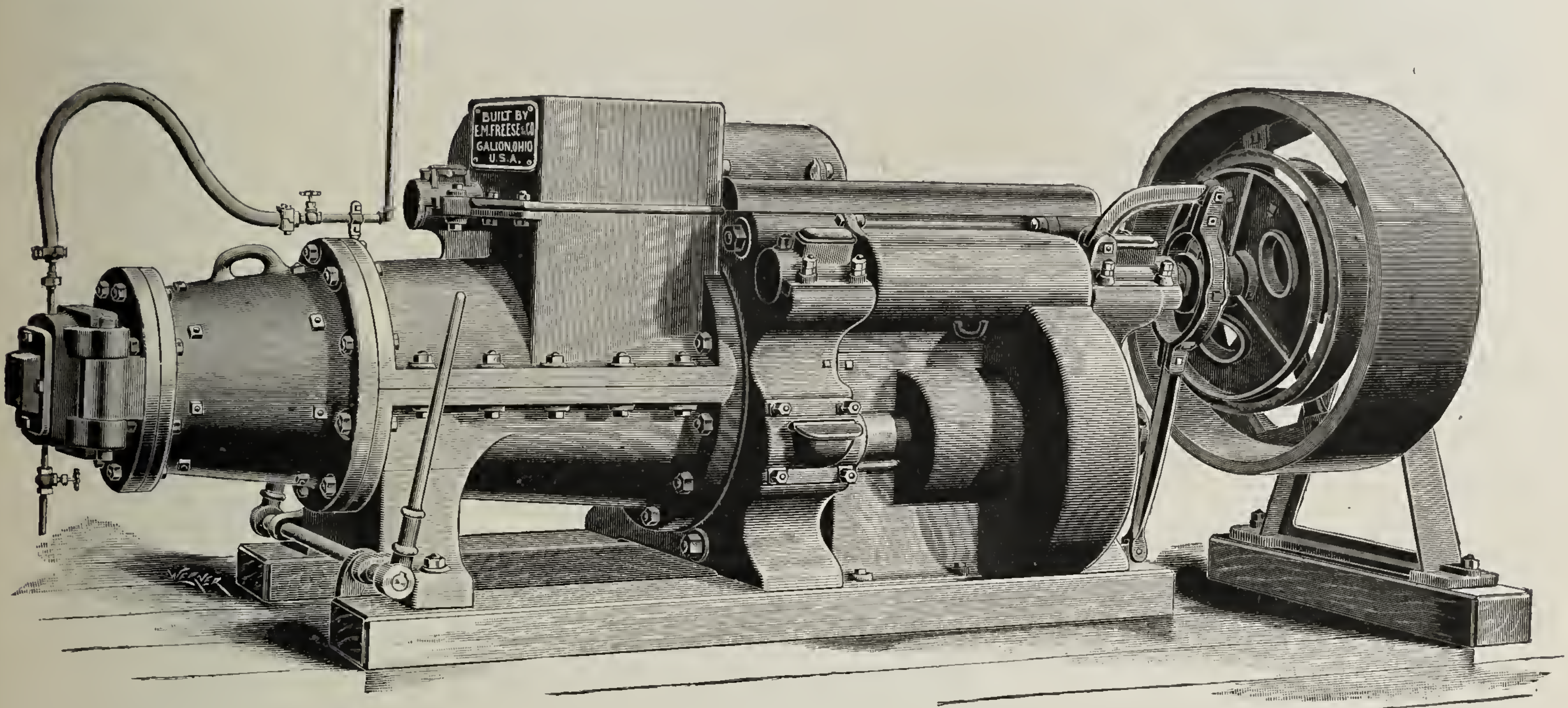
Adam Grube & Son, Springfield, O., write that they have recently changed their yard from a hand to a machine plant, and are in the market for a lot of second-hand pallets. If they cannot get second-hand ones, they will buy new pallets.

The Frost Manufacturing Co., Chicago, Ill., advise us that among recent orders booked is one from the Swoyer Bros. Brick Co., of Allentown, Pa., for one of the Frost nine-foot iron frame dry pans for the latter's new plant at Allentown, Pa.

The Alonzo Curtis Brick Co., of Grant Park, Ill., add an interesting report to the dryer controversy. Two years since, they say, a Standard of four tracks was put in at their plant, and the results were successful in the extreme, inasmuch as the Standard invariably dried its full capacity, 40,000 brick, each twenty-four hours. So pleased were they that six more

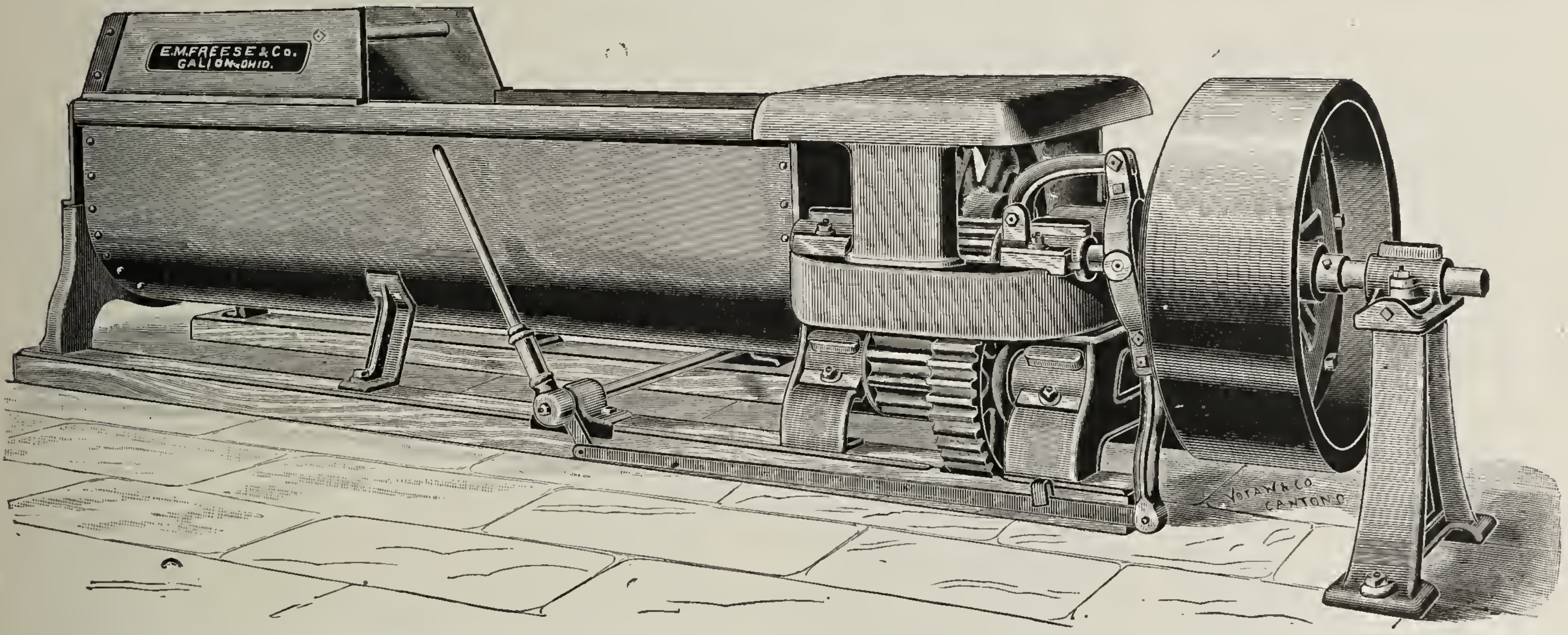
[CONTINUED ON PAGE 574.]

Our Mammoth Brick Machine


BUILT BY
E.M. FREESE & CO.
GALION, OHIO
U.S.A.

THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug=Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.

THESE PUG=MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitted for making a fine quality of brick.

E. M. FREESE & CO., = = Galion, Ohio.

Mention The Clay-Worker.

EDITORIAL NOTES AND CLIPPINGS—Continued.

tracks were added to their dryer last year, and with this more than doubled capacity the dryer has proved as satisfactory in results as before. There is reason, therefore, in the Curtis Co.'s hearty indorsement of the Standard system.

The J. D. Fate Co., Plymouth, O., advise us that they have lately shipped large outfits to the Columbus Clay Co., Summit Station, O.; the National Tile Roofing Co., Lima, O.; the Fredonia (Kan.) Brick Co., and Jacob Seitters, McMinnville, Ore.

Thomas R. Hammond, of the Reese-Hammond Fire Brick Co., Bolivar, Pa., died in Aiken, S. C., where he had been for some time on account of ill-health. Mr. Hammond was forty-nine years old and leaves a widow, two daughters and three sons.

Messrs. J. Warner and J. F. Boland have purchased the old Martin pressed brick plant at Crawfordsville, Ind. They will remodel the plant at once, repairing the present equipment, adding new machinery and putting the works in first-class shape.

J. W. Stipes, of Urbana, Ill., commenced making brick for the season early in April, but the first of the brick made were frozen, causing a loss of several hundred dollars. Mr. Stipes operates two yards, which, combined, give him a capacity of 70,000 daily.

In a recent letter A. A. Oldham, secretary and treasurer of the Bonnot Co., Canton, O., says: "We are very busy, having a large amount of orders on our books. The outlook for business in the clay machinery line could hardly be better than it is at present."

The Purington Paving Brick Co., of Galesburg, Ill., have recently installed mechanical draft plants in their yards Nos. 1 and 2. The fans were furnished by the American Blower Co., of Detroit, Mich., to be used in connection with Jones underfeed stokers.

J. H. Barry's paving brick plant at Atchison, Kan., was almost completely destroyed by fire recently, only the boilers being saved from the flames. The loss is estimated at $20,000, on which there was $6,000 insurance. Mr. Barry will at once begin the work of rebuilding.

The Southern Sewer Pipe Co. will build a new factory at North Birmingham, Ala., for the manufacture of sewer pipe, fireproofing, flue linings, etc. L. S. Russell is president and general manager, C. S. Bissell vice president and J. A. Menge secretary and treasurer.

A plant for the manufacture of paving brick is to be established at Atchison, Kan., by a company with $75,000 capital. B. P. Waggener, of Atchison, and A. R. Batley, of Bucyrus, O., are the chief promoters. Mr. Batley will have charge of the building and equipping of the plant.

The new Carlisle Brick Co., reported in the last issue of The Clay-Worker, has put in an all iron and steel machine manufactured by the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa. This company contemplates handling the entire brick trade in the vicinity of Carlisle.

The American Blower Co., of Detroit, has recently booked orders for "Waste Heat" dryer outfits for the Terre Haute (Ind.) Brick and Pipe Co., Peebles Paving Brick Co., Portsmouth, O., and the Model Brick Co., Mineral City, O., also a large steam dryer for the Denver (Col.) Sewer Pipe and Clay Co.

The Cartersville Brick Co., of Cartersville, Ga., has been incorporated under the laws of Georgia to manufacture building brick. Their capital stock is placed at $6,000, with privilege of increasing to $50,000. It is their intention to enlarge the plant in the fall. Samuel Carnes is president, W. R. Satterfield vice president and general manager, and C. S. Carnes is secretary and treasurer.

C. & L. Merrick, of Syracuse, N. Y., and the Onandaga Vitrified Brick Co., of Warners, N. Y., have each received an order for half a million brick, to be used in the construction of the new Smith Premier Typewriter factory at Syracuse. Both of the plants are doing an immense business this year. The Merricks have made a number of improvements at their plant, putting in a new dryer.

Howard P. Eeels has been appointed temporary receiver of the Eastern Paving Brick Co., of Catskill, N. Y., by Judge Lacombe, of the United States Circuit Court, on the application of the Woodland Avenue Savings and Loan Company, of Cleveland, O., as trustee of an issue of $180,000 bonds made by the Eastern Paving Brick Co. on September 15, 1898, payable twenty years from date, on which interest due since September 15, 1900, amounting to $16,500, has not been paid. The bonds were secured by a mortgage on the company's property and plant at Catskill.

The Illinois Supply and Construction Co., St. Louis, Mo., have moved into their new offices, 800 Columbia Building, southeast corner Eighth and Locust streets, where they say they will be pleased to greet their friends. In addition to their kiln and brick press business, they handle a full line of builders' supplies.

Articles of incorporation have been filed by the Alabama and Georgia Brick Co. Its capital stock is $10,000, and the object of the company is to manufacture building brick, do a mining business, etc. The principal place of business will be Coaldale, Ala., and the incorporators are Messrs. Lewis D. Cole and B. D. Ribley.

A. W. Penny, general manager of the Marion Brick Works, of Indianapolis, writes a cordial letter of praise about the Standard dryer, which has been in operation at their Montezuma, Ind., works for several months. Their dryer, Mr. Penny says, has accomplished all that was expected, and they are extremely pleased with the Standard.

Gold Bros. Brick Co. is the name of a new concern organized to manufacture brick, both pressed and common, and tile, at Big Stone, S. D. The new company succeeds to all the business of the Big Stone Brick Co. They will put in new machinery, build a new dryer and put up a number of new kilns, which will give them a capacity of 40,000 brick a day.

The Pennsylvania Clay Manufacturing Co., located in Logan's Ferry, Pa., near New Kensington, has just closed a contract for its product for almost the entire year. For six months it is to deliver to Pittsburg 400,000 brick a month, and for the six months following 200,000 a month. This is a new company, and is managed by D. B. Kahle, of New Kensington.

The Brookside Co., of Cleveland, O., are getting their plant in shape to supply the large demand for brick in Cleveland and vicinity. They have placed their order for a complete outfit of machinery, including the engine and boiler, with the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa. We understand that one of the Martin style "A" machines, in combination with pug mill, elevator, crusher, etc., will be used.

The Washington Brick, Lime and Manufacturing Co., of Spokane, Wash., have lately added three more tracks to their Standard dryer. They report that since first installing the Standard the quality of their brick has made a great change for the better, and as a result their business shows a rapid increase. They believe they have the best brick dryer on the market, and as results talk loudly, this opinion appears to be based on a sound foundation.

The Salmen Brick and Lumber Co.'s plant, at Slidell, La., was completely destroyed by fire April 27, entailing a loss of nearly $60,000, on which there was $40,000 insurance. While the plant will be rebuilt as soon as possible, still it will probably be several months before the new plant is completed. Mr. Selmen says it is hard to estimate the loss, for they were rushed with orders, very few of which can be filled until the plant is in operation, for they had comparatively few brick on hand.

The American Blower Co., of Detroit, Mich., has recently secured orders for apparatus for "A B C" waste heat dryers from the Kittanning Brick and Fire Clay Co., of Pittsburg, and the Bessemer Limestone Co., of Youngstown, O. Among others, they have also furnished their apparatus for similar plants to the following: American Hydraulic Press Brick Co., Collinsville, Ill.; Canton Tile Hollow Brick Co., New Bethlehem, Pa.; Reese-Hammond Fire Brick Co., Bolivar, Pa.; Royal Sewer Pipe and Fire Brick Co., Akron, O.; National Fire Brick Co., Strasburg, O.; Purington Paving Brick Co., Galesburg, Ill.; Galesburg Paving Brick Co., Galesburg, Ill.; Washington Brick and Terra Cotta Co., Washington, D. C.; The Whitacre Co., Canton, O.—plant at Magnolia, O.; Horseheads Brick Co., Horseheads, N. Y.; Excelsior Terra Cotta Co., New York, for plant at Rocky Hill, N. J.; Buckeye Brick Co., Wickliffe, O.; Kittanning Clay Manufacturing Co., Kittanning, Pa.; Ft. Pitt Stone and Brick Co., Carnegie, Pa.; Coaldale Paving Brick Co., Birmingham, Ala.; Cleveland Brick Co., Canton, O.; Springfield (Ill.) Paving Brick Co.; International Clay Co., Perth Amboy, N. J.; Kountz Bros. Co., Harmarville, Pa.; Suburban Brick Co., Wheeling, W. Va.; Frederick Brick Works, Frederick, Md.; Eastern Paving Brick Co., Catskill, N. Y.; Crown Fire Clay Co., Parol, O.; W. D. Richardson, Cleveland, O.; Don Valley Brick Co., Toronto, Ont.

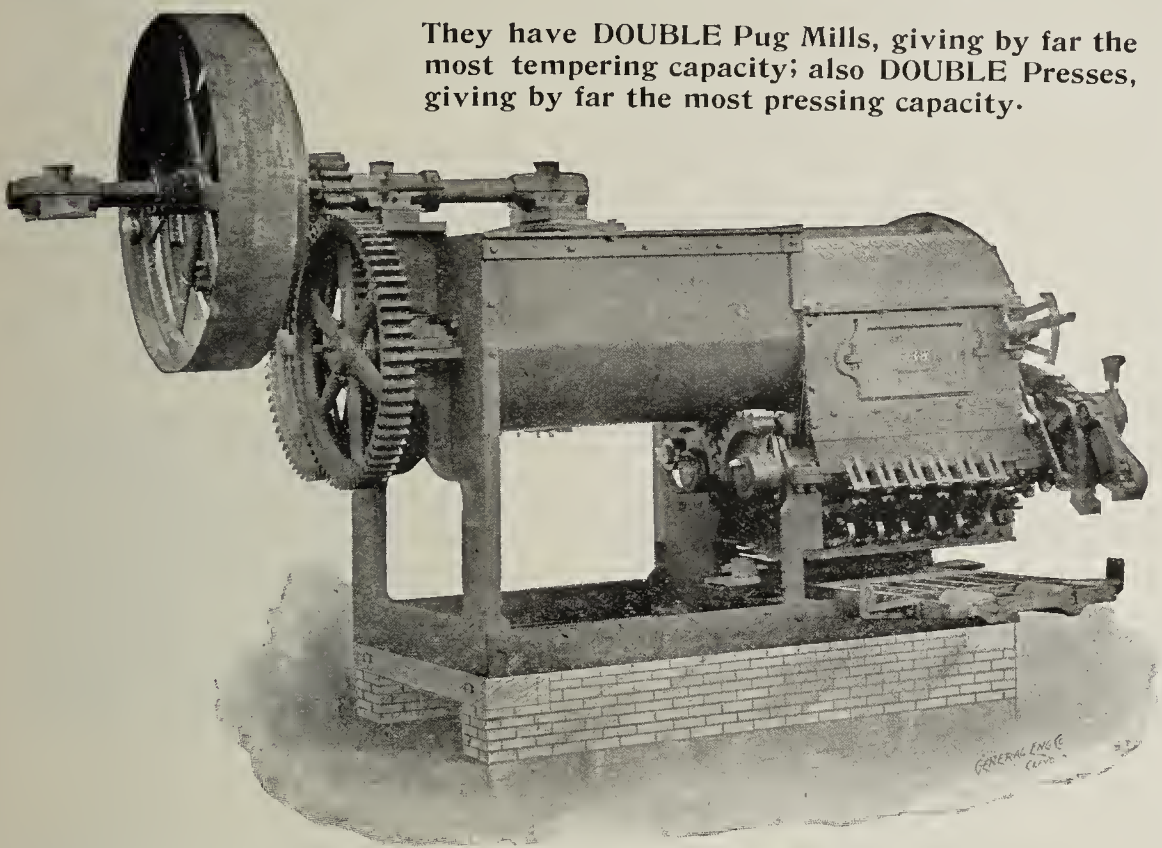
LIGHT HOUSES

Do not have to hire bands or fire cannon to call attention to their shining—**THEY JUST SHINE.**

Thus it is with the two "soft-mud" machines we manufacture (one horizontal and one upright). **Each** is at the head of its respective class, and the number of each in use, (note the figures) **tells the whole story.**

Over 125 "MONARCH" BRICK MACHINES in use.

They have DOUBLE Pug Mills, giving by far the most tempering capacity; also DOUBLE Presses, giving by far the most pressing capacity.



READ THIS.

A Fresh one Every Month.

◆ ◆ ◆

ASHTABULA, O., Oct. 5, 1901.
The Wellington Machine Co.,
Wellington, Ohio.

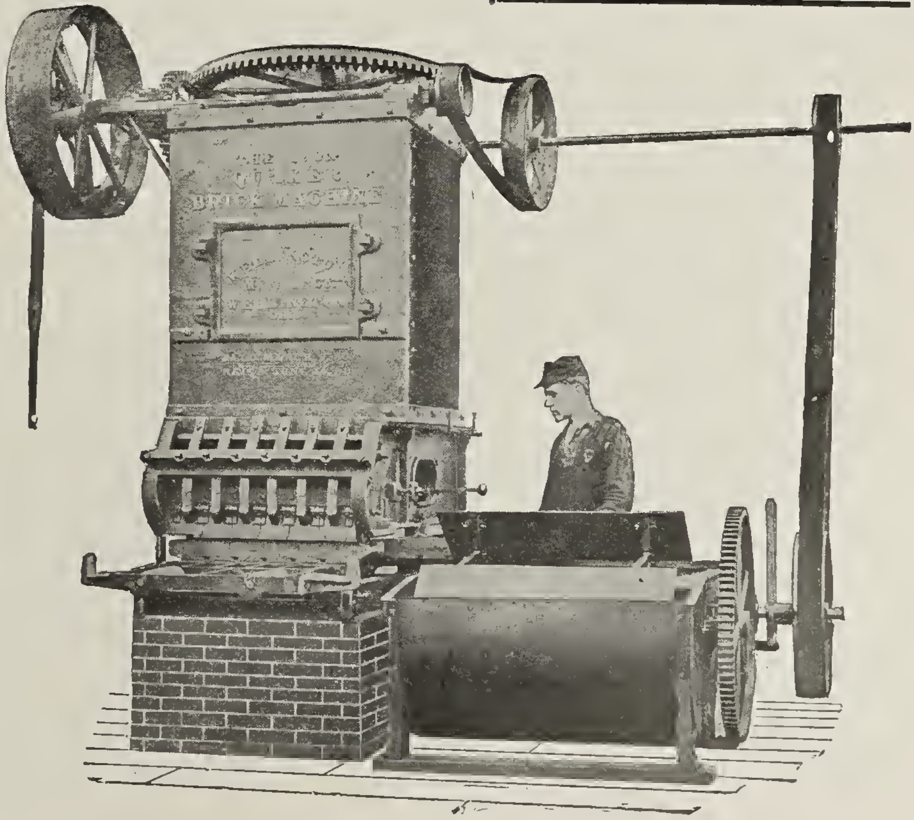
Gentlemen — This is the fourth year that I have used the ten-year old "Monarch" Machine, and it has made about 1,500,000 each year since I came into possession of it. The past year it has worked better than any of the four previous years, and has given very good service.

Yours very respectfully,
C. W. SIMONDS.

OVER 500 "QUAKERS" in use, both Horse and Steam Power, now made entirely of Iron and Steel.

OUR MOULD-SANDER is the BEST, SIMPLEST AND CHEAPEST.

WITH our ROLLER-BEARING BRICK BARROWS you can wheel 20 per cent. more load and do it as easily. Order one subject to approval.



ALL OTHER SUPPLIES. Send for Catalogue.

The Wellington Machine Co.,
WELLINGTON, OHIO.

Written for The Clay-Worker.

PACIFIC COAST NEWS.

NOTWITHSTANDING THE raise in the price of structural steel, builders' hardware, etc., there seems to be no diminution in the demand for brick, terra cotta, fireproofing, tiling, etc. A number of new buildings of large dimensions are now under way, and brick and terra cotta people are fairly rushed. The contracts for stone and steel for the big Flood Building, at the corner of Market and Powell streets, have just been let. This will probably be the largest building in the city. It will be twelve stories high, and will be built in as substantial a manner as possible. The contracts for brick, tiling, fireproofing, etc., will be let soon.

Henry P. Holmes, of the H. P. Holmes Brick and Lime Co., of Sacramento and San Francisco, died in this city on April 29. Mr. Holmes was seventy-three years old at the time of his death, and had been a resident of California since 1849. He was prominent in construction circles in Sacramento for many years before moving to this city.

About two weeks ago the Bricklayers' Union of Fresno, Cal., adopted a new scale of wages, calling for an advance of $1 per day on the price hitherto prevailing. The daily wage for bricklayers in Fresno will hereafter be $6 per day. Contractors seem to have accepted the raise.

A company has been organized in Los Angeles, Cal., for the purpose of manufacturing a new variety of wall plaster, which is known as fire pulp.

The Whittier brickyards, at Whittier, Cal., report orders on hand for half a million brick. Two kilns of 200,000 brick each have already been burned.

Next to a sewerage system the town of Richmond, Cal., has been in greater need of cheap brick than anything else, and now a brickyard is about to be established there. J. R. Utter, of Richmond, is the moving spirit in the enterprise, and C. J. and T. B. Craycroft, brick manufacturers, of Fresno, are associated with him. They have formed a company and will manufacture and put on the market a cheap brick of the best quality possible. Arrangements have been made to commence work on the yard at once. It is the intention of the company to manufacture 20,000 bricks a day for this season, and as the demand becomes greater the plant will be enlarged accordingly.

Frank Foster, the well-known brickmaker at Boise, Ida., is preparing to meet the demand for brick that it is expected will be made on the brickyards this year, as a result of the recent growth of Boise. He has had a force of men at work all winter mining clay, building drying sheds and enlarging his yard, and now has one of the best equipped yards in Idaho. His output this year will be about four million brick.

H. B. Nelson recently began work at his brickyard in Weston, Ore., for the season's run. This brickyard, which is the principal industry of Weston, turns out from two to three million brick yearly, and runs about nine months of the year. The Weston brick are of an excellent quality and the demand for them is increasing. The sales last year amounted to about two million, the average price being $7 per thousand. The outlook for this year is even better, and the manager of the yard says that everything points to a large increase of business over that of last year.

The Improved Brick Co., of Salt Lake, Utah, with works located at Bountiful, is now turning out from 50,000 to 75,000 bricks per day. The company has ordered some new electrical machinery, and after this is installed, which will be very soon, the output will be increased to 150,000 per day.

John Jenkins, the old-time brick manufacturer at Heppner, Ore., has opened up a brickyard there, and will burn brick during the season.

A short time ago it was thought that all the brick needed at Douglas, Ariz., would have to be imported. Affairs have taken quite the opposite turn now, however. Deposits of good clay have been found both east and west of the town. T. Hines has been experimenting with the clay found east of the town, and a few weeks ago opened his small experimental kiln. He found the brick to be of good quality and suitable for all building purposes. As a result, he has commenced active operations for the manufacture of brick on an extensive scale, and has ordered the necessary machinery. Another yard will be opened west of Douglas by E. F. Jones, who has located a deposit of brick clay there. His experimental kiln was a success, the brick being of first-class quality and correct color. He has commenced making brick and expects to be ready to deliver in about four weeks. A third firm to contribute to the Douglas market and surrounding towns is composed of E. L. Elder, J. A. Johnson, M. Avila and Mr. Martinez. The necessary apparatus is now at the yards, which will be near Fronteras, Sonora. The samples of these bricks were also of first-class quality. J. A. Johnson will have charge of the yards.

A deposit of real yellow ochre clay, similar to that supposed to be on the Mallory ranch, at Orange, Cal., is reported to have been found near Corona, Riverside county, Cal. According to the statements of F. Crikelair, of Los Angeles, who recently returned from an extended examination of the find, the deposit is a remarkable one. It is not only said to be one of the largest ever found in this country, but the quality is said to be superior and to compare favorably with the French production. William Dyer and J. H. Dixon, of Corona, who have secured control of the deposit, have organized the National Paint and Color Company, and are making arrangements to install a mill, as it is said there is a ready market for the clay.

The Pacific Clay Co., of Los Angeles, Cal., has 200,000 bricks made and drying for the Odd Fellows' Hall, and has also completed and delivered the last of the twenty miles of sewer pipe for Pomona, Cal., and over a mile of sewer pipe for Hermosa Beach.

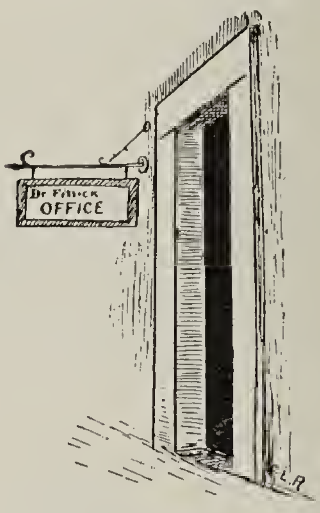
SUNSET.

San Francisco, May 5, 1902.

THE MESSAGE OF THE ROBIN.

A robin sang at my window,
And his notes had a gladsome ring.
He sang old Winter's requiem,
And then he seemed to sing
A song so glad it filled the air
With a prophecy of Spring.

—From Four-Track News for March



Young Fissick's got a shingle out proclaiming him M. D.
But from A. M. to late P. M. his office is M. T.—Life.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than $1.00.

FOR SALE—At a bargain, second-hand Raymond tempering wheel; in good condition.
DAN H. WILLIAMS,
5 1 c Barboursville, Ky.

WANTED—Position by man practical in the enameling of bricks, terra cotta, art tiles, etc. Proof of ability given to firm intending business.
5 1 cd STONE, care Clay-Worker.

FOR SALE—14,000 white pine pallets, 10x32 inches; good conditon; "Mershon" make. Also racks for same. Cheap if sold soon.
Address GEO. B. ROLLER,
5 2 d Canton, Ill.

FANCY BUILDING BRICKS—We are prepared to take the agency for a good line of fancy face brick, and will consider proposition from a concern making a good assortment at low prices.
BARBER & ROSS,
5 ? d Washington, D. C.

FOR SALE—The Austin Brick and Tile Works, Austin, Minn., consisting of 15 acres of clay land, two round down-draft kilns, two up-draft kilns, dryhouse 28x50, Chandler & Taylor engine, boiler 80-h.-p., Nolan & Madden stiff-mud mill, pug mill, granulator, winding drum, trucks, barrows, and all tools. Yard is in complete working order. Address
ED BARR,
5 3 cm Austin, Minn.

WANTED—An experienced and reliable soft-mud brick burner (Pottsmachine); one familiar with the burning of soft mud from Mississippi river deposit. Address
THOS. FERGUSON & CO.,
1002 Commercial Ave.,
5 1 d Cairo, Ill.

SUPERINTENDENT WANTED.

We use a Chamber's side-cut machine and Standard dry kiln dryer, and make brick year round. We need a first-class superintendent that knows all about the making and burning of brick. A man that has the executive ability to handle the brick business from start to finish. One that can work free negroes and get good results. No other sort need apply. We will pay $75 to the man with the best recommendation for the first month and $100 per month after that, if he proves to be the man we are looking for. Otherwise, we would not want him at any price.
THE HODGES BRICK CO.,
5 2 dm Meridian, Miss.

FOR SALE.

Paving and building brick site at Bucyrus, O., consisting of twelve acres of land, with buildings and good railroad facilities.
One 100-h.-p. Mansfield Rocker Valve Engine.
One 80-h.-p. Boiler, full-flush front.
One Steam Pump.
One 9-foot Dry Pan.
One Elevator.
Eighty Single-deck Brick Cars.
Five tons 12-ft. "T" Rails.
Eleven Down-draft Kilns, with good bands.
Floor Brick, Fire Brick, etc.
Will be sold as a whole or in part.
Inquire of L. P. BATTEFIELD,
Room No. 7 Fair Building,
5 1 d Indianapolis, Ind.

WANTED—By an experienced man, a situation as foreman. Face brick plant preferred. Am first-class burner. Address
5 1 cm "G.," care Clay-Worker.

WANTED—Engineer and machinist in a fire brick factory. One acquainted with this kind of work preferred. Address
5 1 d T. B., care Clay-Worker.

WANTED—Superintendent in a fire brick plant. Must be sober, industrious and understand his business. Address
5 1 d R. E. T., care Clay-Worker.

WANTED—A good second-hand pug mill for stiff mud; capacity, 30,000 or over.
Address C. S., care Clay-Worker.
5 1 cm

WANTED—Position by experienced brickyard engineer. Can give satisfactory references as to character and ability.
Address W. H. R.,
5 1 cm Care Clay-Worker.

WANTED—A position as manager of either dry press or stiff mud plant; am thoroughly familiar with both Fernholtz and Raymond machines. Can furnish the best of references. Address ALBERT C.,
5 1 d Care Clay-Worker.

WANTED—First-class burner for burning dry press brick. Stating reference, wages, age, etc., please address
LOUISVILLE BRICK CO.,
510 W. Jefferson St., Louisville, Ky.
4 4 dm

WANTED—A clay deposit, east of Harrisburg. Must be suitable for sewer pipe or high-grade vitrified glazed wares. A quick sale if the quality, quantity and location desired is presented. Address
5 1 cm J. F. A., care Clay-Worker.

WANTED—Man of experience and ability to design and superintend construction of sewer pipe and tile plant, and to remain in charge of same when in operation. Good permanent position for a wide-awake man.
Address SUBSTANCE,
5 1 cm Care Clay-Worker.

FOR SALE.

147 cars, suitable for either stiff or soft-mud machine brick. Also 1,200 perforated cast iron pallets for stiff mud and 3,000 steel pallets for soft-mud brick. In good condition. We offer these for sale on account of having changed our mode of manufacturing. Prices, terms, etc., given on application.
DELAWARE TERRA COTTA CO.,
5 1 d Wilmington, Del.

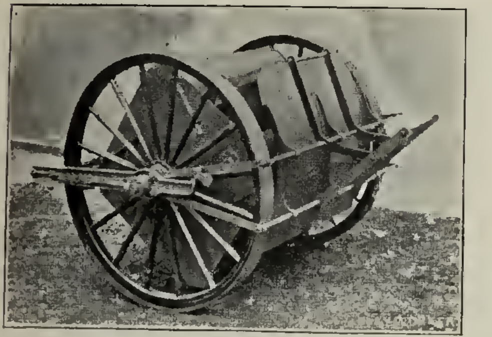
FOR SALE.

One complete brick plant, 50,000 capacity.
400 brick cars.
One No. 2 Giant brick machine.
Two Eagle represses.
Dry pans.
50,000 feet of piping.
25 tons of 20-ft. T rails.
Four boilers and a pair of engines.
Address HARRY B. PYNE & CO.,
Machinery Dealers,
5 3 cm Louisville, Ky.

FOR SALE.

17-in. x 29-in. and 22-in. stroke; Williams Auto. tandem comp.
16-in. x 42-in. Reynolds-Corliss-R. H., with heater and boiler feed pump.
12-in. x 30-in. Corliss, with belt.
12-in. x 24-in. slide valve.
5¼-in. x 10-in. two-cylinder, belt-driven Deane pump.
15-h.-p. vertical gas engine.
W. S. McKINNEY & CO.,
5 1 dm 1706 Marquette Building, Chicago.

FOR SALE—Books for brickmakers. Inexperienced workmen will find them a source of valuable information. Brickmakers' Manual, $3.00—a practical treatise on the everyday details of brickmaking; Clay Glazes and Enamels, $5.00, tells how to glaze and enamel brick and gives valuable recipes; Vitrified Paving Brick, $1.00, tells all about the best materials for and methods of manufacturing paving brick; Tables of Analyses of Clays, $1.00, gives the analyses of many American and European clays. Any or all of these mailed, postage prepaid, on receipt of price. Write for lists of other valuable books for clayworkers.
Address T. A. RANDALL & CO.,
3 tf r Indianapolis, Ind.



Also Make a Special
CLAY PLOW.

Write us Now for
full particulars.

Do you want to save **MONEY?**
If so, use the

"Quincy" Improved Dry Clay Gatherer,

The best and most economical method of gathering Clay for Brick and Tile Manufacturers.

Will save at least 50 per cent. over any other method.

Manufactured by

Central Iron Works,
QUINCY, ILL.

The Best Brick Drier

Is the Drier which dries the Brick safely, quickly and thoroughly in the shortest time and with the least cost and labor. This the **Phillip's Fan Dryer** will do. The first cost of construction is moderate and cost of operation is much less than old style dryers. Soft Mud, Stiff Clay or Dry Press Brick dried speedily and economically. The **PHILIP'S DRYER** is no experiment but is now in successful operation in a number of plants in the U. S. and Canada. **Phillip's Inside Fan Heater and Dryer,** proves to also be a "Condenser."

Relief from back pressure guaranteed.

Exhaust steam alone ample for heat supply.

If you are interested in the drying problem don't fail to write for circulars.

S. G. PHILLIPS, Agent and Patentee, **126 Church St. Rahway, N. J.**

WANTS, FOR SALES, ETC.

FOR SALE—Four-mold Simpson dry press, in good condition; cheap. Address
DARLINGTON BRICK & MINING CO.,
4 2 d 150 Frankstown Ave., Pittsburg, Pa.

FOR SALE—One large size Chambers brick machine with automatic end-cutting table. Address
R. L. C., 328 Pennsylvania Ave. N. W.,
4 3 cm Washington, D. C.

WANTED—Position as superintendent of fireproofing, hollow block or stiff-mud brick plant. Have A1 references as to steady habits, push, capacity as manager and exceptional familiarity with machinery, steam presses and dryers.
5 I c Ohio, care Clay-Worker.

WANTED—First-class engineer; one who is thoroughly accustomed to handling clayworking machinery in large plant, and who has had some experience in the preparation of clays. Permanent position to right man. Address, stating salary expected,
EXCELSIOR TERRA COTTA CO.,
5 1 d Rocky Hill, N. J.

FOR SALE.

One 9-foot Dry Pan, iron frame.
One 4-mold Semi-Dry Press, almost new.
One Arnold Steamer.
One Revolving Screen.
One Miller Hand Press.
One 15-H. P. Portable Engine and Boiler.
One 20-H. P. Ajax Engine.
One 25-H. P. Boiler.
THE T. B. TOWNSEND BRICK & CONTRACTING CO.,
2 tf d Zanesville, Ohio.

LEASE.

I will lease to the right party "W. E. Cowington's" tile plant, situated right on the C., L. & N. R. R., at Mason, O., for one year at the following terms:

I will furnish kiln, large tile shed, mill and yards for one-third of all made tile, to be piled up and left on the ground. Power under same roof can be hired cheap, and the whole county is clay.

Call and see or address
J. C. BENNETT,
Agent for W. E. Cowington,
4 3 d Mason, Ohio.

FOR SALE.

Over 1,000 acres of clay land, with a No. 1 repressed brick plant, situated in eastern Pennsylvania, having three veins of clay and one of coal. This clay is suitable for different shades of buff or mottled brick. Two No. 1 brick presses and 2 100-h. p. boilers. All other machinery in first-class condition. Facilities for shipping on two railroads, with a siding 400 feet long. Will be sold outright if desired, or will be contributed in exchange for stock if capital can be furnished to develop.
Address COURT HOUSE,
4 3 cm Care of Clay-Worker.

WANTED—A practical all-round brickmaker; one that can handle colored labor to good advantage, with ten or fifteen thousand dollars cash, to take stock in a company that is chartered for $50,000. Good opening for all kinds of brick. The business has been established for twelve years. Good demand for brick; common, $7.50 to $8 per thousand; pressed brick, $8 to $12 per thousand. We have good machinery; capacity, 100,00% per day. The town has a population of 25,000. Climate good. Address
4 3 c W. J., care Clay-Worker.

NOTICE.

Full Equipped Brickmaking Plant For Sale.

I offer for sale the brickmaking plant of the Bem Brick Company, situated near the city of San Antonio, Tex. This is a first-class plant in every particular; capacity 21,000 brick per day; machinery in first-class working order, and there are contracts now out for over 2,000,000 brick. The only reason for selling being to wind up the administration of the estate of the owner. Offers received to June 16, 1902.
Address BENNO ENGELKE,
Administrator of the Estate of Amelia Elmendorf, deceased, San Antonio, Tex.
5 1 dm

The STARKEY DOWN DRAFT DRYER.

[Pat. January 30, 1894. Other patents pending.]

The many users of this system claim there is no other steam dryer. It has no rival for economy, and **does dry brick in the center** as rapidly as on the surface. If you want a Dryer, write for circular and convince yourself that you have been misled on these points. Address

JOHN STARKEY, Minerva, Ohio.

Twin Mountain Fire Clay Works,

SOLDIER, CARTER COUNTY, KENTUCKY.

...MINER AND SHIPPER...

Capacity 100 Tons per Day, Superior Quality No. 1 and No. 2 Clay.

ORDERS SOLICITED.
PROMPT DELIVERY.

W. A. Connolley.

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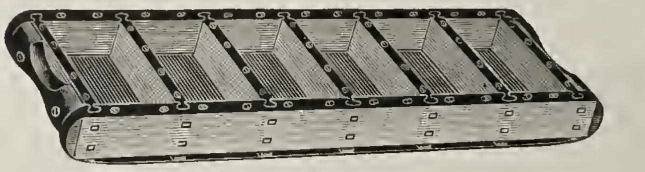

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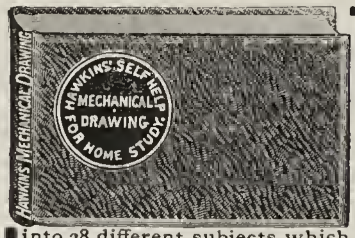

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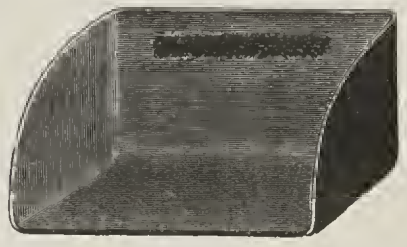

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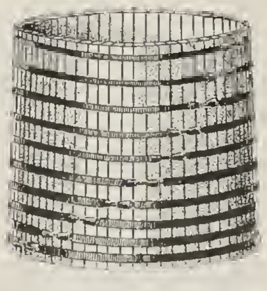

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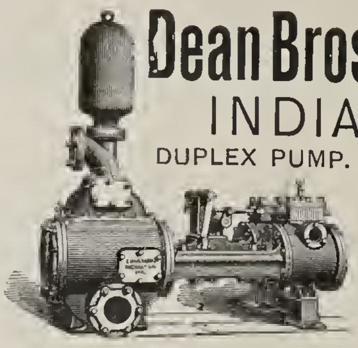

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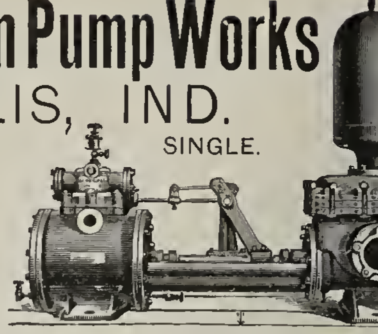

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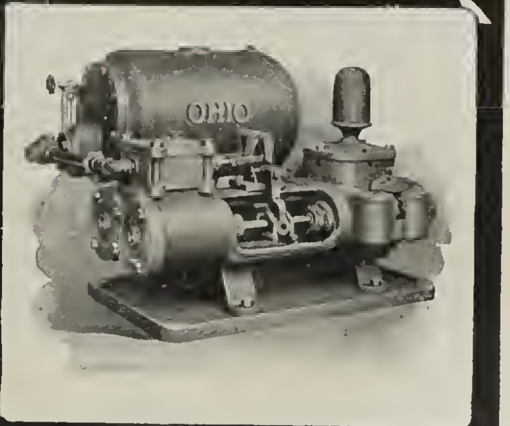

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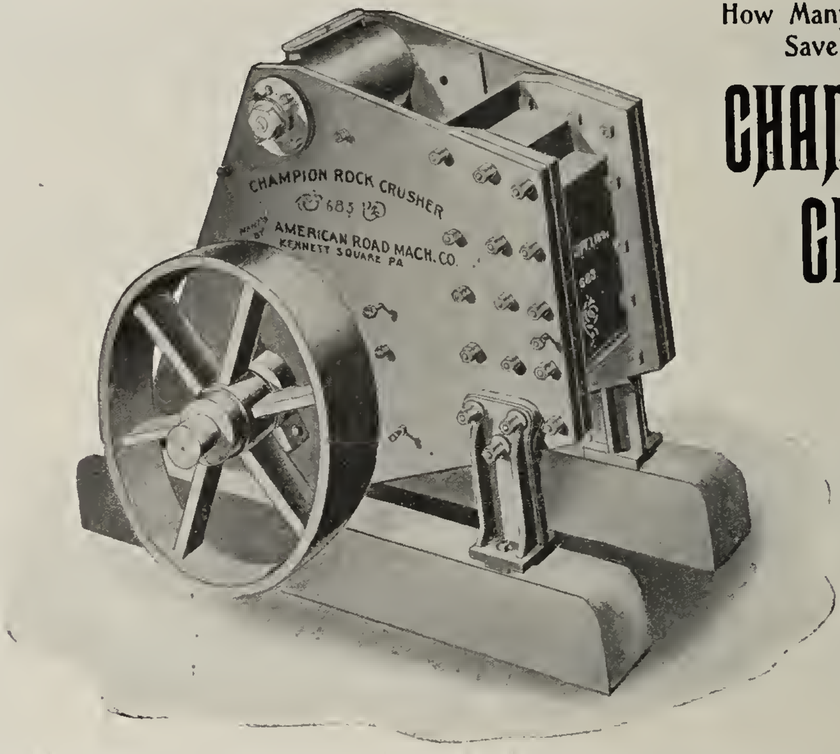

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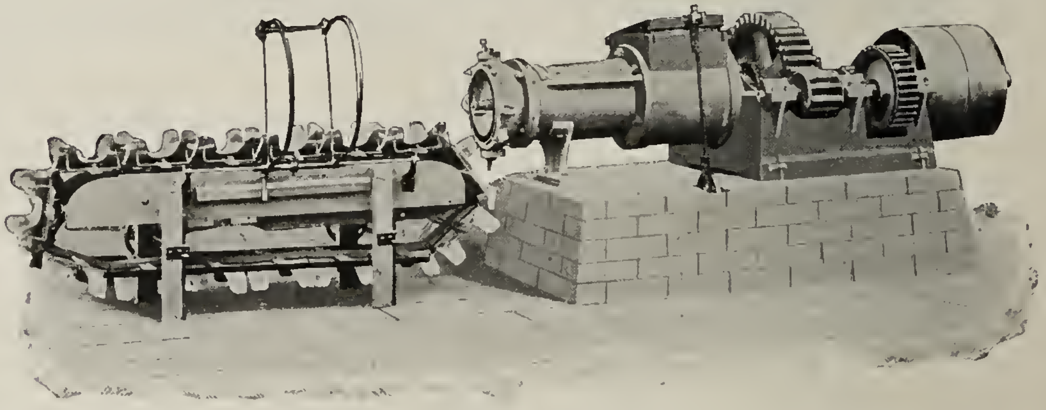

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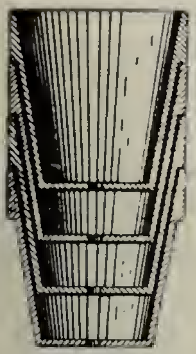

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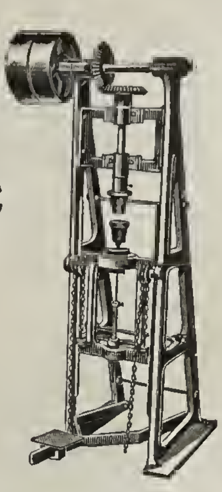

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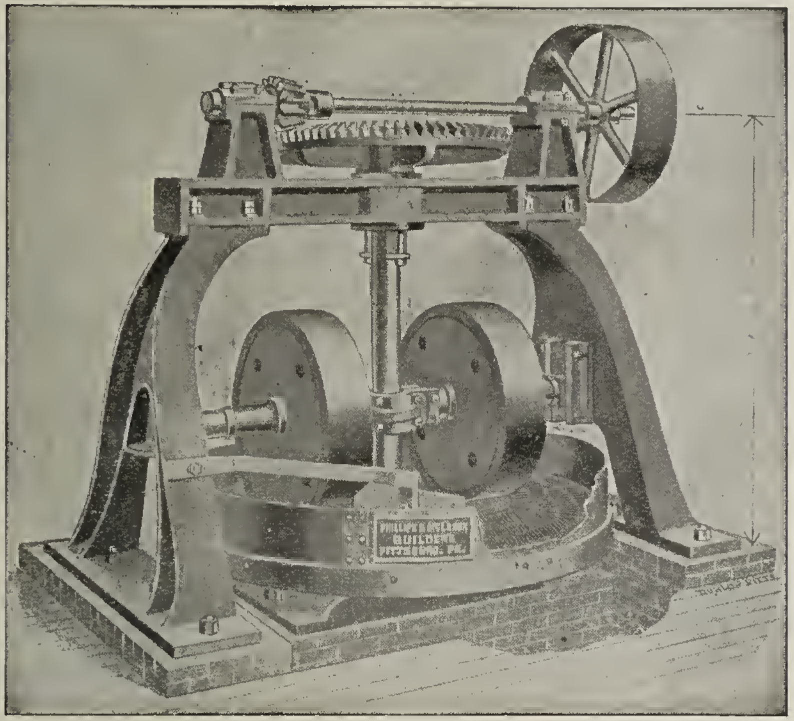

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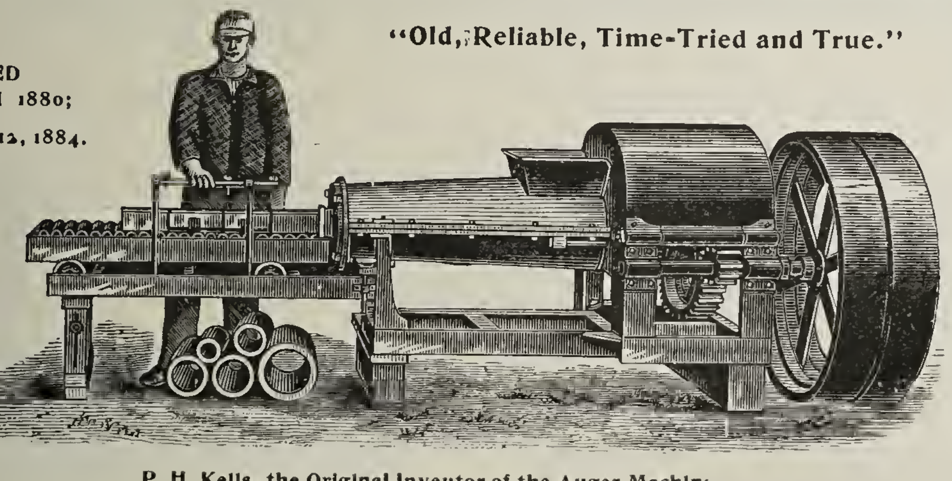

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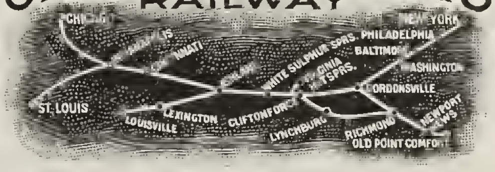

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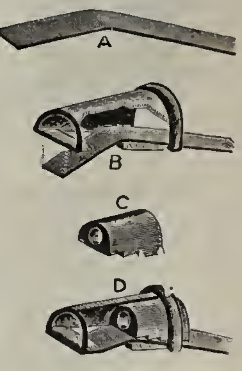

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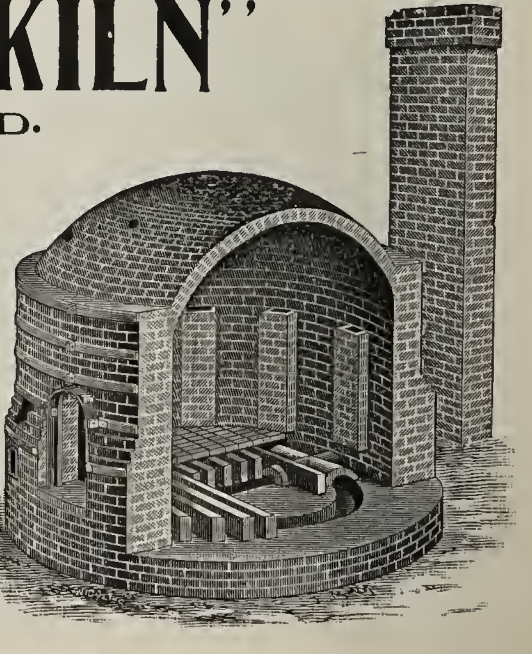

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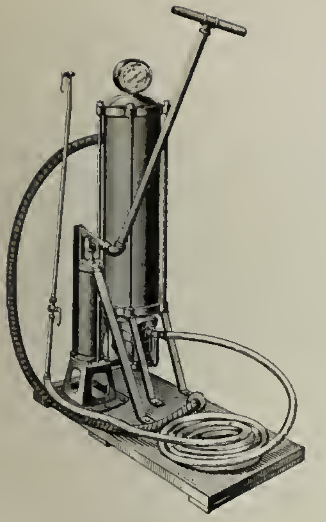

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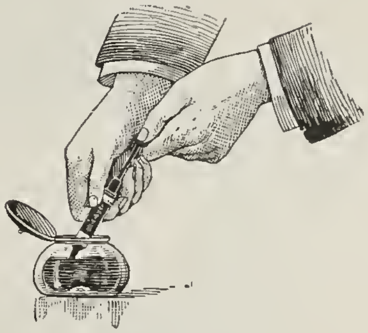

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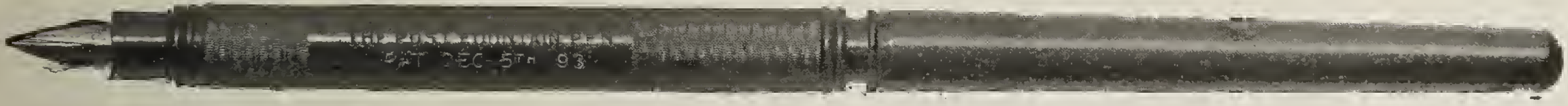

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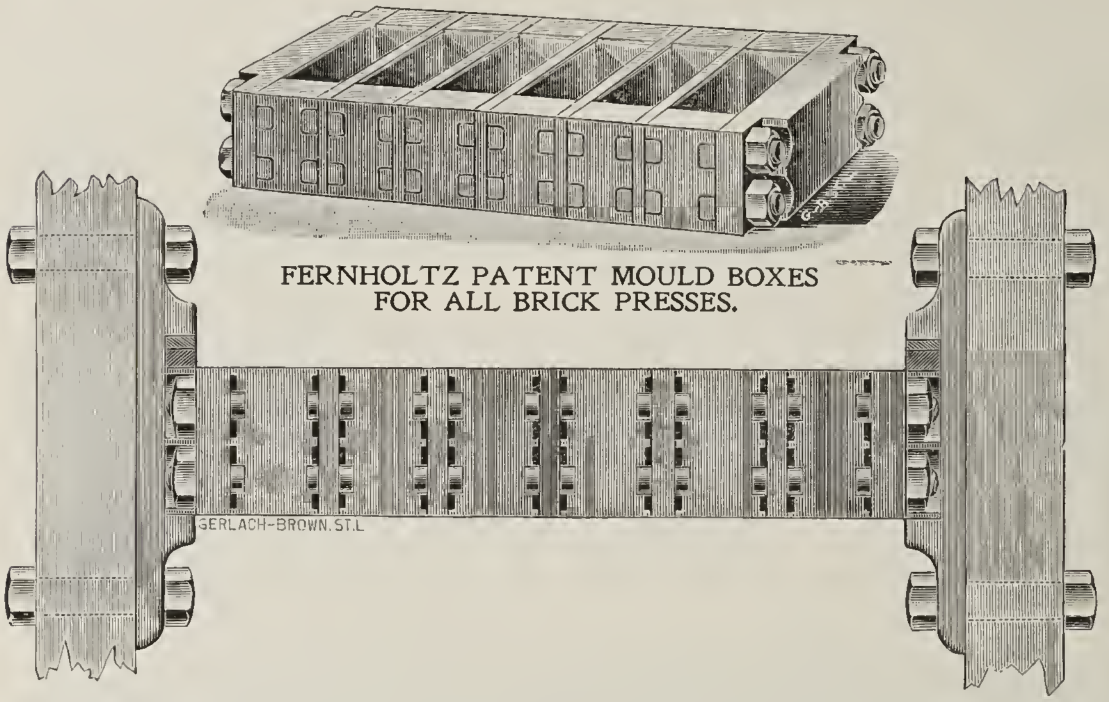

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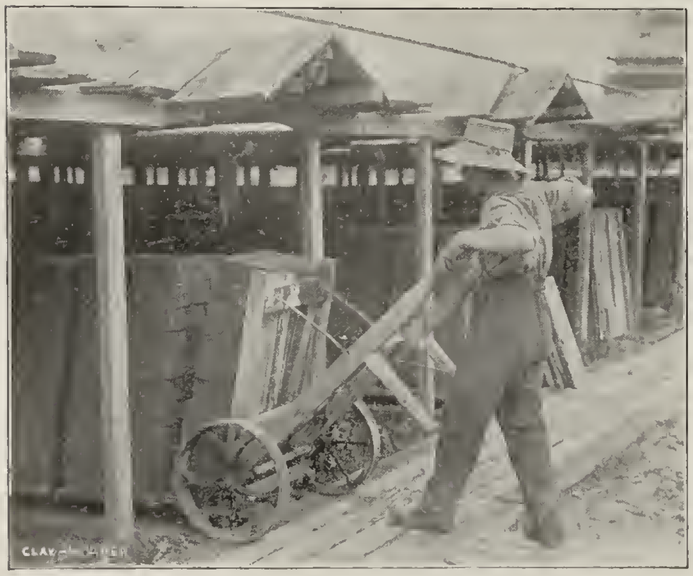

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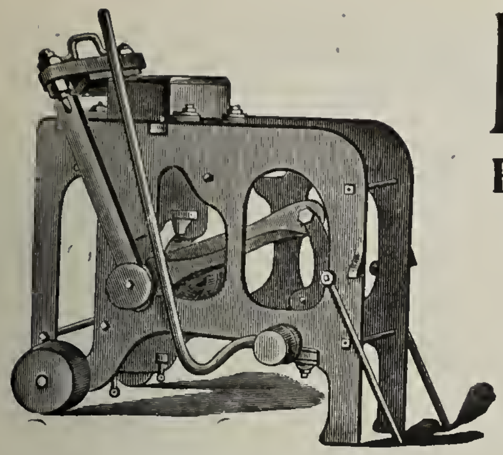

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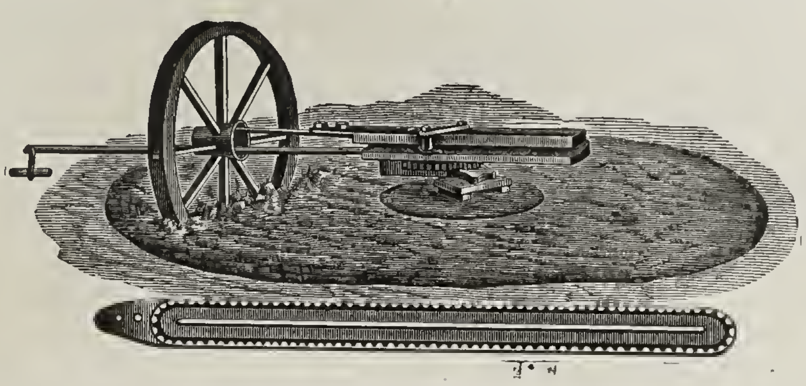

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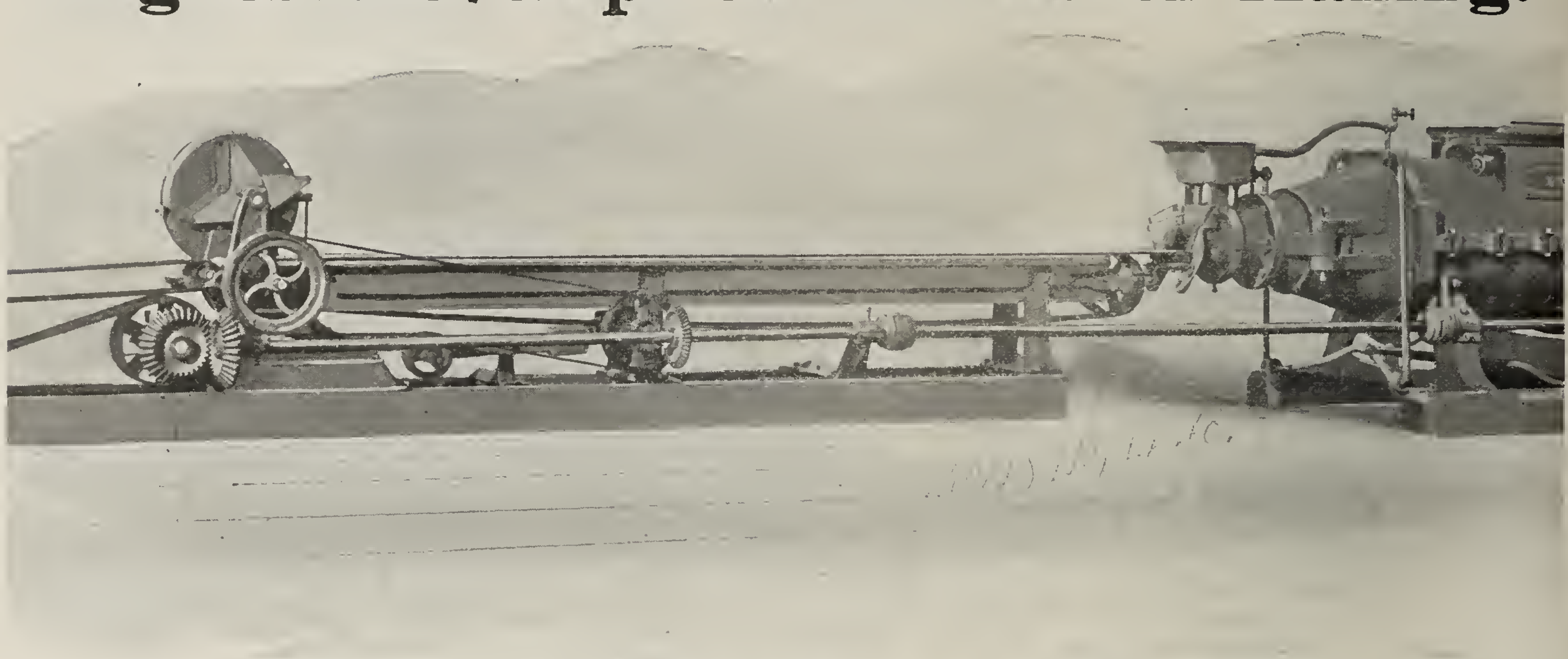

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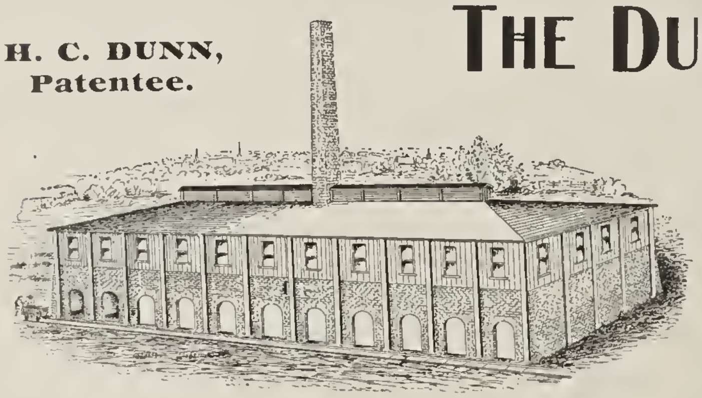

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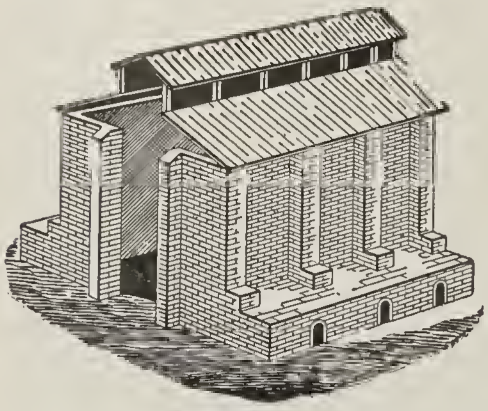

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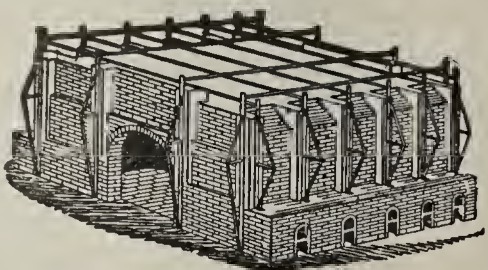

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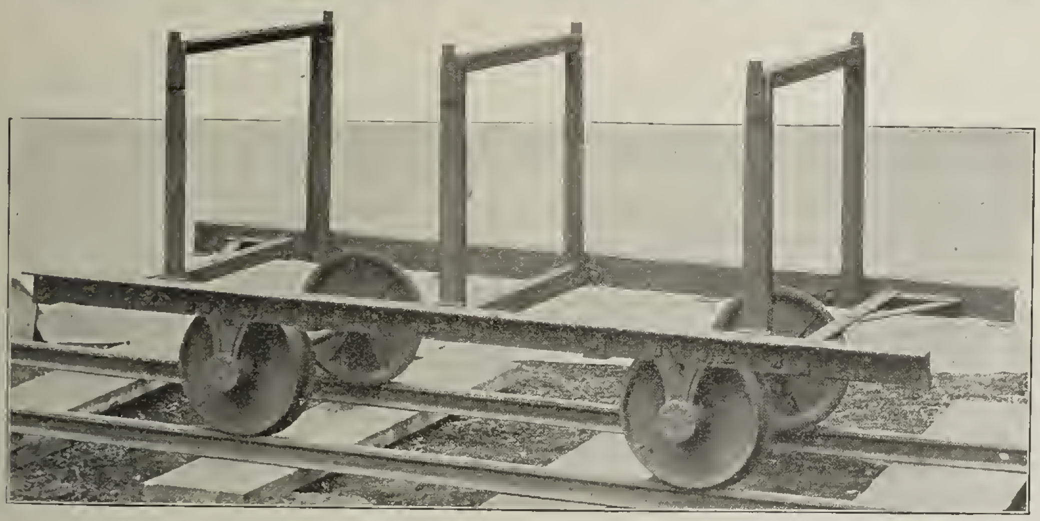

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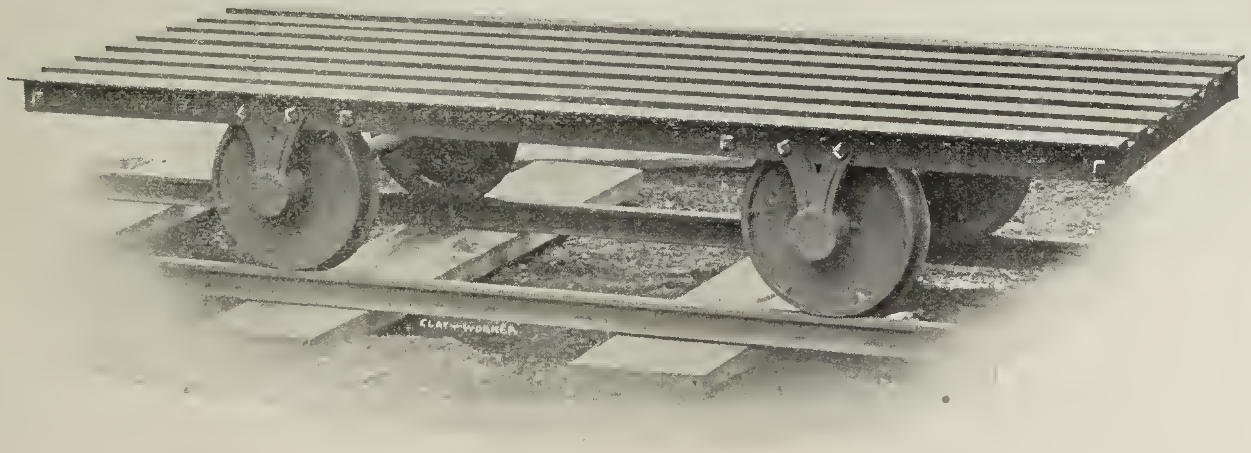

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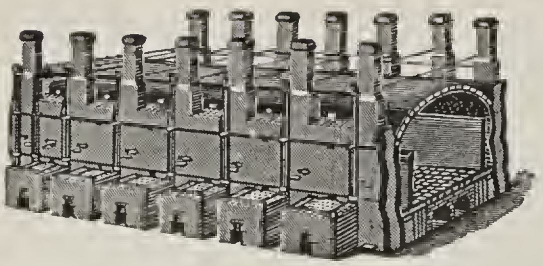

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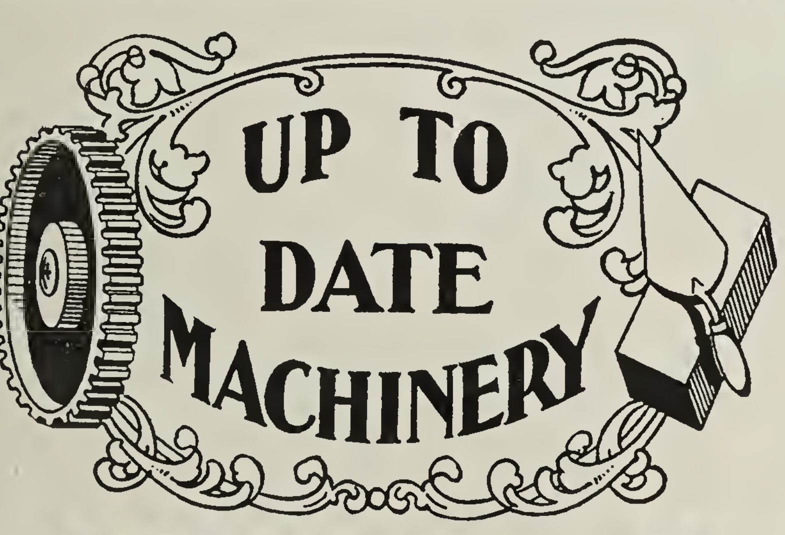

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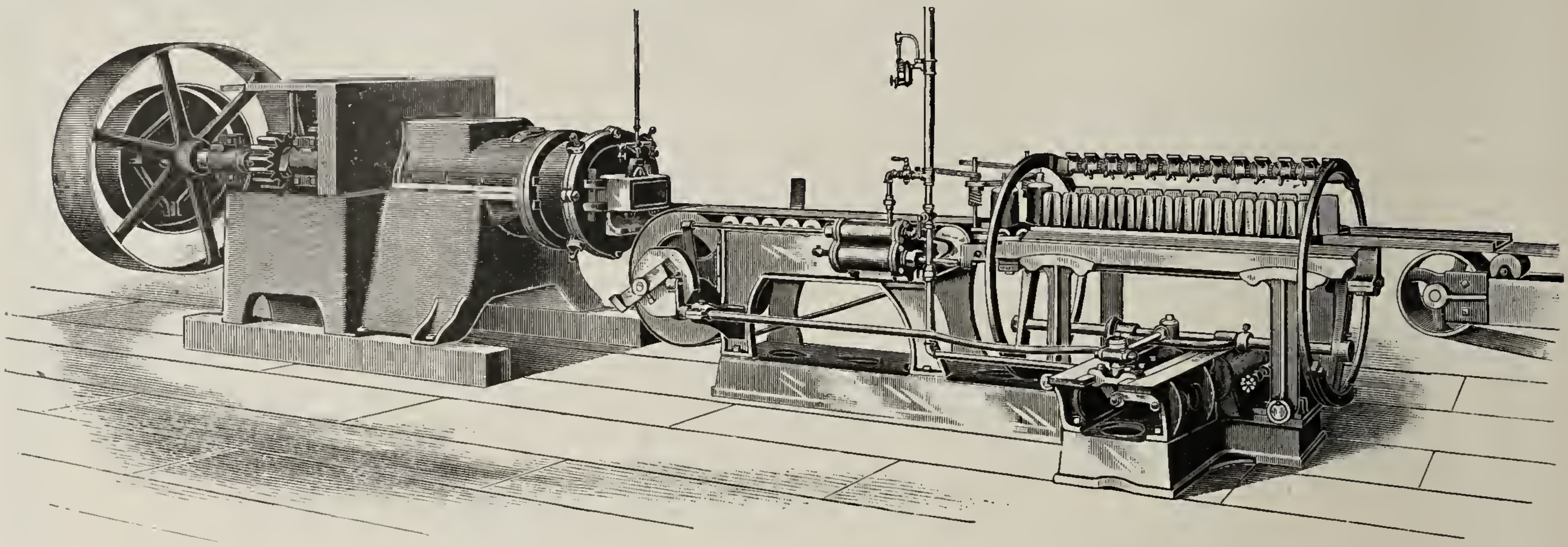

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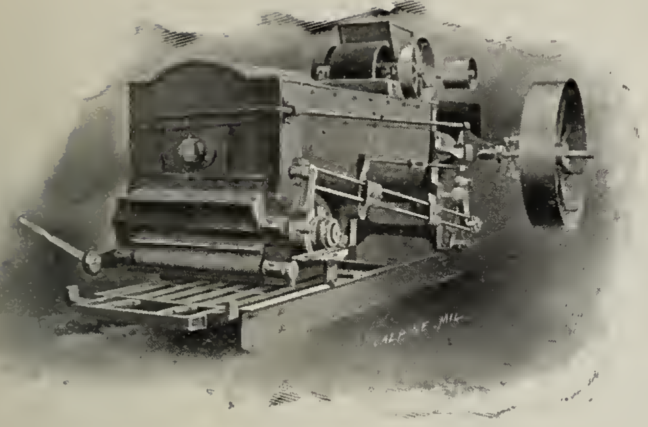

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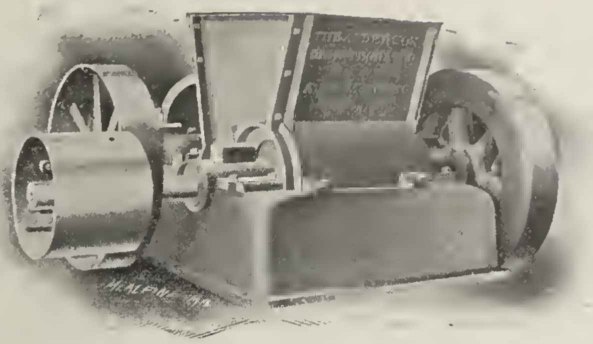

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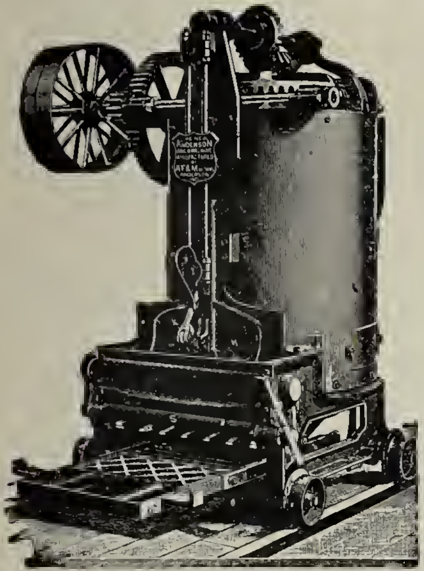

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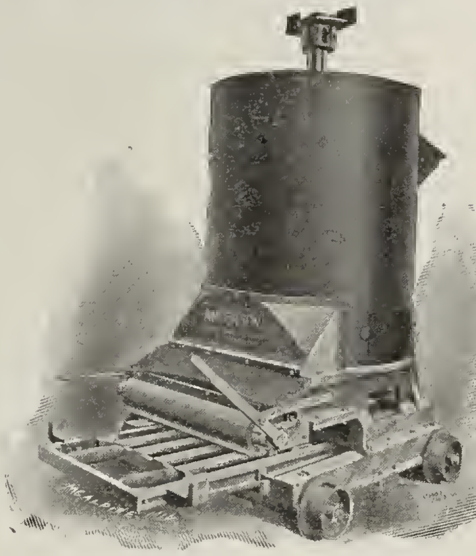

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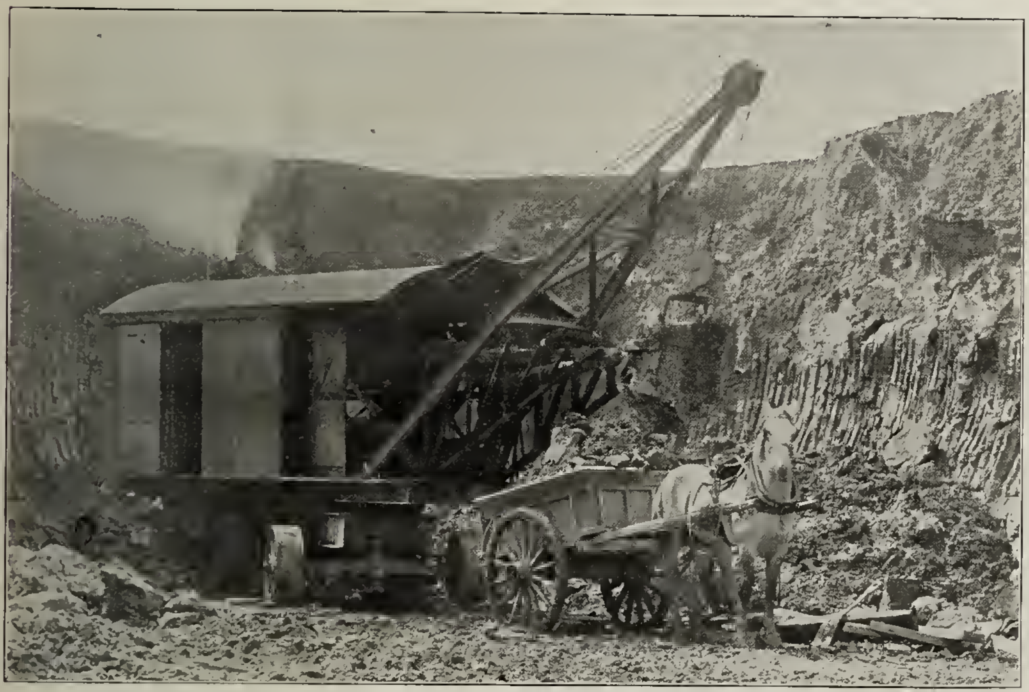

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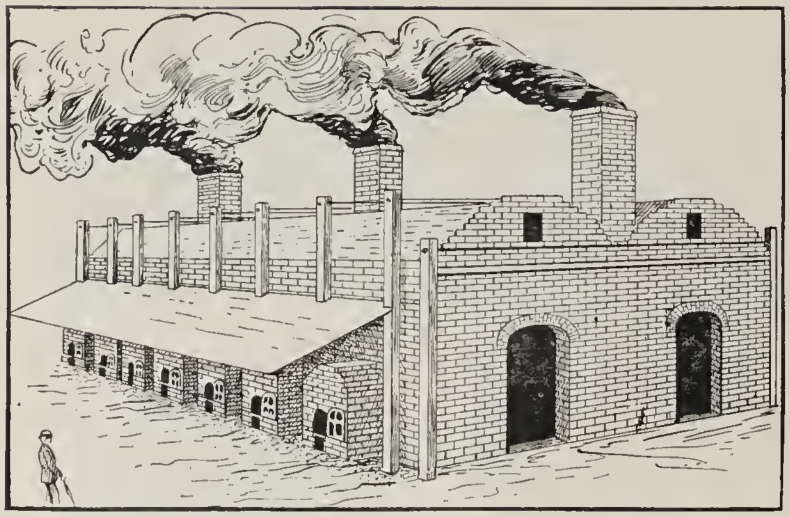

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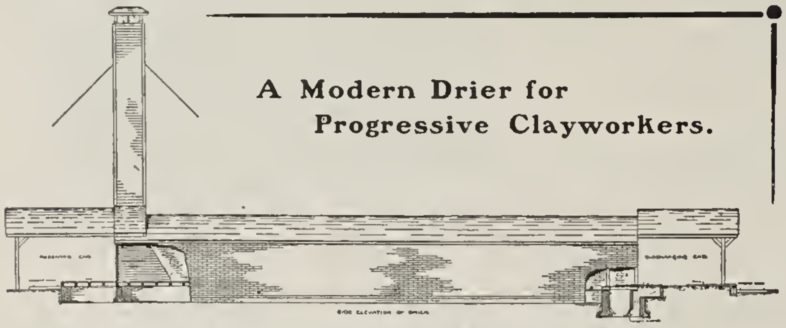

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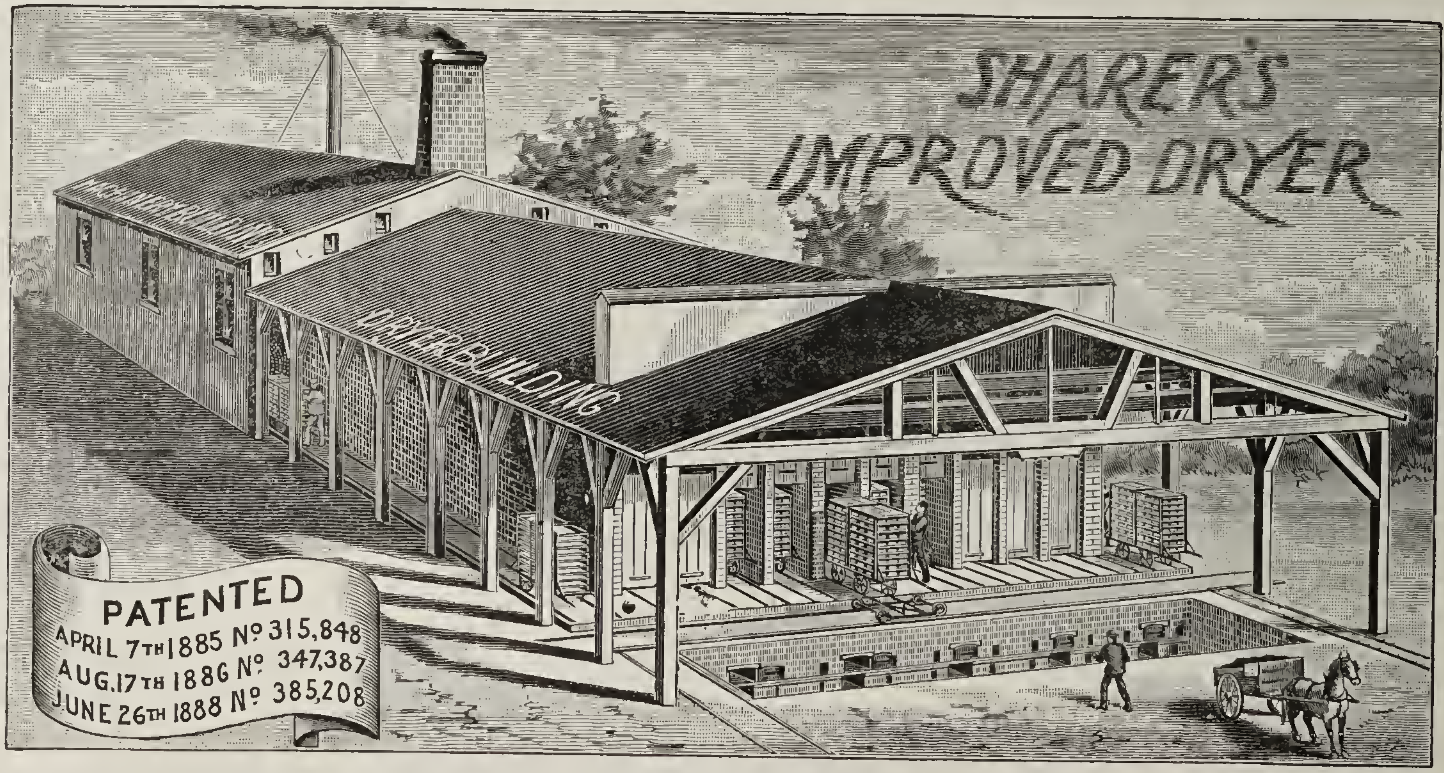
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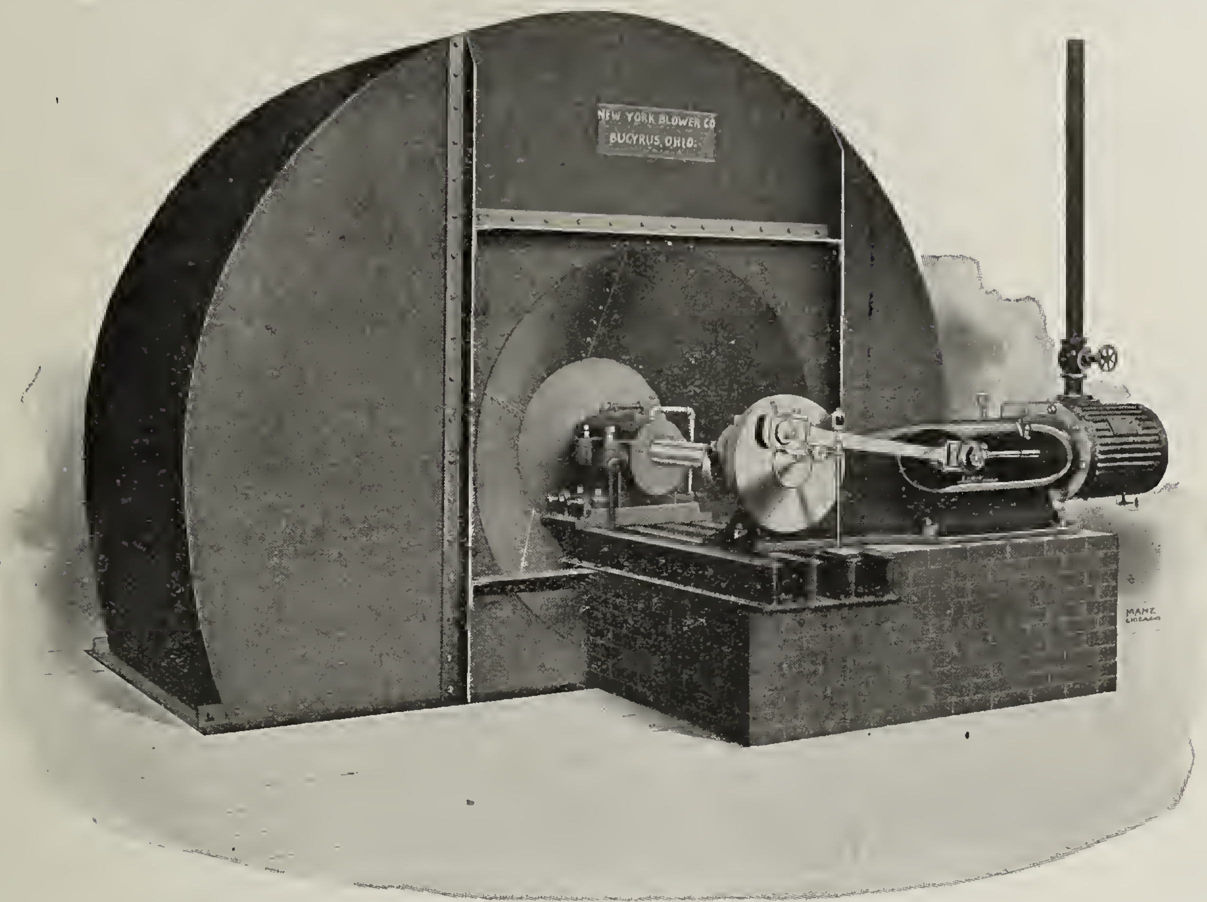

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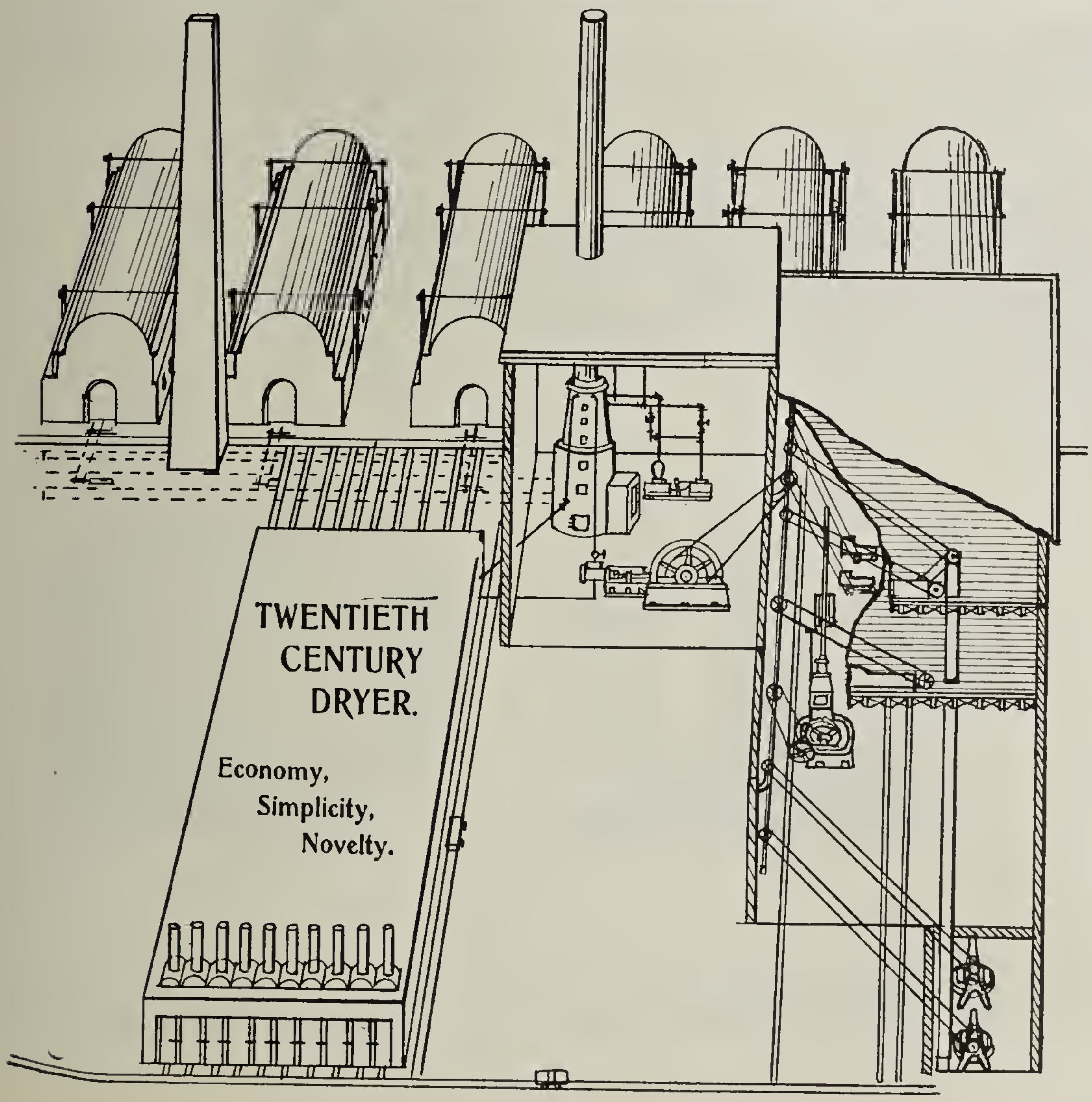

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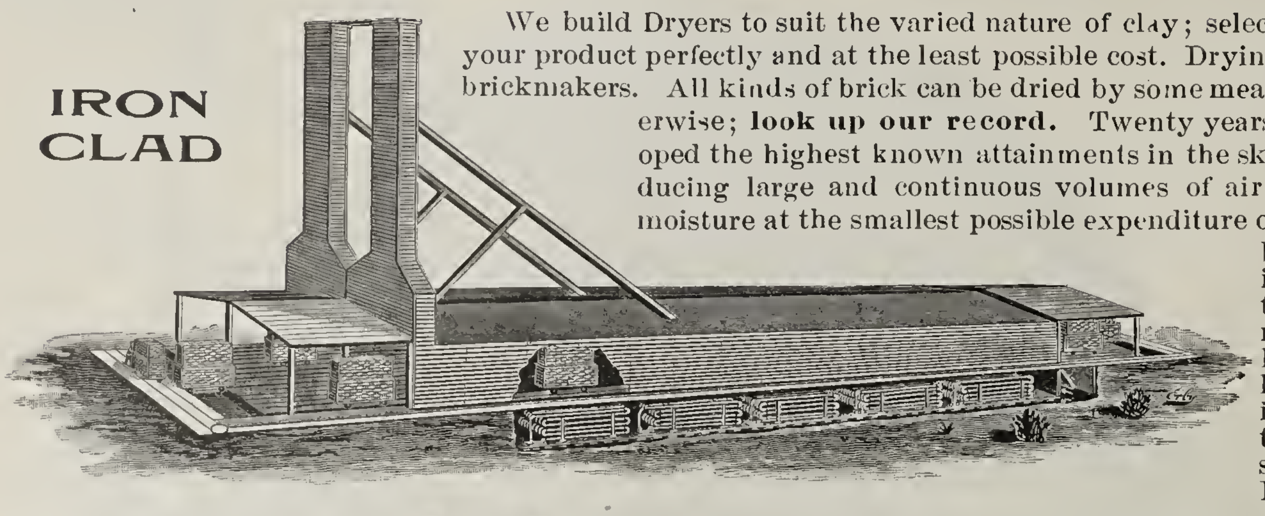
Mention The Clay-Worker.

CHICAGO IRON CLAD DRYER.

We build Dryers to suit the varied nature of clay; select the Dryer that will dry your product perfectly and at the least possible cost. Drying makes and breaks many brickmakers. All kinds of brick can be dried by some means, either profitable or otherwise; **look up our record.** Twenty years of experience has developed the highest known attainments in the skill of steam fitting for producing large and continuous volumes of air currents for carrying off moisture at the smallest possible expenditure of fuel. Ordinary stiff mud brick are now being dried in from 18 to 24 hours, at a temperature at the hot end not exceeding that of the hot room in a Turkish bath, leaving the brick as perfect in bond as when they left the machine. The only true system of producing perfect Paving Brick.



NOTICE—What we are doing in Chicago we can do elsewhere.

AMERICAN BRICK COMPANY,
Manufacturers of COMMON AND SEWER BRICK.
Office and Yard 45th and Robey Sts.
Telephone, Yards 128.

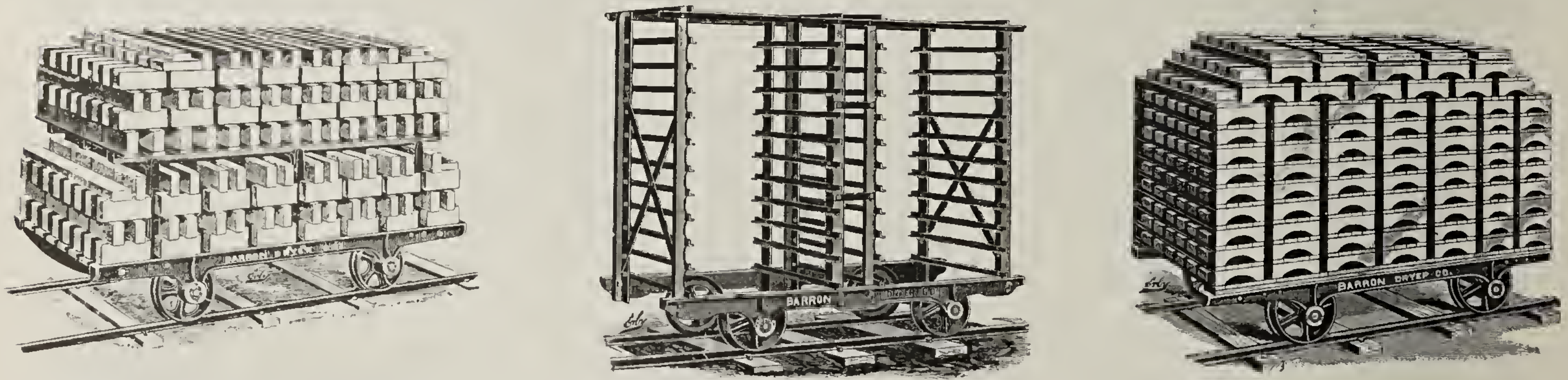
Barron Dryer Co. Chicago, Ill., January 8, 1902.

Gentlemen: The four-tunnel Brick Dry House which you installed at our plant last summer, guaranteed to dry one hundred and sixty-seven thousand (167,000) brick every twenty-four hours, is proving a most wonderful success. While Jack Frost has been making ice thirteen inches thick in the pond opposite, our Dry House has averaged one million of brick every six days with apparent ease, and is capable of doing much better providing our machinery was capable of turning out more brick each day. We have proven this by running two hundred thousand through the dryer in one day.

Last summer we dried our brick outside; a comparison of the two systems proves that the cost for labor in handling the brick outside is about the same as expense in fuel for running the dry house. Taking the loss of brick from rain and storms in outside drying, leaves a large margin in favor of drying by your system. In burning we also find a saving of 20 per cent. in fuel and produce a much better brick in every respect. Our brick now all burn hard from top to bottom. The saving of fuel in burning, loss in washed brick, and the improved quality of our brick—a great advantage to us. Your improved dry house is certainly a perfect and economical system of drying. Respectfullly yours,

AMERICAN BRICK COMPANY,
John D. Shelhamer, Vice-President.

The Barron Tender Clay Dryer for Tender Clays.


BARRON DRYER CO.
BARRON
BARRON DRYER CO.

MODERN BRICK CARS—Made in both cast iron and steel. Are the strongest and smoothest running. Have been tested for years and ound the best. Send for prices.

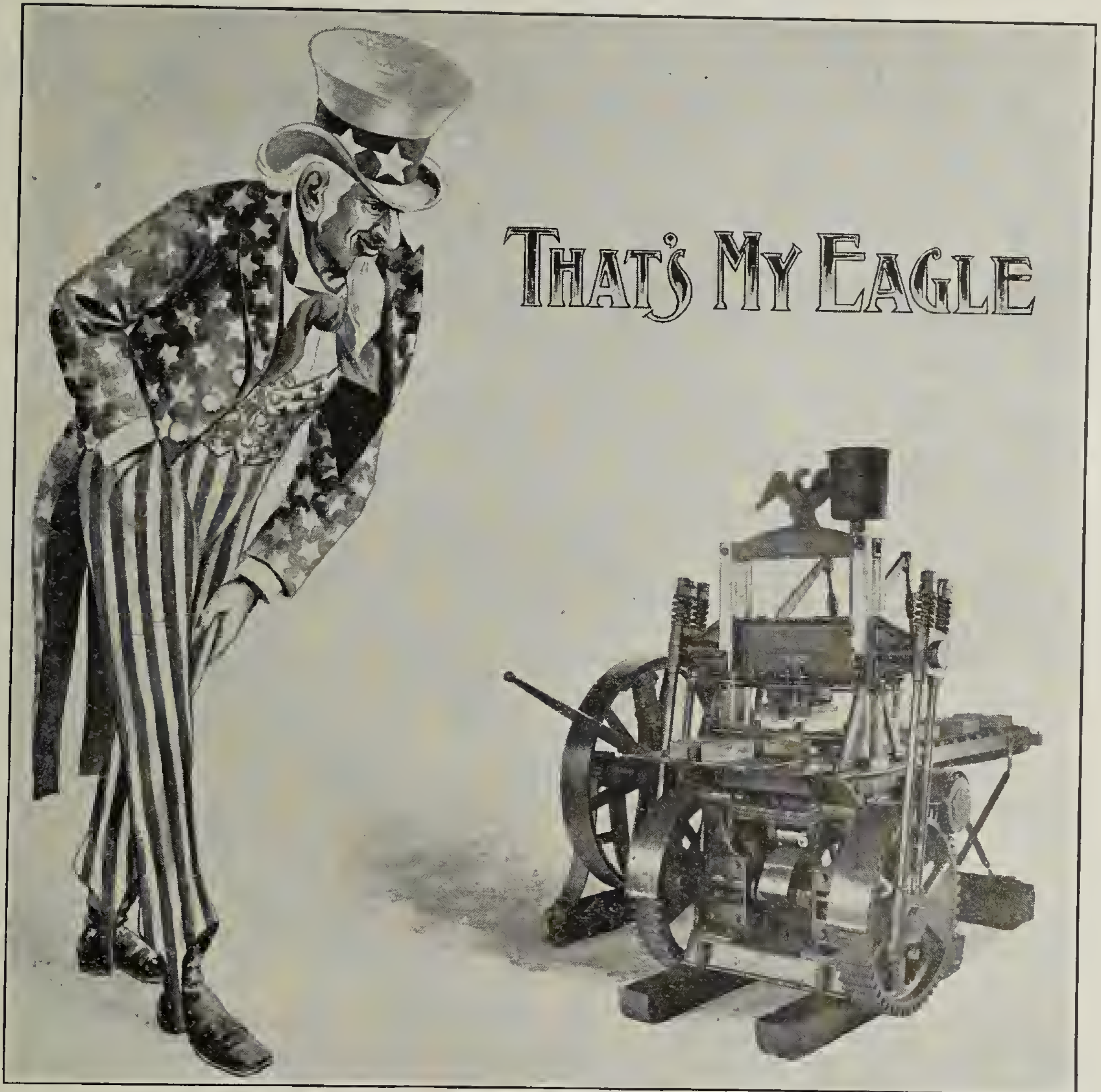
Send for Information,
Estimates, etc., etc.

BARRON DRYER CO.,

Temple Court Bldg., 225 Dearborn St.,
CHICAGO, ILL., U. S. A.

UNCLE SAM is proud of the Eagle. So are we. So are all the clayworkers who have bought Eagles. Why is it? People are never proud of a poor thing or a disappointing investment. They all like the Eagle because it is a fulfiller of guarantees, because it stands for quality, because it's a willing worker, because it saves its cost in repair bills, because when the whistle blows it's ready and able to run, and is willing and able to run overtime, or all the time, without complaint. If you're going to buy a repress and are willing to buy on a business basis of economy, you'll be safe in investigating the record of the Eagle. We'll send you facts and figures for the asking, and a list of users. Wire or write.

BUILT RIGHT RUN RIGHT
THE AMERICAN CLAY WORKING MACHINERY CO.
BUCYRUS, O. U.S.A.



BUILT RIGHT RUN RIGHT
THE AMERICAN CLAY WORKING MACHINERY CO.
BUCYRUS, O. U.S.A.

We also build the only complete line of clayworking machinery in the various processes. Every machine a winner because it's **"Built Right and Runs Right."**

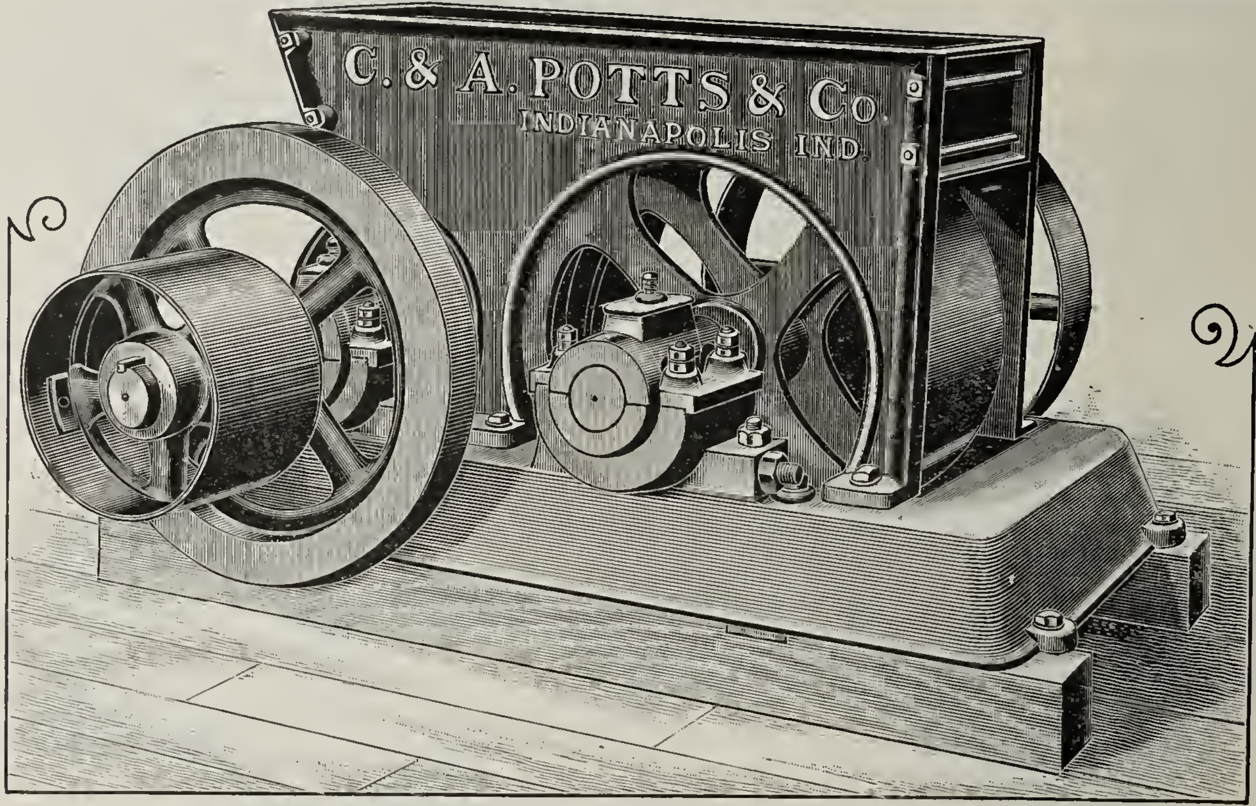
The American Clay-Working Machinery Company,
Bucyrus, Ohio, U. S. A.

New York Office,
39-41 Cortlandt St.
Chicago Office,
Merchants' Loan and Trust Bldg.
European Office,
3 Gore St., Picadilly, Manchester, Eng.

See Ad. on Page 606.

Potts Disintegrators

Are used in all parts of the United States and Europe. They are acknowledged by the trade in general to be the only Reliable Machine ever made for the work.


C. & A. POTTS & Co.
INDIANAPOLIS IND.

(Patented.) **Style "P"** Four Sizes, Capacity 20 to 150 M Brick per day.

It grinds any kind of clay. Does not Choke or Clog from wet, sticky or hard, dry clays. Grinds the clay, leaving it in a loose, open condition so it will take water readily, and can be thoroughly tempered.

These Disintegrators grind the small stone, and separate the large ones.

There is no piece of machinery made which will make a greater improvement in the quality of your Brick or Tile.

Remember that a good thing, and one in general demand, soon has competitors, so with the Potts Disintegrator, which is the only machine made having **ADJUSTABLE SECURED STEEL CUTTING BARS**, all other Disintegrators have the lugs, or bars cast to the cutting roll (an underhand way competitors have taken to avoid our patents) these cast bars wear off in a week or two, with no way to replace them, only by purchasing a new roll. When some agent is trying to sell you one of these inferior machines, his only recommendation is that it is cheaper than the Potts.

Stop, Then, and figure what three new rolls for one of these machines will cost per year. You will purchase a Potts Disintegrator we know. THEY ARE THE BEST.

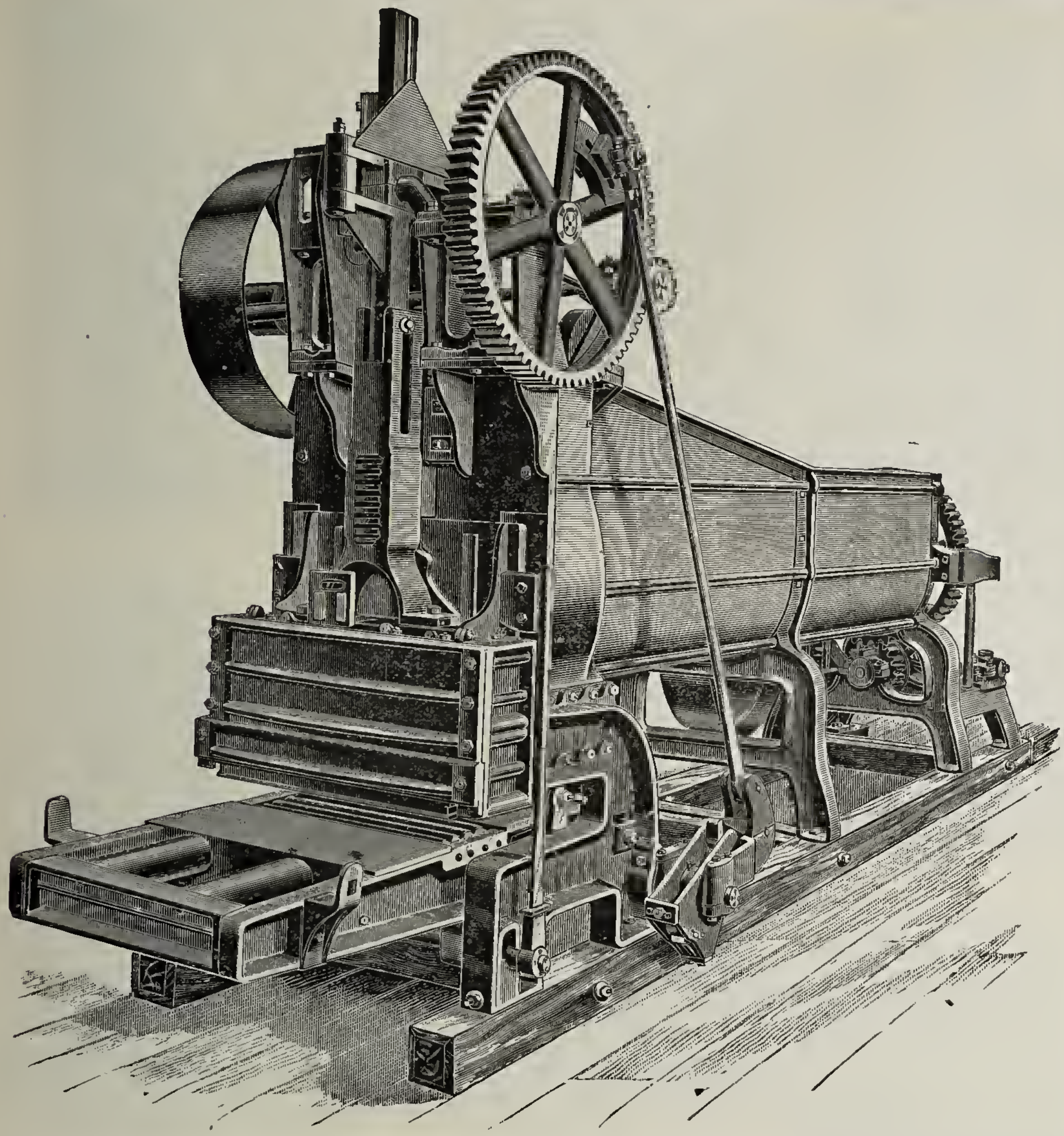
C. & A. POTTS & CO.,

Mention the CLAY-WORKER

Indianapolis, Ind.

THE POTTS Horizontal Stock Brick Machine.

THE LEADING MACHINE OF AMERICA.



More Machines Sold This Past Season, Than In Any Two Former Years.

What We Claim: It is the Largest, Heaviest and Best Constructed. It has Double the Tempering Capacity of any Machine made, It will work the clays as stiff as it is possible to slip it from the moulds or strike the moulds, at the same time fill a six-brick mould perfectly with brick which will have CLEAN, SHARP CORNERS, SMOOTH SURFACES, and are STRAIGHT and SQUARE when burned.

All Shafts are made of the best grade of STEEL. STEEL GEAR—All surface joints planed, insuring good solid bearings.

There is no one to dispute, and prove his claim, that this is not the best Machine on the market today.

We guarantee all we claim with a guarantee which is good, no verbal promises.

Write for Prices and Terms.

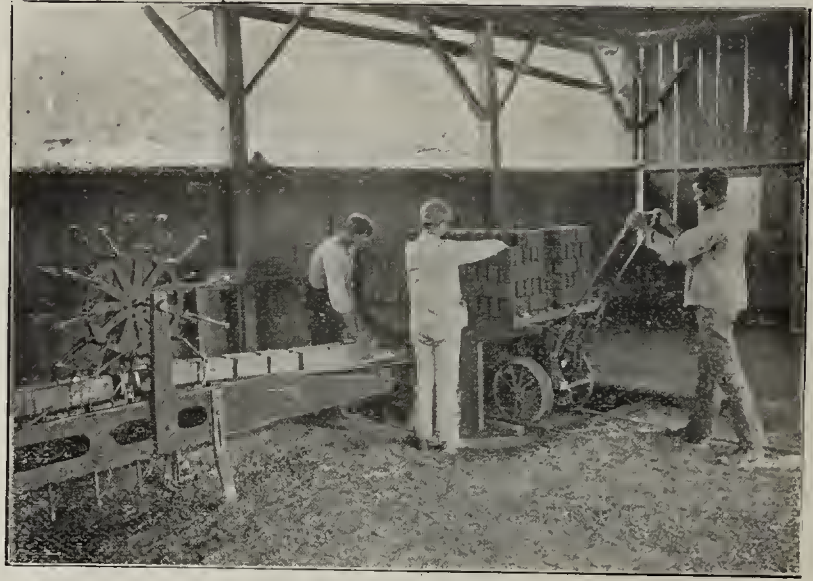
C. & A. POTTS & CO., - Indianapolis, Ind.

A PERFECT CAR SYSTEM

For Either Soft or Stiff Mud.

With only TWO CARS
One man will handle 40 M brick per day.

No Fan to Run. No Boiler to Steam.
No Pipes to Burst. No Fireman to Pay.
No Dryer. No Fuel.



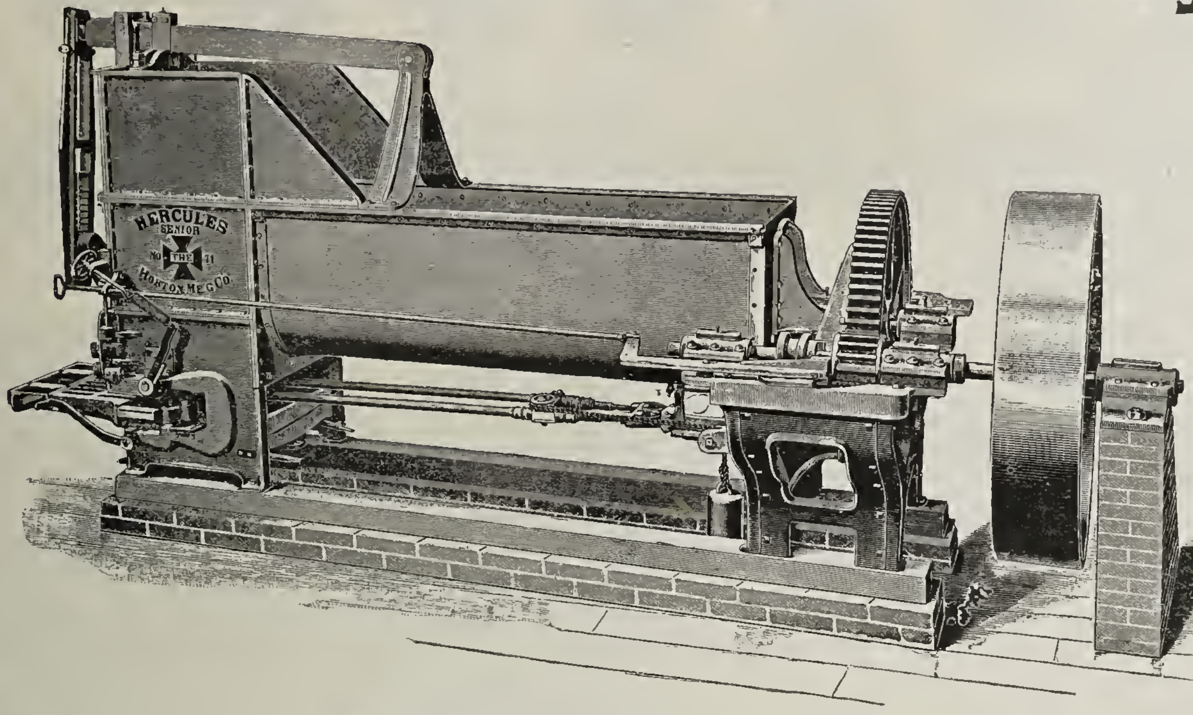
We Guarantee This to be the cheapest, best and only out-door car system ever offered the brick manufacturer. We guarantee to handle from the machine and put on the yard in good condition, from thirty to forty thousand green brick per day, with one man, and same amount to kiln. We guarantee our patent car and system to perform the work for which they are built, and all the workmanship and quality of material to be first class. Our Covers and Storm Curtains give absolute protection from rain and storms and also protects tender clays.

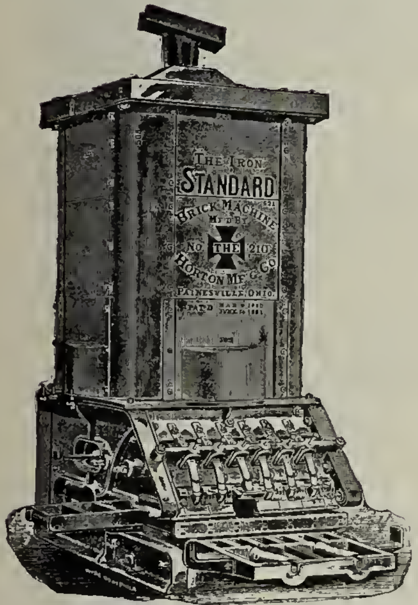
THIS SYSTEM consists of two elevating and lowering brick cars for a thirty to forty thousand capacity brick plant; these take the place of several hundred common cars. The car is made of channel steel, with movable deck, which is raised and lowered by a compound lever. From two to five hundred brick are taken from the machine and placed on a pallet, the lever lowered, raising pallet off the rests. The load is then on car, which is run on the yard to the rests along each track; the lever is again raised, thus lowering deck of car which places load on the rests.

Scotts Patent Brick Car Co.,

Write for Catalogue. Knoxville, Tenn.

The HERCULES Works the Clay Stiff.

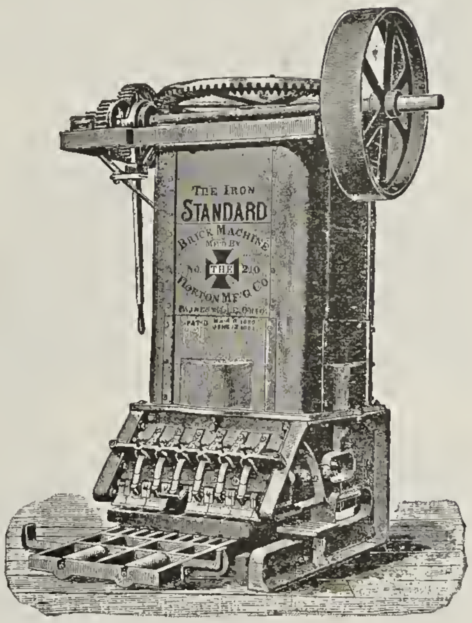




Iron Standard Horse Power Brick Machine—The Leader of all Horse Power.

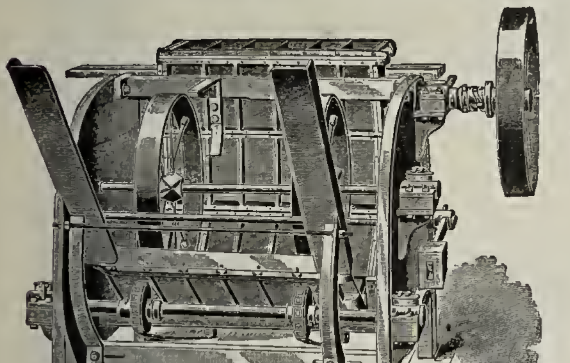
MOLDS.

Is one of our Specialties. Either Hand, Machine or Shapes. We have a shop full of Special Machinery for the Manufacture of these as well as Trucks of all kinds, Wheelbarrows. Dump Cars, and Carts. In fact everything used on a Brickyard.



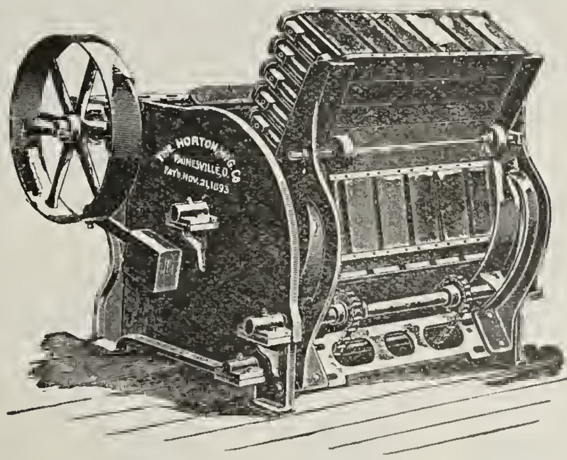
Standard Steam Power Brick Machine—Just the Machine for Medium Sized Yards.

The Mold Sanders That "Sand"



No. 1 Sander for Pallet System.

TWO STYLES.



No. 2 For Open Yards.

THE HORTON MANUFACTURING CO.,

Painesville, Ohio, U. S. A.

Mention The Clay-Worker.

Brick Machinery and Brickyard Supplies

Soft Mud, Wire Cut, Dry Press Processes.

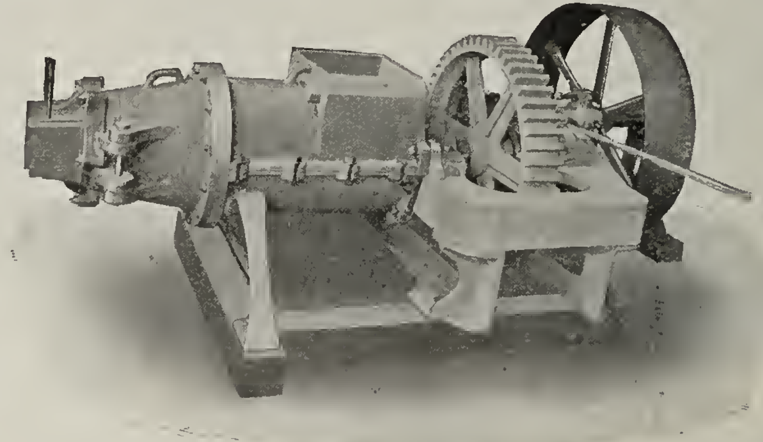
WE EQUIP BRICK PLANTS COMPLETE AND GUARANTEE THEM TO GIVE SATISFACTION.

◆ ◆ ◆

Advise us the capacity you desire and get our prices.

THEY WILL INTEREST YOU.

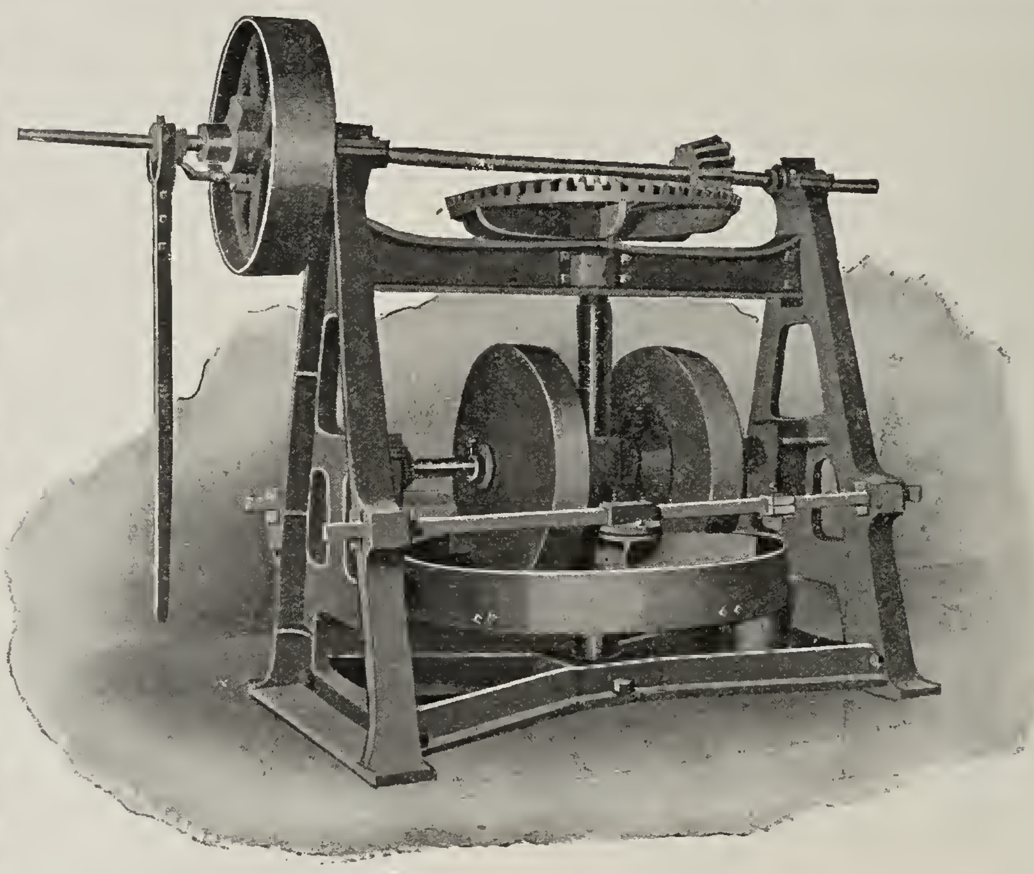
Send us a Sample of your clay and get our opinion of it.



Our No. 2 Auger Machine—Capacity 20 M.

We Furnish Everything a Brickmaker Needs.

Pug Mills.
Granulators.
Crushers.
Dry and Wet Pans.
Elevators.
Conveyors.
Hoisting Drums.
Dump Cars.
Brick Barrows.
Brick and Tile Trucks.
Dump Carts.
Dryer Cars.
Brick Moulds.
Engines.
Boilers.
Etc., etc.



5 foot Grog Mill.

THE HENRY MARTIN BRICK MACHINE MFG. CO.,

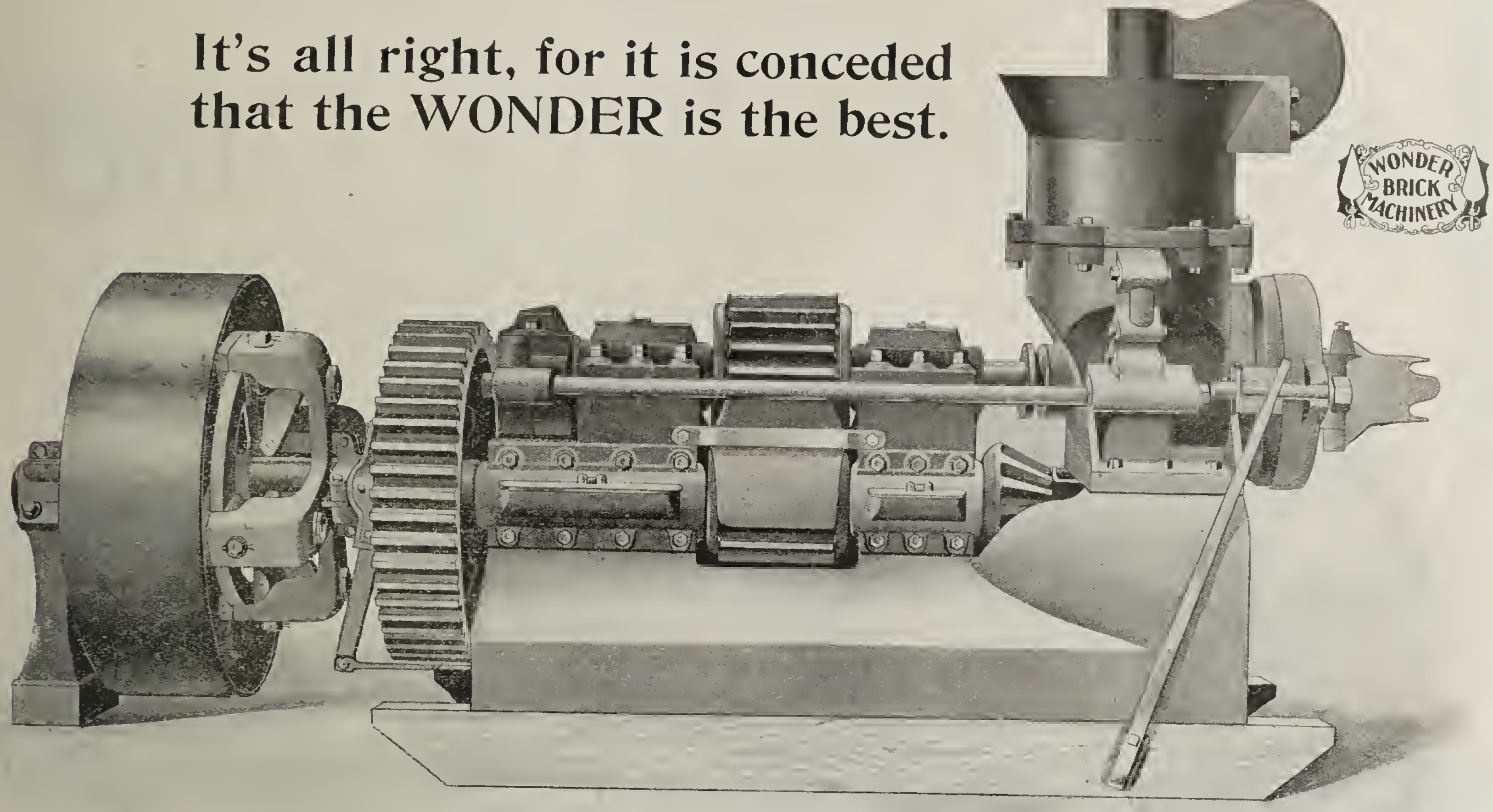
Incorporated.

Send for our new Catalogue No. 60.

LANCASTER, PA.

IF IT'S A WONDER,

It's all right, for it is conceded that the WONDER is the best.



We are not only in the front ranks, but in the lead. The WONDER stands today without an equal for STRENGTH, DURABILITY and GENERAL EXCELLENCE and with our new and strictly MODERN FACTORY and EQUIPMENTS we propose not only to maintain the high standard to which the WONDER brick machinery has been brought, but to bring it still higher.

It is not simply our desire to equal, but to excel. There are a great many features in the WONDER machine which are decidedly advantageous and which are not contained in other Stiff Mud machines.

With the WONDER, lamination is entirely destroyed and the brick are solid throughout.

We sold more machines last year than in any two previous years—more people are investigating, and where the WONDER machine is investigated it is always adopted.

Catalogue for the asking. Information cheerfully given.

The Wallace Mfg. Co.,

FRANKFORT, IND., U. S. A.

SOUTHERN AGENTS:
Atlanta Brick Machinery Co.,
403 Prudential Building, ATLANTA, GA.

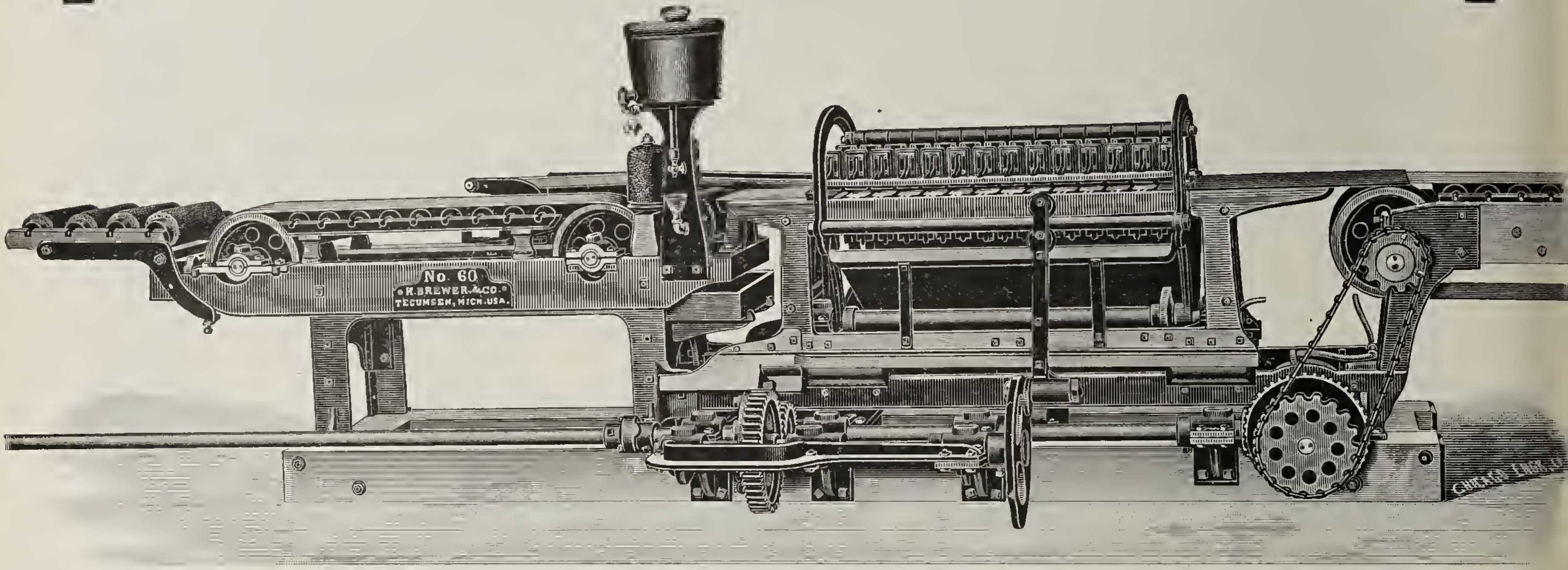
WESTERN AGENTS:
Chicago Brick Machinery Co.,
225 Dearborn Street, CHICAGO, ILL.

Mention The Clay-Worker.

THE BREWER NO. 60

Automatic Brick Cutter

Is more simple, more efficient, more durable and less expensive than any other machine of the kind that has even the least foundation for a claim of being a good one.



It is sold under a guarantee which gives you the opportunity of trying it before you pay for it and of returning it at our expense if not satisfactory to you. Get one of our catalogs. They are free.

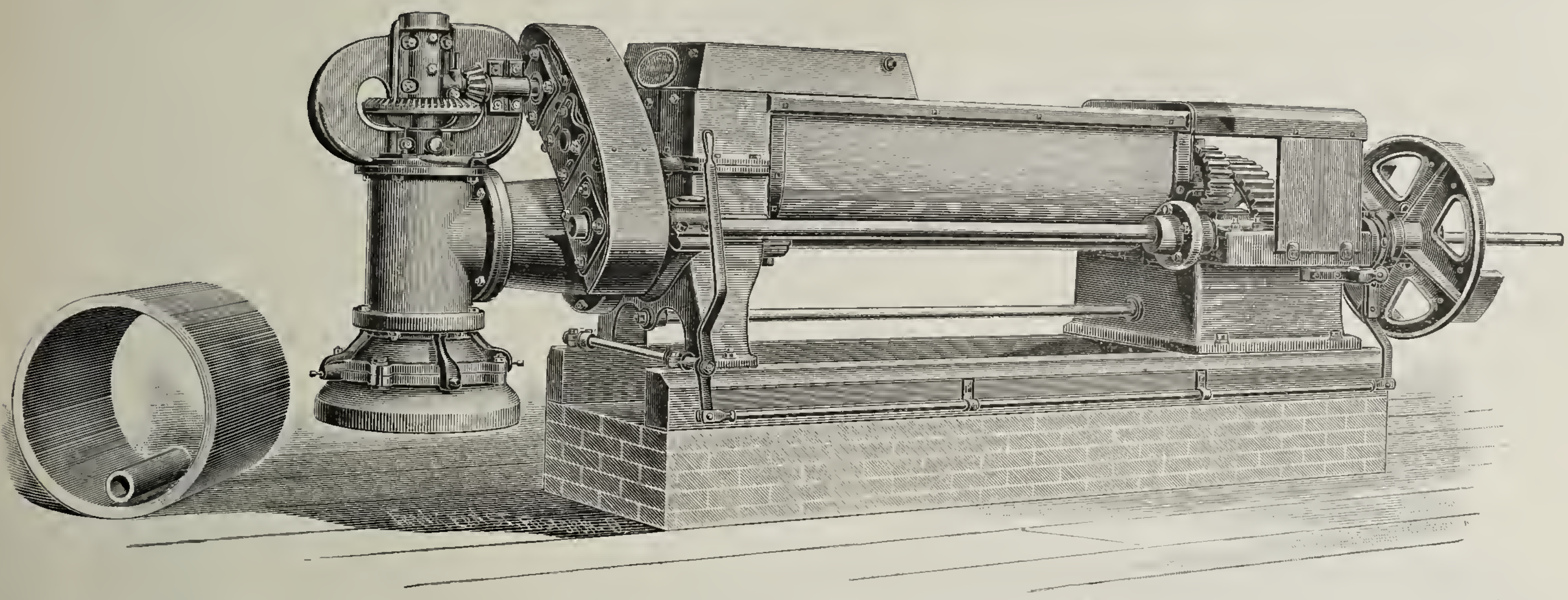
H. BREWER & COMPANY,

Tecumseh, Michigan.

A NEW COMBINATION.

◆◆◆◆◆◆◆◆◆◆◆◆◆

INVESTIGATE IT THOROUGHLY.



Recognizing the fact that the average tilemaker does not sufficiently pug the clay he uses we have arranged our famous "Hummer Combined" Brick Machine so as to make all sizes of drain tile from 2½ inches to 24 inches.

Sizes 2½ inches to 8 inches, delivered horizontally and the larger sizes vertically. This machine, with a "Bensing" Automatic Tile Cutting Table, makes the most complete outfit for the manufacture of drain tile and hollow building blocks on the market.

We would like an opportunity to make you thoroughly acquainted with the good qualities of this Machine. A postal card from you will bring the information.

The J. D. FATE CO.,

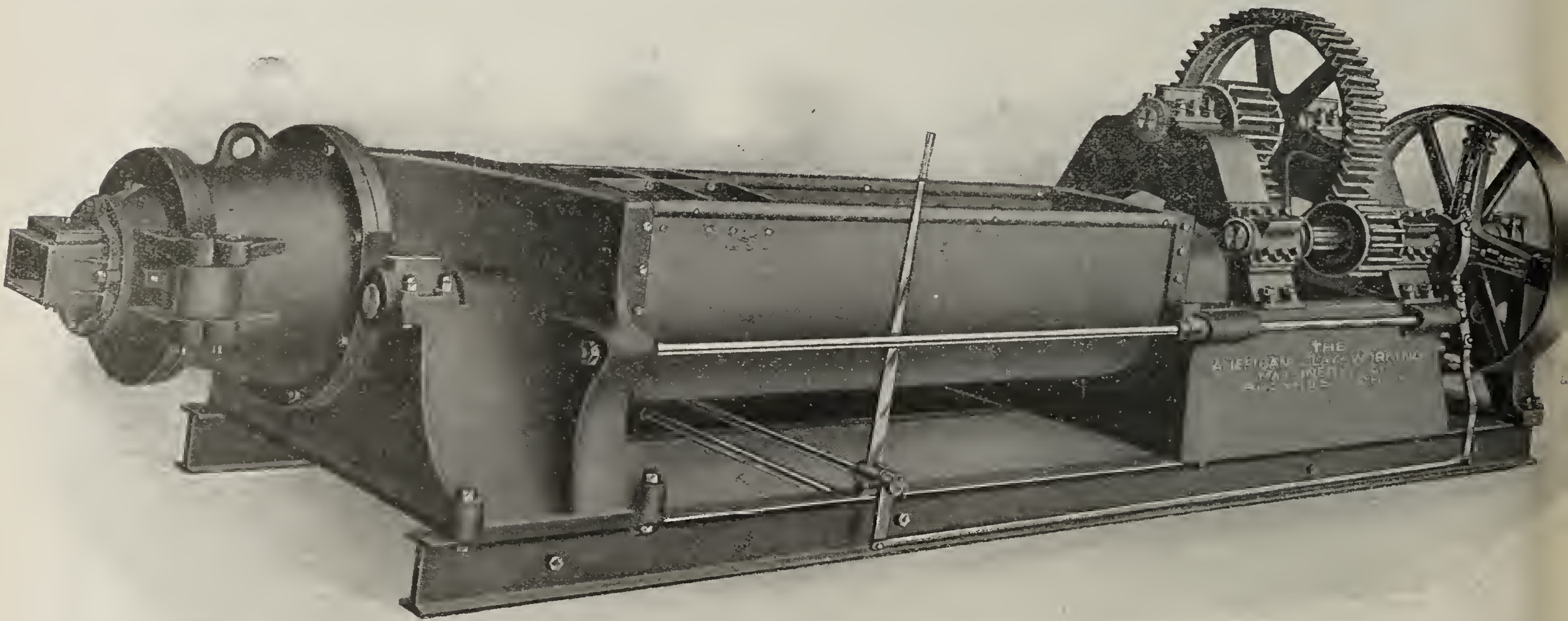
B. E. LaDOW, Western Agent,
1210 Chamber of Commerce, Chicago, Ill.

Plymouth, Ohio.

Mention The Clay-Worker.

BIFURCATED MACHINE.

This new type of Combined Machine has many points of superiority. Its strength factors are away above the average. The placing of the pugging cylinder by the side of the expressing cylinder removes all objections to a combined machine. The clay is forced by pressure from the pugging cylinder into the expressing cylinder. On the old style combined machine the pugging was done above the expressing cylinder, and the clay fell by gravity through a throat to the brick machine. The clogging or barreling up of the clay caused no end of trouble. This new machine removes this serious objection. The side by side arrangement makes the machine much lower down, saving in height of the building, length of elevator, etc., and places the operator on the floor level instead



of on a raised platform as formerly. This makes the machine more easy to operate and with a saving of labor. It makes better brick and insures steady operation. The machine is mounted on substantial steel I-beams, and as shown weighs 25,000 pounds. Built in three sizes. Capacity 35,000 to 100,000 brick in ten hours. It can be equipped with our automatic cutters and will work a greater variety of clays than any other combined machine on the market. The careful and honest construction of this machine insures its successful operation. Write for complete particulars.

The American-Clay-Working Machinery Company,

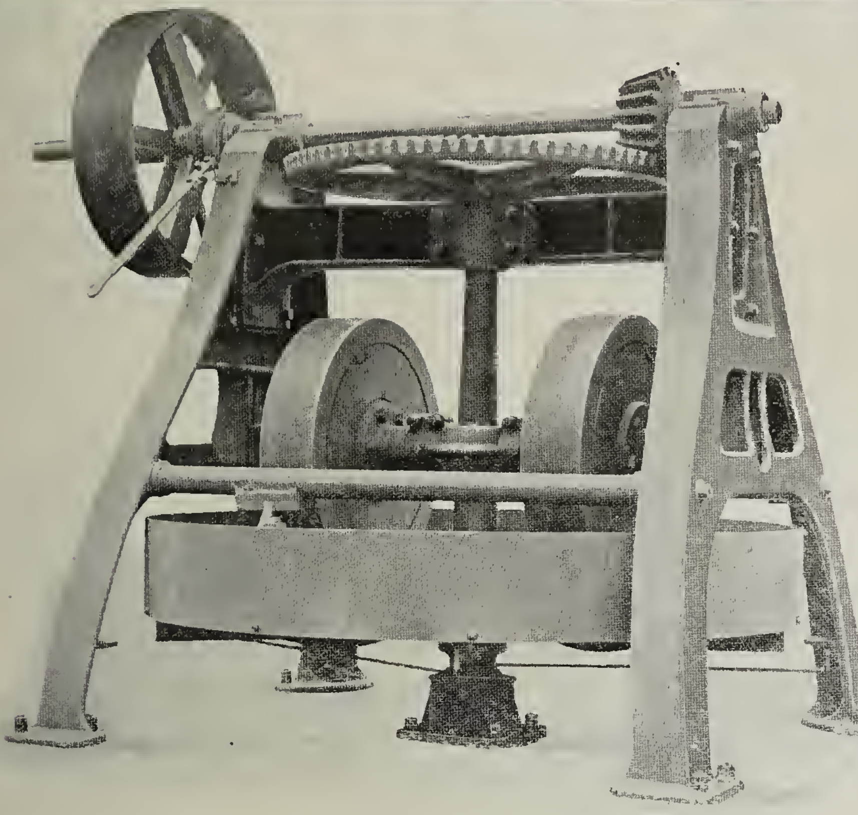
BUCYRUS, OHIO, U. S. A.

NEW YORK OFFICE:
39 and 41 Cortlandt St.,
Rooms 101 to 106.

CHICAGO OFFICE, Merchants' Loan and Trust Bldg. EUROPEAN OFFICE, No. 3 Gore St., Picadilly, Manchester, Eng.

Mention The Clay-Worker.

Modern Brick Machinery.



9-FOOT IRON FRAME DRY PAN.

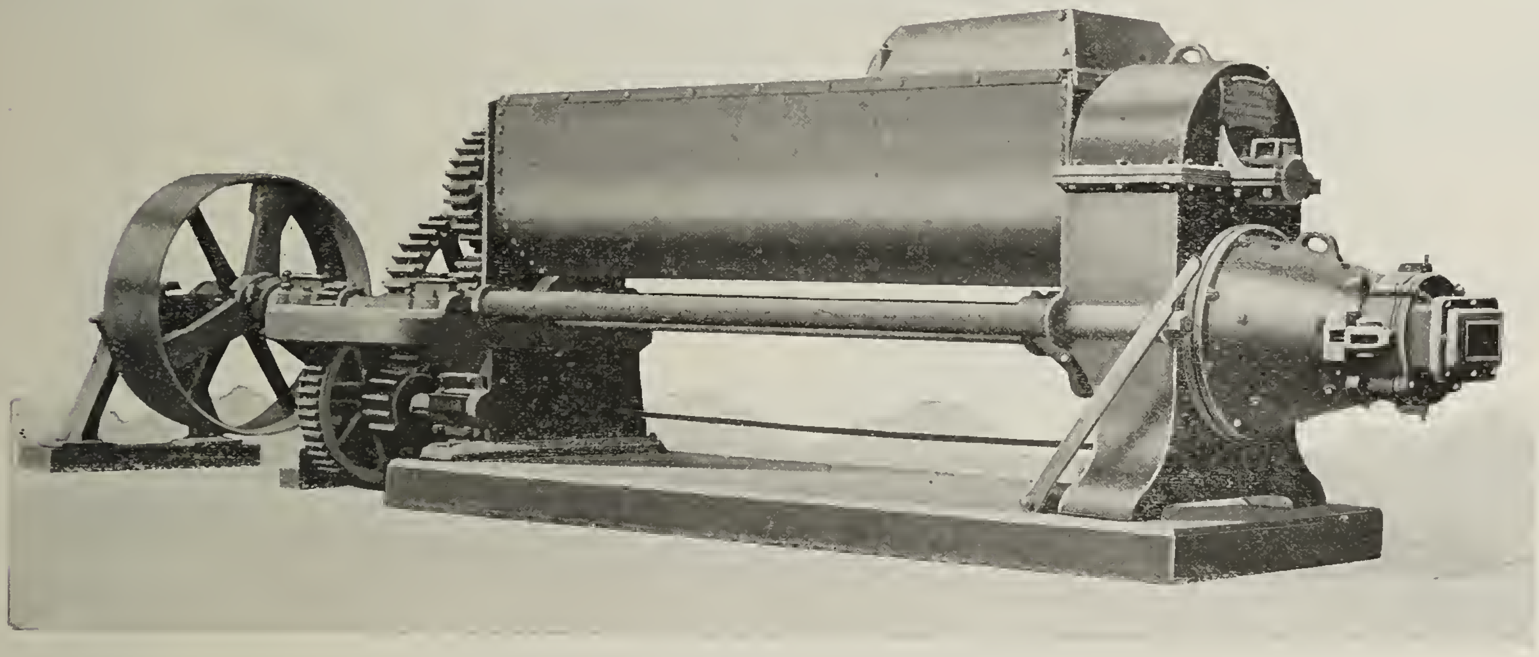
Office of
THE ROYAL BRICK COMPANY,
MANUFACTURERS OF
The Royal Block and Iron Rock Street Pavers,
Building, Fire, Sewer and Sidewalk Brick.

CANTON, OHIO, January 6, 1902.
THE BONNOT COMPANY, CANTON, OHIO.

Gentlemen—Our works are equipped throughout with Bonnot Machinery and we are pleased to say that it is satisfactory in every way. We have your No. 1 Brick Machine and Automatic Cutting Table and have made as many as 65,000 brick in ten hours, although you only guaranteed the machine for 50.000. The table does not give us the slightest trouble and requires very little attention.

Your represses and dry-pans are also very satisfactory and we are well pleased with the entire outfit. Very truly,

THE ROYAL BRICK COMPANY.
OTTO GEISSEN, Secretary.



NO. 4 COMBINED BRICK MACHINE. CAPACITY, 50,000 TO 70,000 PER DAY.

THE BONNOT COMPANY, Canton, Ohio:
Jamestown, N. Y., December 16, 1901.

Gentlemen—In reply to your inquiry as to how we like your No. 4 Combination Stiff Mud Machine which we have had in almost constant use for the past FIVE YEARS will say we find the machine all that we can expect. We have had no breaks to speak of, and the machine works all the shale that our pulverizing machinery will grind. As you know, our shale here is very hard, stony, gritty clay, quite different from your soft, plastic shale.

Yours very truly, JAMESTOWN SHALE PAVING BRICK CO., per George C. Little, Superintendent.

Brick Machines of any capacity from 10,000 to 100,000 daily.
Automatic Side-Cut Table—Simple, Accurate and Durable.
Dry Pans, Represses, Screens, Pug Mills, Elevators, Cars, etc.

A COMPLETE LINE OF
BRICK, POTTERY and CEMENT
MACHINERY.

The BONNOT CO.,

Write for our New
Descriptive Catalogue.

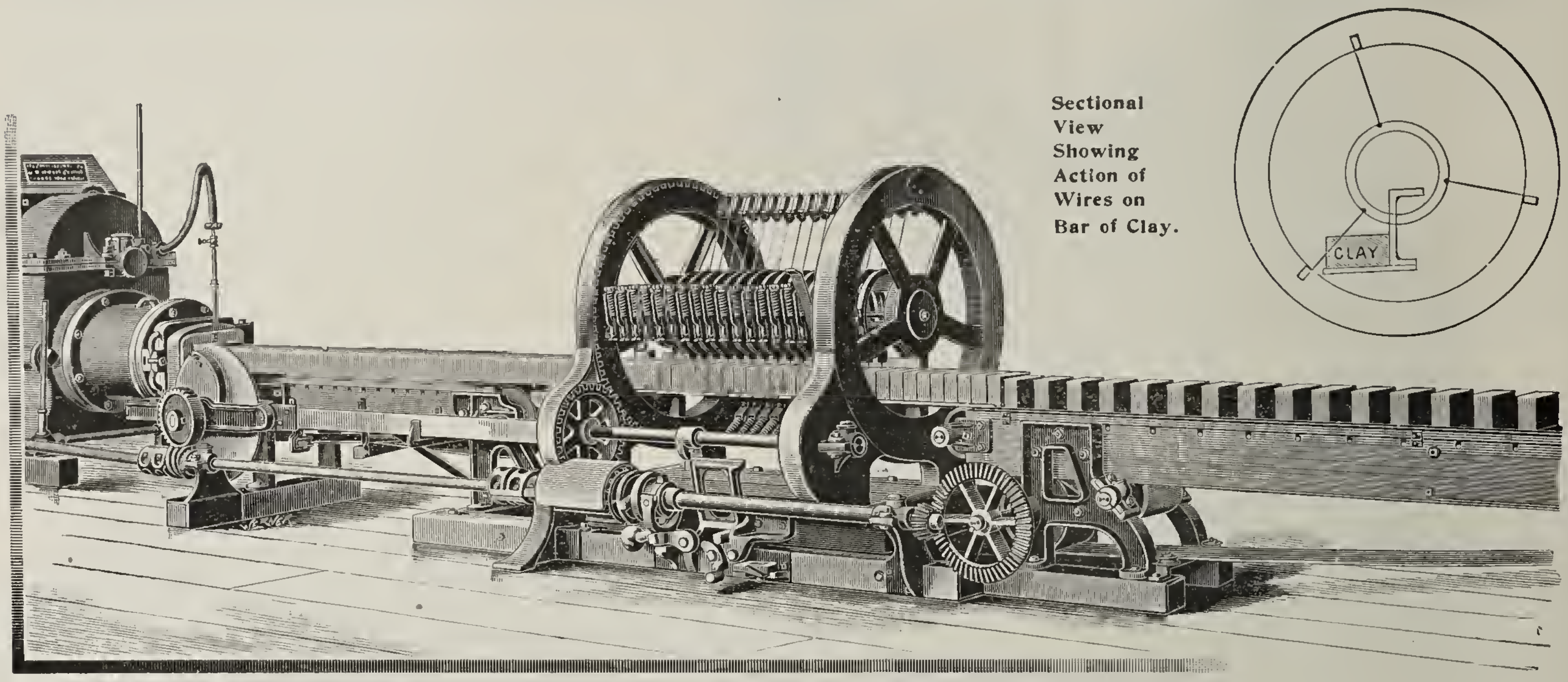
CANTON, OHIO, U. S. A.

Mention The Clay-Worker.

NO OTHER

AUTOMATIC CUTTER

Is "Just as Good" as This.



Sectional View Showing Action of Wires on Bar of Clay.

ROTATING AUTOMATIC CUTTER. Patented.

Why waste time and money using Cutters which are frequently out of order and cannot be depended upon to do good work?

Why not produce brick of **finest quality** when it can be done with less expense?

A multitude of others have found it profitable to use this Apparatus.

Why should you not use it also?

You will be satisfied with it.

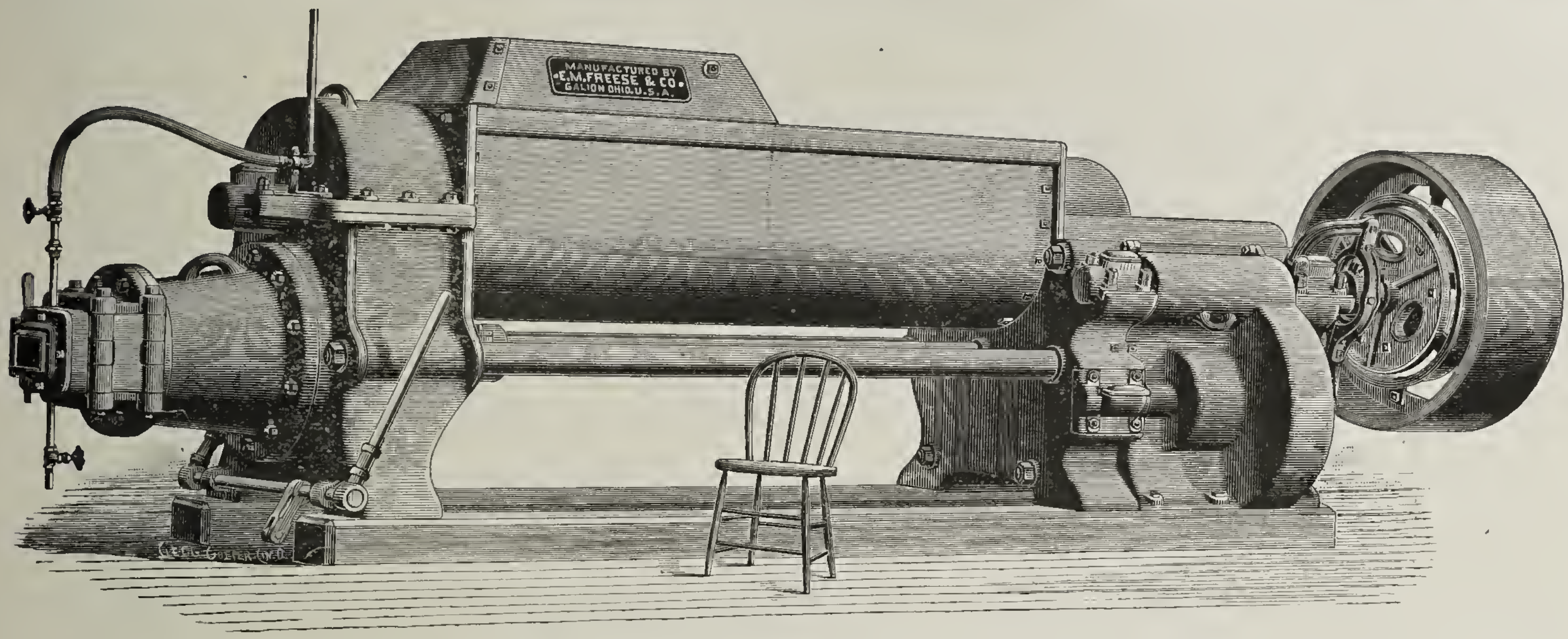
We will prove this statement if you will give us opportunity.

E. M. FREESE & CO.,
Galion, Ohio.

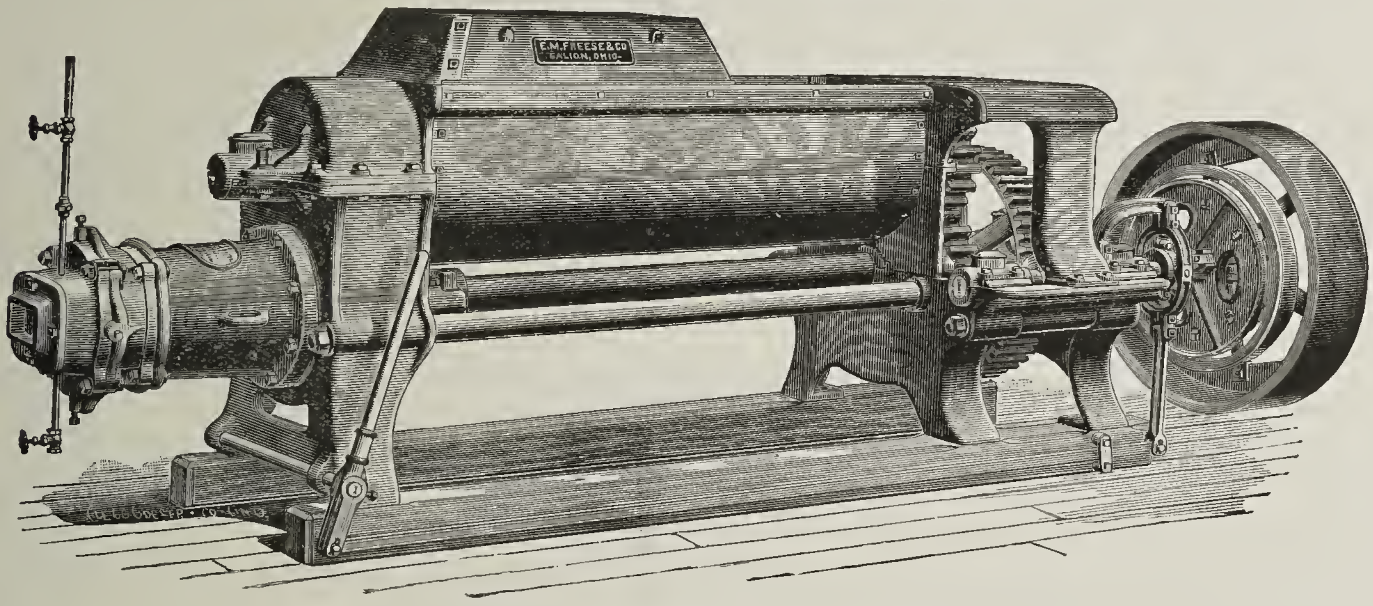
Mention The Clay-Worker.

Union Brick Machines

With Pug Mill Combined.


MANUFACTURED BY
E.M.FREESE & CO.
GALION OHIO.U.S.A.

UNION BRICK MACHINE. (SPECIAL SIZE.)


E.M.FREESE&CO.
GALION, OHIO.

UNION BRICK MACHINE. (No. 1 SIZE.)

We build these Machines in five (5) sizes.

Their reputation for convenience, enconomy and satisfactory service generally is established by their use in scores of the best Brick Plants.

E. M. FREESE & CO.,
Galion, Ohio.

SOME OF THE ARTICLES WE MAKE

Horizontal & Vertical Brick Machines

Clay Granulators,
Clay Elevators,
Clay Cars, Pug Mills,
Revolving Dump Tables,
Tempered Steel Brick Strikes,
Kiln Castings,
And other castings.

◆ ◆ ◆

Friction Winding Machines,
Friction Clutches,
Friction Clutch Pulleys,
Friction Cut-off Couplings.

◆ ◆ ◆

Power Freight Elevators,
Hoisting Machines,
And Some Other Things.

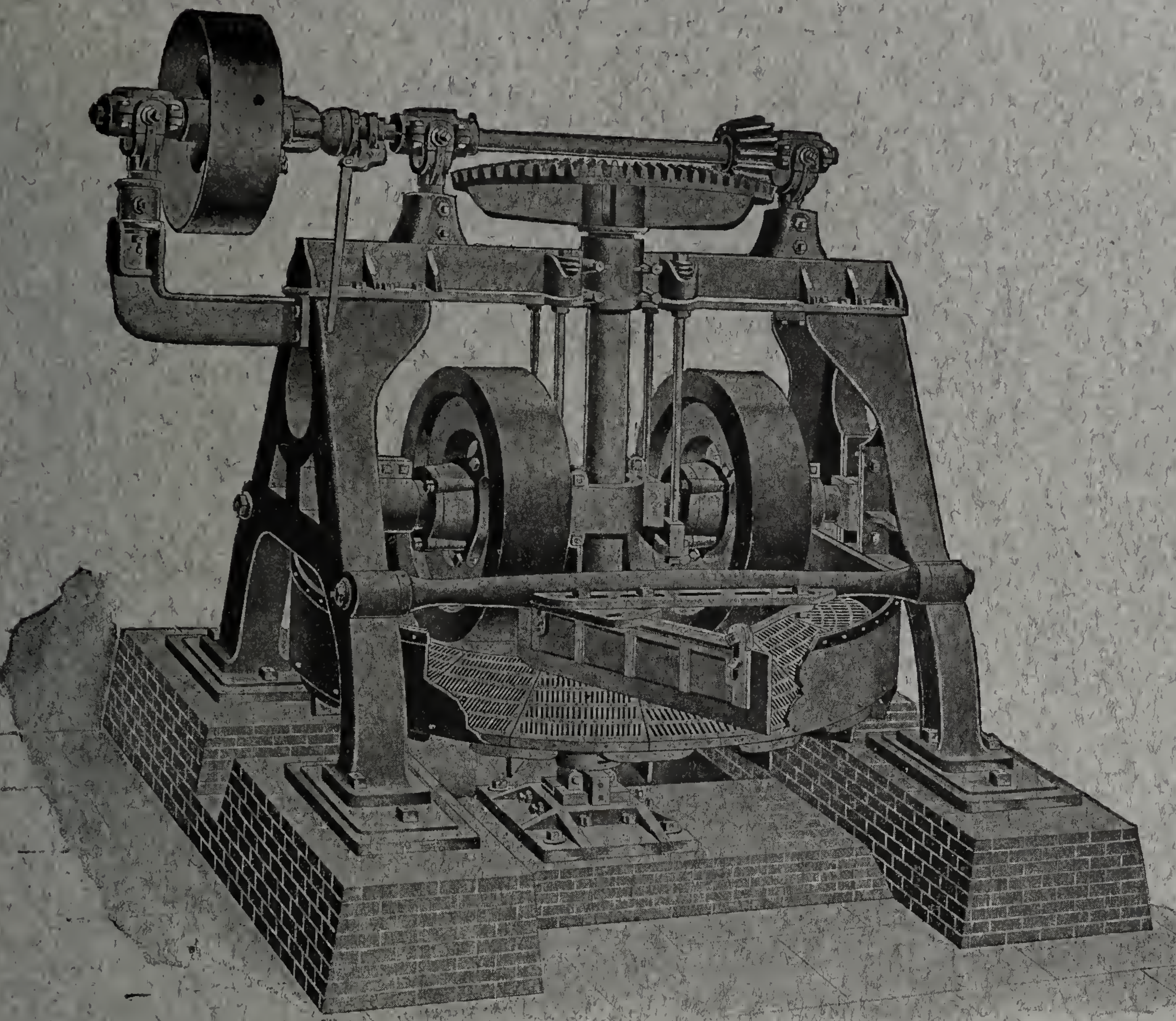
Have printed descriptive sheets describing many of these articles, which we will be happy to furnish, with prices on application.

It's not our aim to build the cheapest but we do try to build the best. Better Investigate Them.

The Eastern Machinery Co.,

Mention The Clay-Worker.

NEW HAVEN, CONN.



The FROST DRY PAN.

The ORIGINAL and BEST Dry Pan in the market. More of these Dry Pans in use to-day than all others combined. All sizes: both Wood and Iron Frames. Used by every Prominent Brick Manufacturer. ❧ Less repairs are required for the Frost Dry Pan than any other make. This is a very important fact. High Grade Automatic and Throttling Steam Engines, Horizontal Tubular Boilers and Plain and Submerged Tube Vertical Boilers. ❧ Send for Illustrated Catalogue.

The Frost Manufacturing Co.,

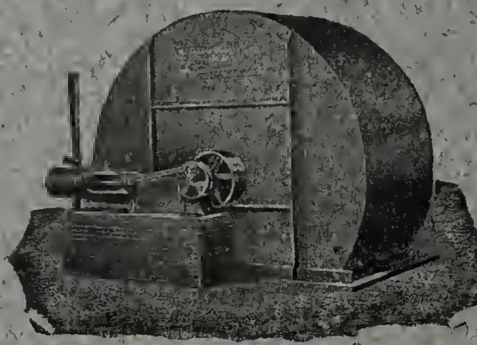
WORKS:
GALESBURG, ILL.

SALES DEPARTMENT:
135 Adams St., CHICAGO, Ill.

IN BUILDING A FORTUNE

Build it with good materials and make the most of your industry.

Every manufacturer would have the best possible apparatus if he knew where to find it.



"A B C" WASTE HEAT DRYERS

Show a greater saving in fuel and a higher percentage of perfect "A-1" product than are obtainable by any other process of brick drying.

Send for complete catalog.

New York,
Chicago,
London.

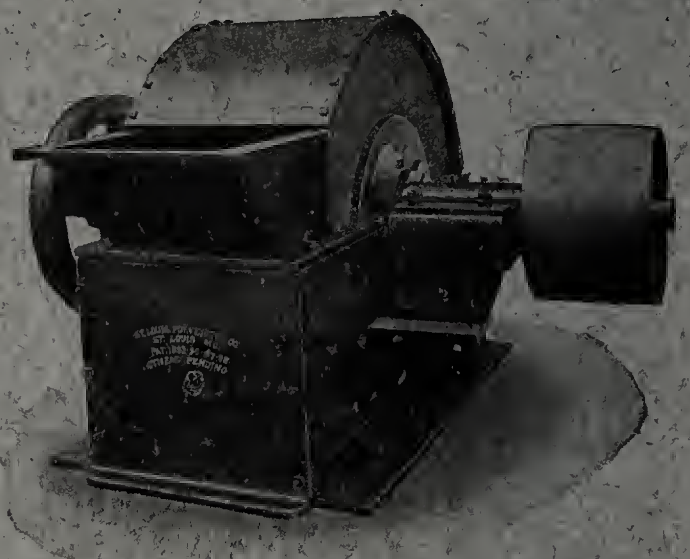
AMERICAN BLOWER CO.,
DETROIT, MICH.

L L C LINE ADV. DET

Schoellhorn and Albrechts'

PATENT

Pulverizers, Breakers and Disintegrators



St. Louis Pulverizer Company,
416 N. Main St.,
ST. LOUIS, MO., U. S. A.

"MAKE A NOTE ONIT."

From all the Brick Companies to whom we sold Dryer Cars last year, we received additional orders except three. [From some we received from three to five orders]. Of these three one is not running, another burned down, and the third ordered all they needed in first lot.

THIS OUGHT TO CONVINCE YOU that your order would be in good hands, if given to us.

STEEL DRYER CAR.

STEAM and HAND REPRESSES,
STEAM DRY PRESSES, two mould,
SWORD BRICK MACHINES.

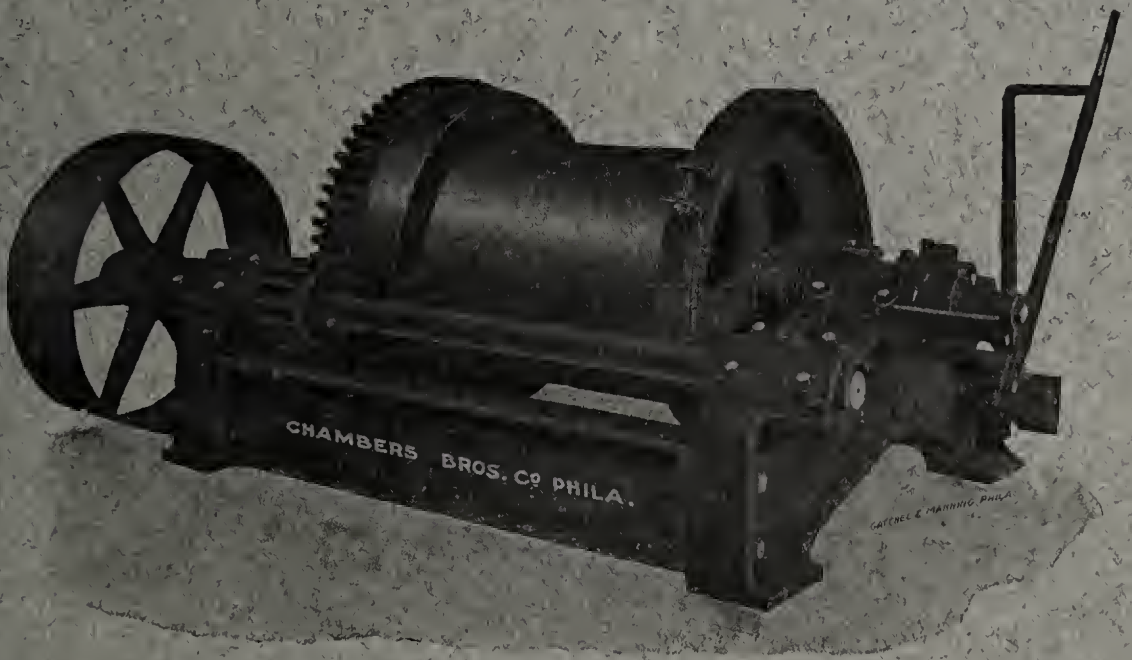
The Ohio Ceramic Engineering Co.,
—— *CLEVELAND, OHIO.*

Table of Contents, Page 670.

THE CLAY WORKER

A JOURNAL DEVOTED TO ALL CLAY WORKING INTERESTS.
INCLUDING BRICK TILE TERRA COTTA SEWER PIPE POTTERY ETC.
T. A. RANDALL & CO. PUBLISHERS.
THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.
VOL. XXXVII, No. 6. INDIANAPOLIS, IND., JUNE, 1902 $2.00 a Year in Advance.

Automatic Side-Cut and End-Cut Brick Machines.

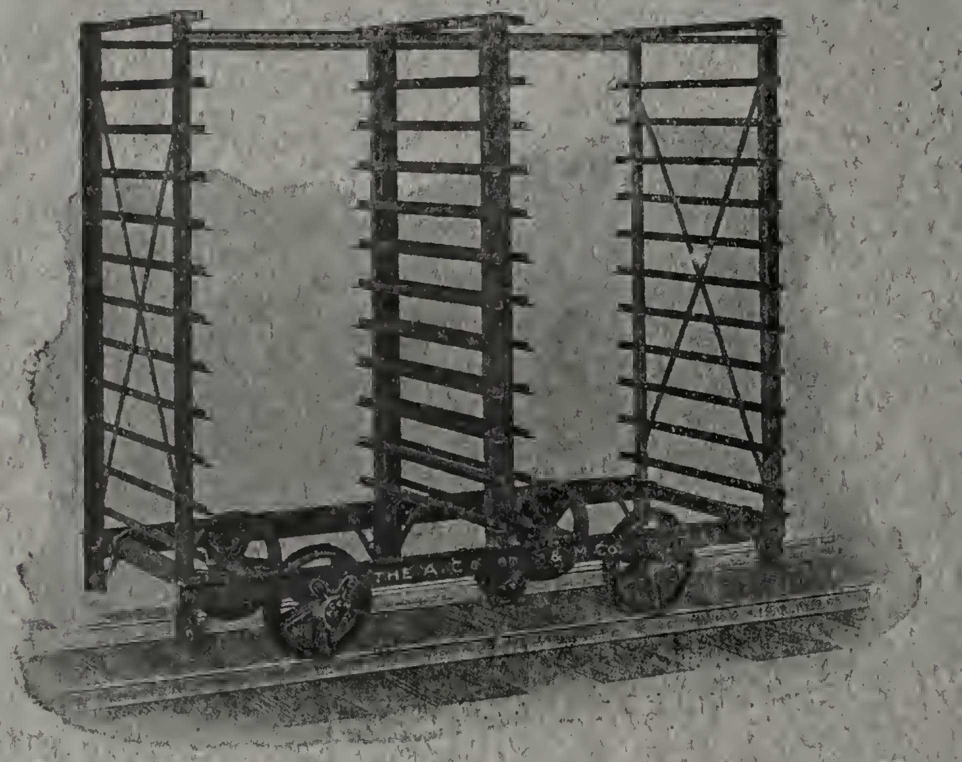


New Friction Hoisting Machine.

Built in heavy iron frame with all journal boxes in halves and babbeted.
Driving shaft $2\frac{15}{16}$-inch diameter with pulley 30-inch diameter by 9-inch face.
Drum 24 inches diameter, 29 inches between flanges and fitted with positive release mechanism. Thrust screw works through a phosphor bronze nut and friction head of drum made with double the usual surface. Gear large and strong.
Weight of machine about 4,500 lbs.

CHAMBERS BROTHERS COMPANY,
FIFTY-SECOND STREET, BELOW LANCASTER AVE.,
PHILADELPHIA, PA.

DAVIS BROWN, Chicago Agent,
59 West Jackson Blvd.



No. 137 Rack Car with Wright's Patent Malleable Corner and Center Upright Brackets.

We also make a full line of

Dump Cars, Turn Tables, Transfer Cars, Track Switches, Etc. ø ø ø

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(THE ATLAS BOLT & SCREW CO. PROPRIETORS.)
Cleveland, Ohio.

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WE ARE THE LARGEST MANUFACTURERS of

Dryer Cars

Of every description in the World.

We do not confine ourselves to standard styles and sizes, but build anything in the way of cars to suit the requirements of our Clients. Our long experience in the manufacture of cars, enables us to design and build the strongest, lightest and easiest running car on the market.

Don't Buy until you see What we have ø ø **to offer.** ø ø

INDEX TO ADVERTISERS.

Brick Machinery—Dry Press Process.

Name. Page.
Anderson Foundry and Mach. Works 622
Chicago Brick Machinery Co.. 691
Chisholm, Boyd & White Co.... 616, 617, 618, 619
Name. Page.
Fernholtz Brick Machinery Co. The 621
Ill. Supply & Construction Co. 623
Ross-Keller Brick Machine Co 620

Brick and Tile Machinery.

American Clay-Working Mach Co., The.... 697, 706
Anderson Foundry and Mach. Works.... 622, 693
Brewer, H. & Co.... 705
Bonnot Co, The.... 702
Chambers Brothers Co.... 613
Chicago Brick Machinery Co... 691
Eastern Machinery Co, The.... 710
Fate & Co., The J. D.... 707
Freese, E. M. & Co.... 675, 708, 709
Henry Martin Brick Mach. Mfg Co., The 703
Henley, I. W.... 615
Horton Mfg. Co., The.... 701
Ill. Supply & Construction Co. 623
Kells Foundry and Machine Co.... 685
Leader Mfg. Co, The.... 692
Madden & Co.... 682
Ohio Ceramic Engineering Co., The.... 712
Potts & Co., C. & A. 698, 699
Raymond Co., The C. W.... 671
Stedman Foundry and Machine Works.... 625
Steele & Sons, J. C.... 691
Wallace Mfg. Co, The.... 704
Wellington Machine Co, The... 673
Wiles Co., A. M. & W. H 689

Brick Kilns and Dryers.

American Blower Co, The.... 712
Barron, A. F. & A. E 696
Bushong, M. M 686
Crown Dryer Co., The.... 694
Dennis, F. W.... 686
Eudaly, W. A 687
Haigh, H.... 684
Illinois Supply and Construction Co, The.... 623
Justice, I. M.... 687
Morrison & Co., R. B.... 684
New York Blower Co., The 695
National Dry Kiln Co, The.... 694
Phillips, S. G.... 678
Pike, E. M.... 684
Reppell, L. H 687
Sharer, Geo. W.... 695
Standard Dry Kiln Co, The.... 628
Starkey, John.... 678

Brick Yard Supplies.

Atlas Car & Mfg. Co. 614
Arnold, D. J. C 625
Bechtel, B. E.... 688
Cleveland Car Co.... 690
Caldwell & Son Co., H. W.... 682
Carnell, Geo.... 689
Central Iron Works 678
Cox, Geo. S.... 684
Dunlap Mfg. Co 681
Frost Manufacturing Co..... 711
Gandy Belting Co., The.... 680
Gray, S. B.... 684
Harrington & King Perforating Co, The 615
Henry Martin Brick Machine Mfg. Co, The 703
Horton Mfg. Co, The.... 701
Jeffrey Manufacturing Co, The. 683
Kendall & Flick.... 683
Marion Steam Shovel Co.... 692
Main Belting Co 681
Mershon, Schuette, Parker & Co 683
Phillips & McLaren 685
Rockwood Mfg. Co, The.... 685
Smidth & Co., F. L.... 688
Scotts Patent Brick Car Co.... 700
Shaw, Willis.... 681
St. Louis Pulverizer Co.... 712
Thew Automatic Shovel Co, The 693
Wells & Hall.... 681
Williams & Co., M. F 688
Williams Patent Crusher and Pulverizer Co 624

Miscellaneous.

American Ceramic Society 690
American Road Machine Co... 682
Audel & Co., Theo.... 679
Big Four Route.... 684
Caldwell Co., W. E.... 683
Chesapeake & Ohio R. R 685
Clark W. J. Co., The.... 681
Clinton Metallic Paint Co.... 679
Clinton Paving and Building Brick Co., The.... 627
Coaldale Paving Brick Co., The 626
Connolley, W. A 679
Crown Fire Clay Co., The 680
Dean Bros. Steam Pump Works 681
Eastern Paving Brick Co.... 626
Evens & Howard 680
Evert & Co., H. C.... 682
Gabriel & Schall.... 682
Green & Hunter Brick Co 626
Hook, F. E.... 686
Indianapolis Engraving and Electro. Co.... 680, 682
Indiana, Decatur & Western 684
Indiana Paving Brick Co.... 626
Johnsonburg Vitrified Brick Co 626
Lake Erie & Western.... 684
McAvoy Vitrified Brick Co.... 627
Miller Oil and Supply Co 683
New York Brick and Paving Co 626
Ohio Steam Pump Co., The.... 683
Ohio State University.... 681
Pennsylvania Line.... 685
Purington Paving Brick Co, The 627
Perrine & Son, H. C.... 682
Reese-Hammond Fire Brick Co 680
Roessler-Hasslacher Chemical Company, The 689
Sangamo Brick Co 627
Terre Haute Brick and Pipe Co. 627
Vandalia Line.... 685
Wabash Clay Co., The.... 627
Ads., Small Wanted, For Sale, etc.

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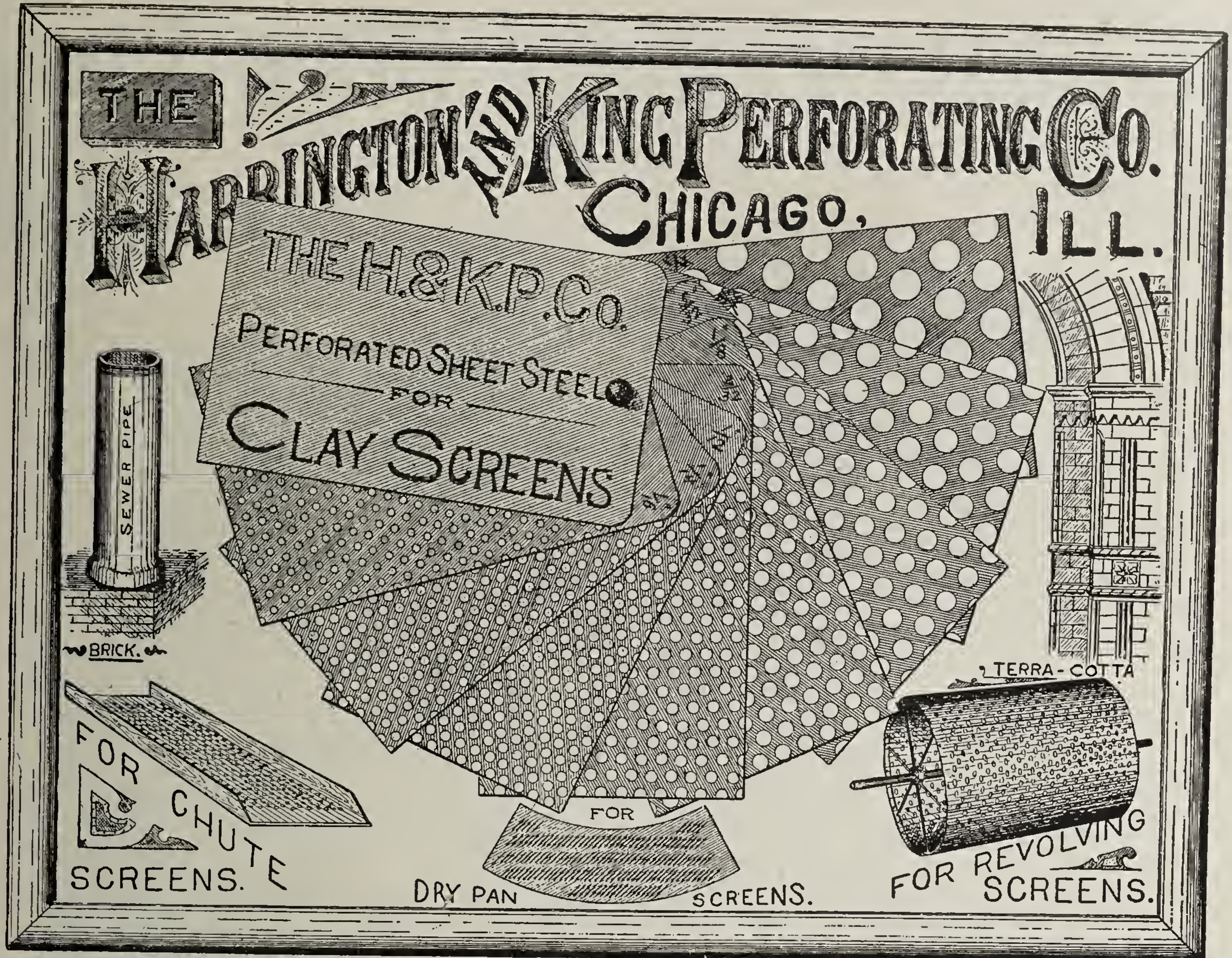

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THE HARRINGTON AND KING PERFORATING CO. CHICAGO, ILL.

THE H.&K.P.Co.
PERFORATED SHEET STEEL FOR CLAY SCREENS

FOR CHUTE SCREENS.
FOR DRY PAN SCREENS.
FOR REVOLVING SCREENS.

Address all Communications to
THE HARRINGTON & KING PERFORATING CO., 231 N. Union St., CHICAGO.

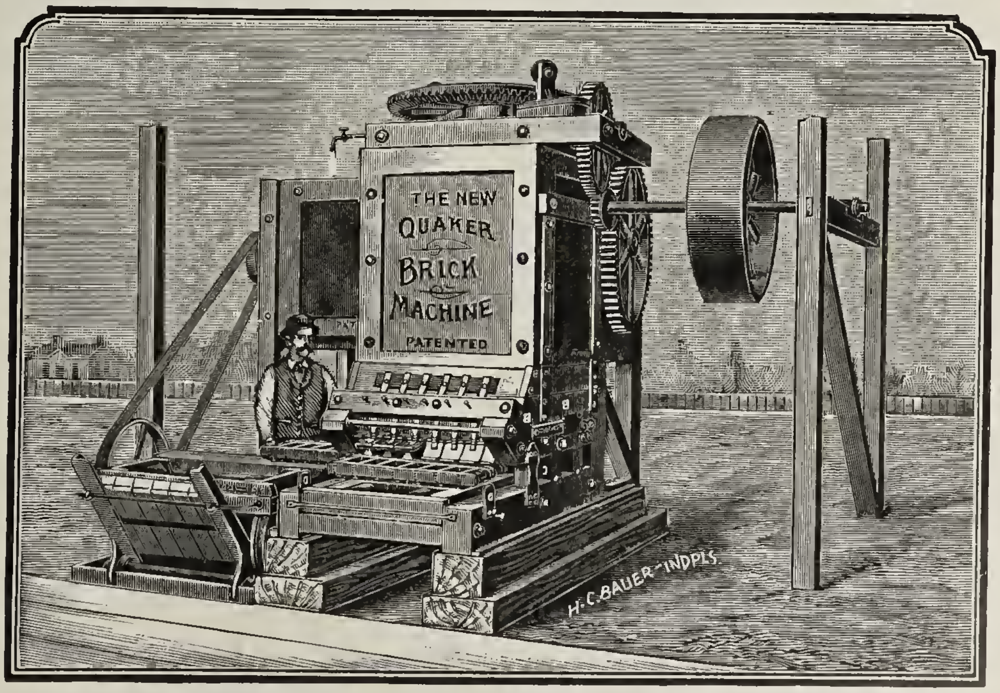
The Best for the Least Money.

Complete Combined Outfit, Consisting of the Extra Heavy Iron Quaker, Spiral Pug Mill and Mold Sanding Machines.

THIS OUTFIT is intended for fire brick, common brick, or street pavers. Its capacity is only limited by the ability to handle the product.

As will be seen, the manner of gearing has been simplified to the utmost extent, thus reducing the power required, so that a fifteen to twenty horsepower engine will run it with ease. No line or counter shafting necessary. No extra pulleys or belting.

I carry in stock a full line of first-class brickyard supplies at a very reasonable price.



THE NEW QUAKER BRICK MACHINE PATENTED
H-C.BAUER-INDPLS.

No. 1 Spur Geared Style, Capacity 40,000 or More per Day.

JAMES W. HENSLEY,

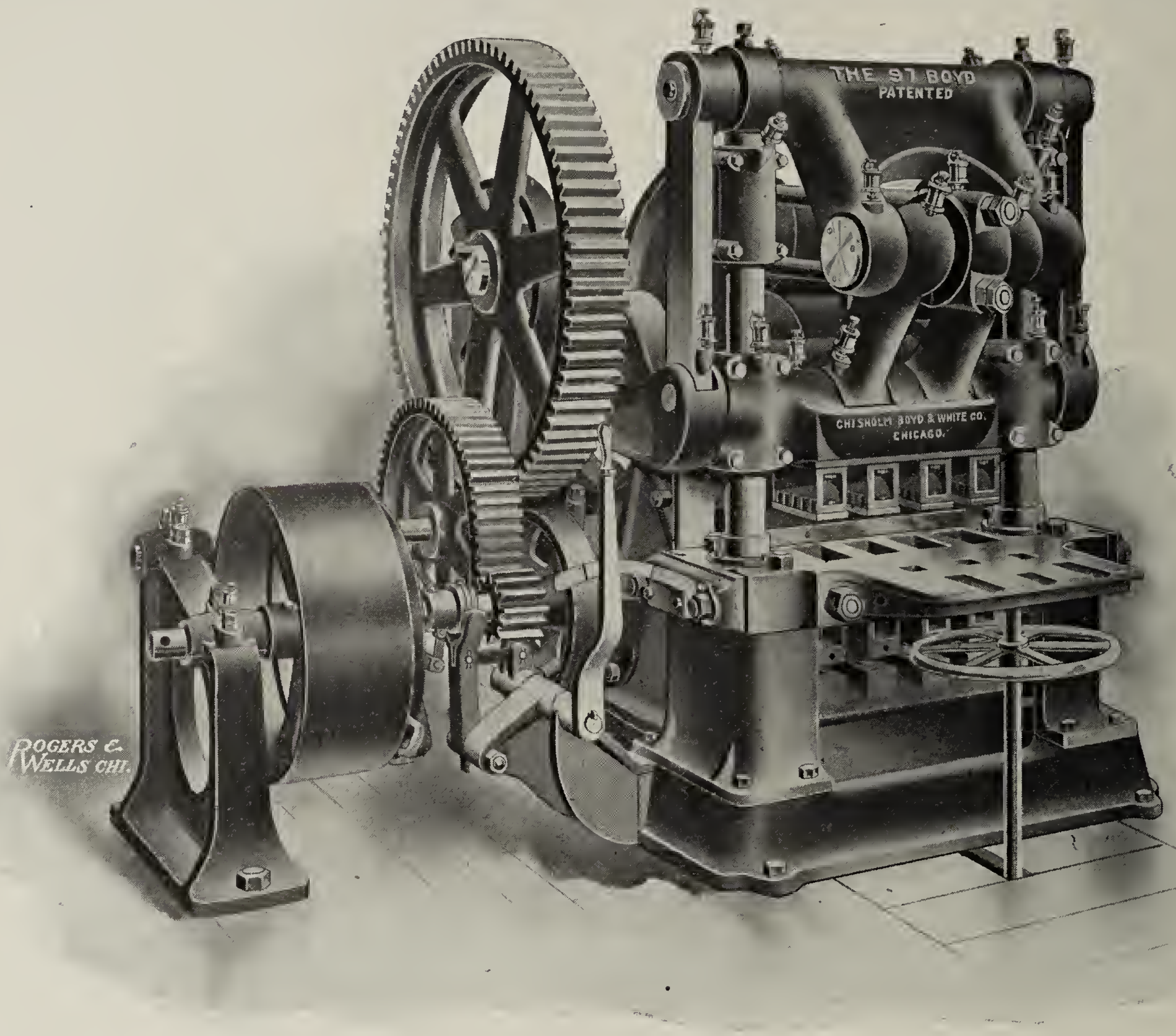
Successor to
S. K. FLETCHER.

Indianapolis, Ind.

The Improved Boyd Brick Press.

The '97 Model.

IT'S NAME A GUARANTEE.



The '97 Boyd Brick Press has Enormous Strength and Great Durability: It is Compact; The Adjustments are Convenient; It Operates Quietly and Smoothly; The Workmanship and Material are of the best; The Design Ingenious, and shows the most Perfect Application of Scientific and Mechanical Principles to the Art of Brickmaking.

Sent on trial and subject to purchase after the making and burning of one or more Kilns of Brick.

Fifty Presses of this Pattern Now in Use.

Can not be broken in pressing brick. Fully Guaranteed.

Write for Descriptive Catalogue, No. 9.

CHISHOLM, BOYD & WHITE CO.,
CHICAGO, U. S. A.

OFFICE AND WORKS:
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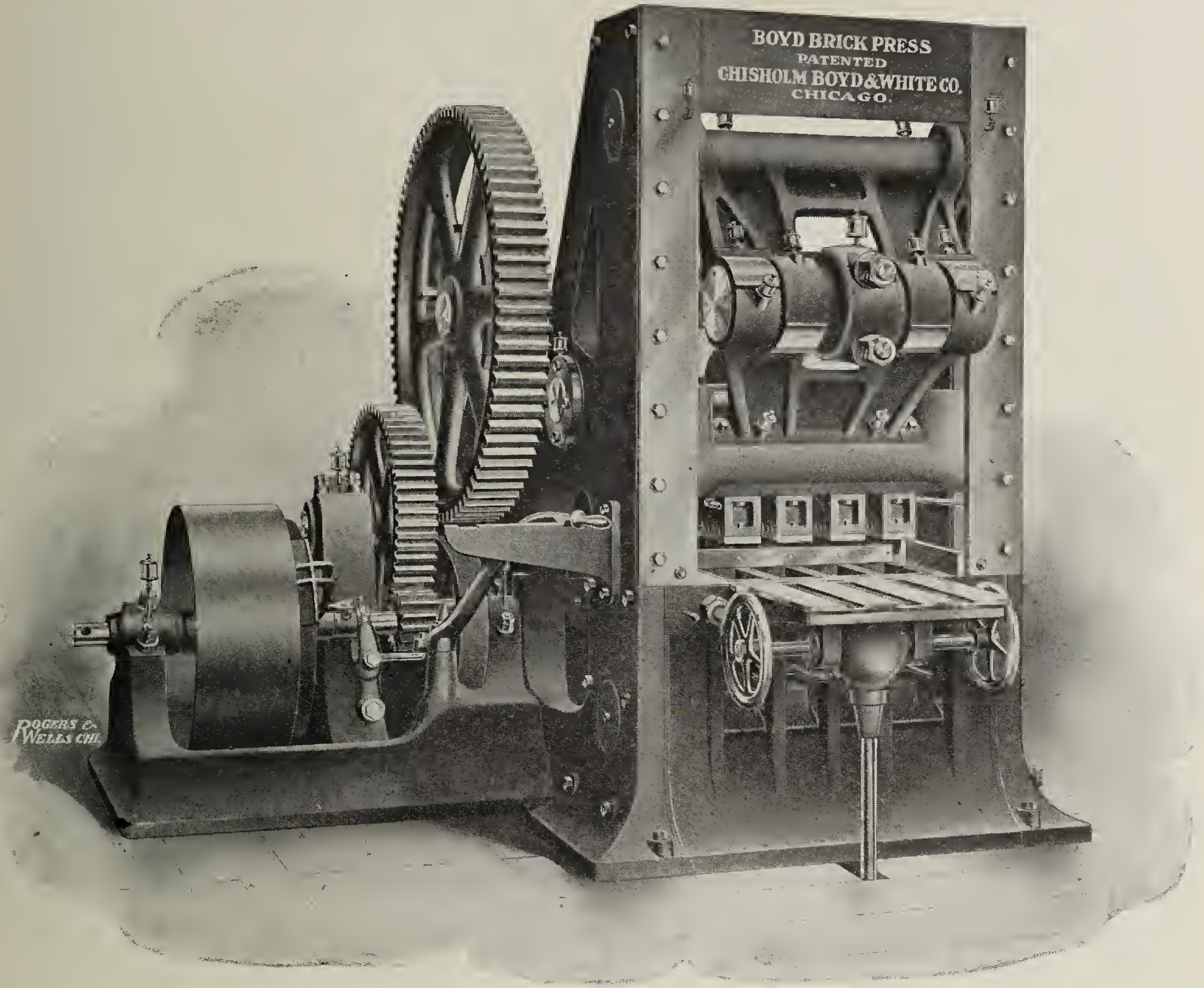
Cable Address; CHISHOLM, CHICAGO.
A. B. C. and Liebers Code.

The BOYD BRICK PRESS.



The Boyd Brick Press will make Better Brick from Clay or Shale than can be made from the same material by any other press.

Especially adapted for Working Shales; and is the only Successful Machine for Making Fire Brick.

Its Record: More Boyd Presses in Actual Operation than of all other Press Brick Machines Combined.

Brick Plants of any desired capacity designed and constructed complete, Under Guarantee of Producing Satisfactory Burned Brick.

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OFFICE AND WORKS:
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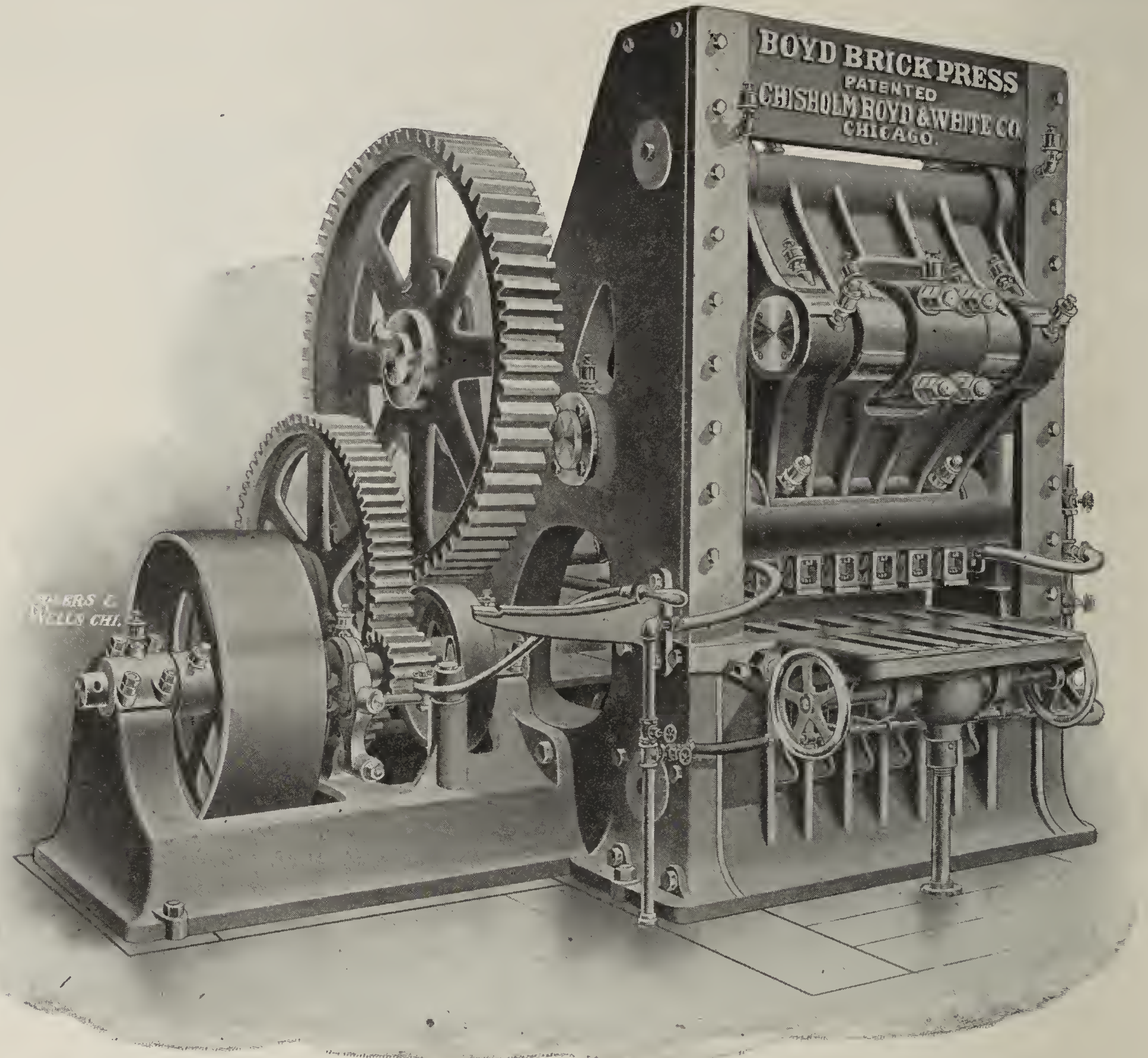
America's Greatest Brick Press.



Another Record for the Boyd Press!

Six of our Six-Mold Presses in use **on one yard** since 1892. Average cost of repairs for each machine $1.00 per year.

The Boyd Press exerts greater pressure than any other machine made. It is the only Press in which the lower plungers are independent of the lower crosshead. This feature positively ensures equal pressure and finish on both sides of the brick, and no granulated or soft centers.

The mold liners are made of the hardest and toughest known metal, and are guaranteed for two years. The movement of the Boyd Press is noiseless and without jar or shock; no rubber or air cushions, hooks, latches or other uncertain and unmechanical devices are employed. Write for General Catalogue No. 10.

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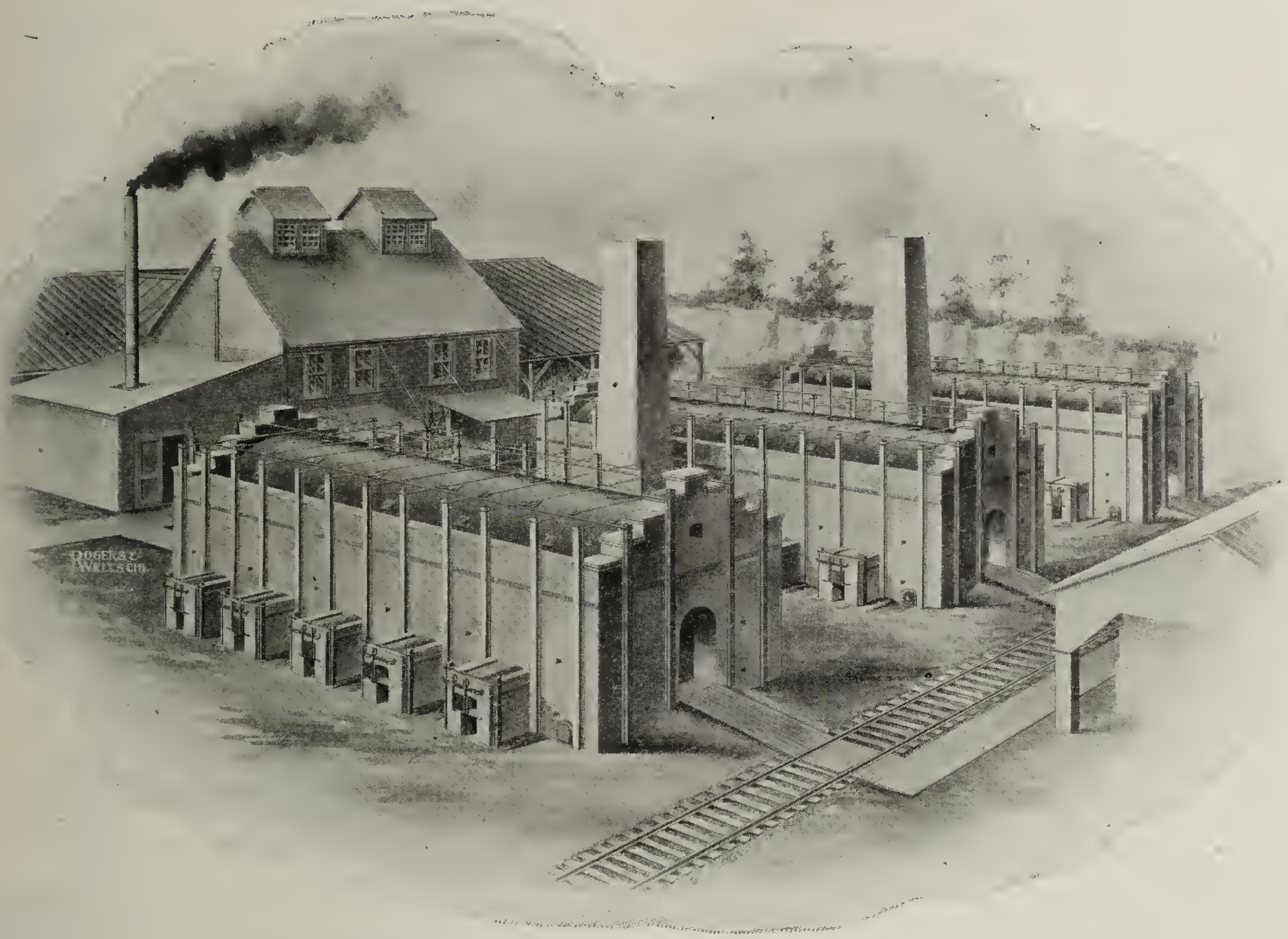
Chisholm, Boyd & White Company,

ENGINEERS AND CONTRACTORS FOR BRICK PLANTS.

MANUFACTURERS OF

The Boyd Brick Press.



A MODERN BRICK PLANT—As Equipped by Us.

A Sure Thing—We are prepared to construct and equip a Brick Plant of any desired capacity, furnishing the brickmaking machinery and power plant, erect the necessary buildings and kilns, and turn the plant over to the purchaser in proper working order, under guarantee of satisfactory results.

Brick Plants designed and equipped by us have the highest reputation for efficiency. They are modern, up-to-date, compact, convenient in arrangement, and are not encumbered with unnecessary or useless machinery or appliances.

CORRESPONDENCE SOLICITED.

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CHICAGO, U. S. A.

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The LATEST IMPROVED

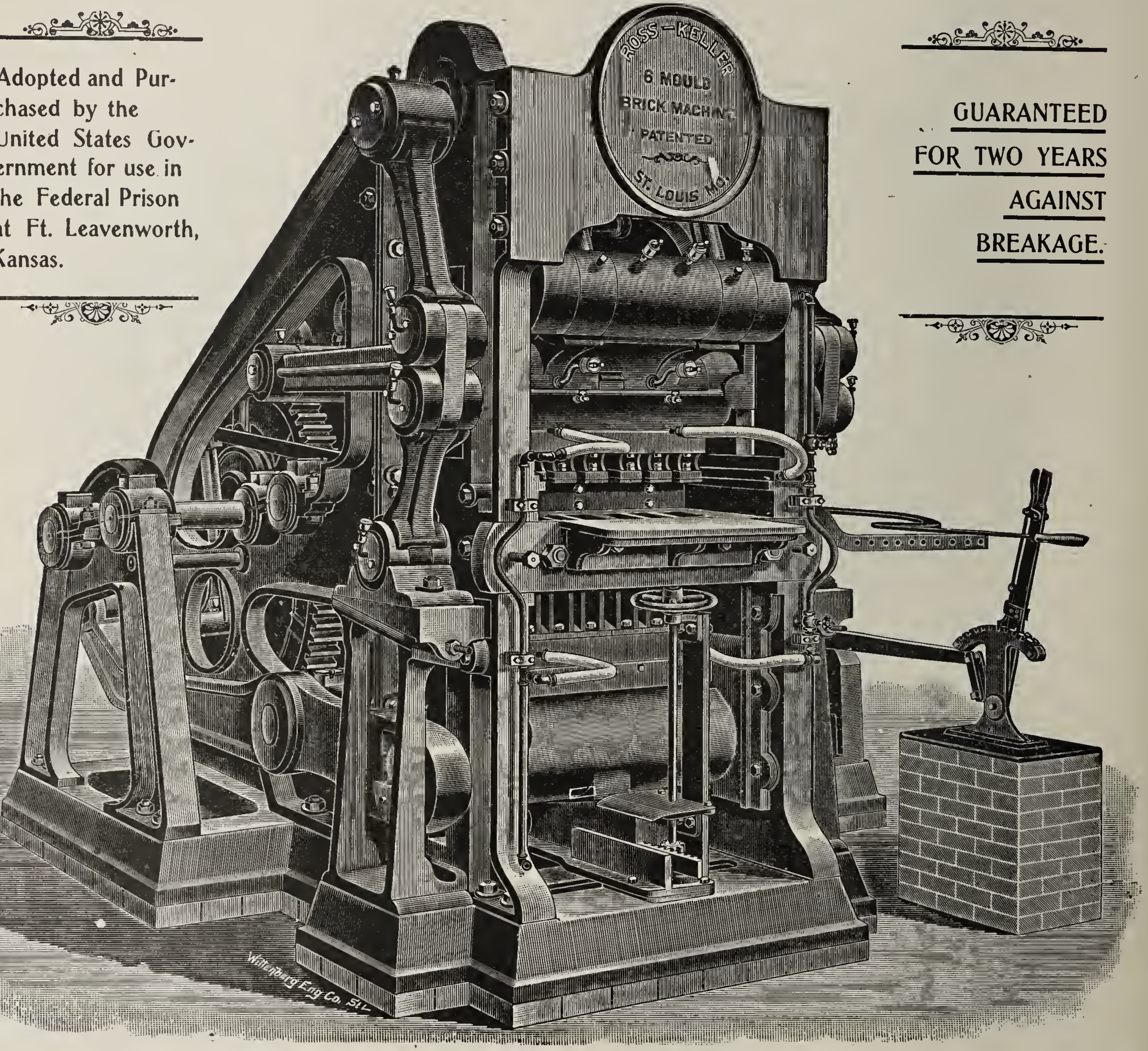
Ross-Keller TRIPLE PRESSURE Brick Machine

Manufactured in four and six-mould sizes. Weight of four-mould machine 58,000 pounds; capacity 24,000 brick per day. Weight of six-mould machine 75,000 pounds, capacity 35,000 to 40,000 brick per day.

BRICK SET IN KILN DIRECT FROM MACHINE.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

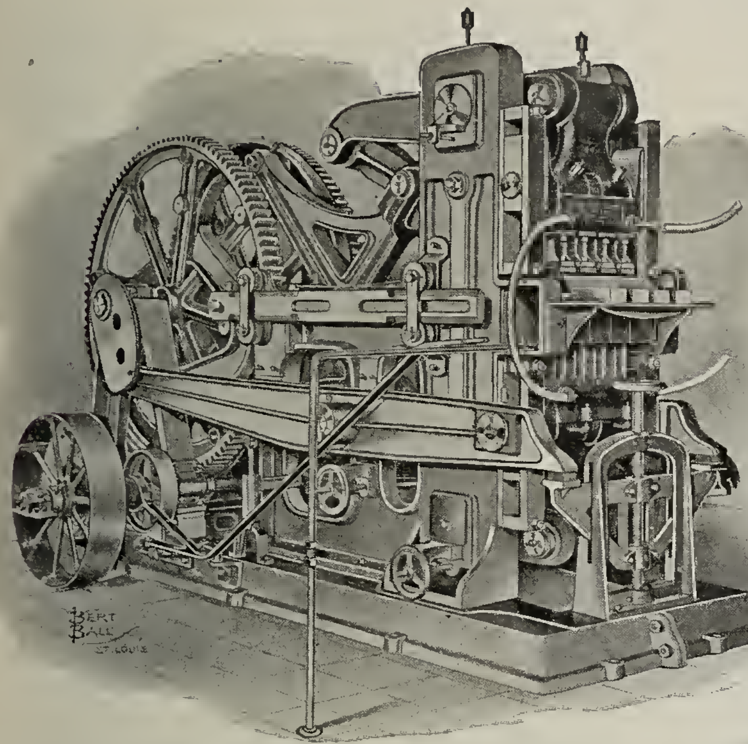
GUARANTEED FOR TWO YEARS AGAINST BREAKAGE.



THIS machine has an unbroken record of success. It is used on a number of the best equipped brick plants in the United States. It has never failed to give entire satisfaction and we are perfectly safe in guaranteeing that it will work any clay of which pressed brick can be made, and make them better and cheaper than any other press. It makes better brick because the pressure is greater and is applied in a way most effective. It makes brick cheaper because it is unbreakable and hence there are no repair bills or expensive delays and stopping of work which brickmakers know are more costly than the repair bills themselves. If you want to make the best brick at the least expense the season through don't fail to investigate this machine. with it you can "put money in your purse." Let us tell you more about it and give the address of those now using it. Remember "the proof of the pudding is in the eating of it."

For Prices and Full Particulars, address **ROSS-KELLER BRICK MACHINE CO.** Fullerton Bldg., ST. LOUIS, MO., U. S. A.

The New Fernholtz Brick Press.

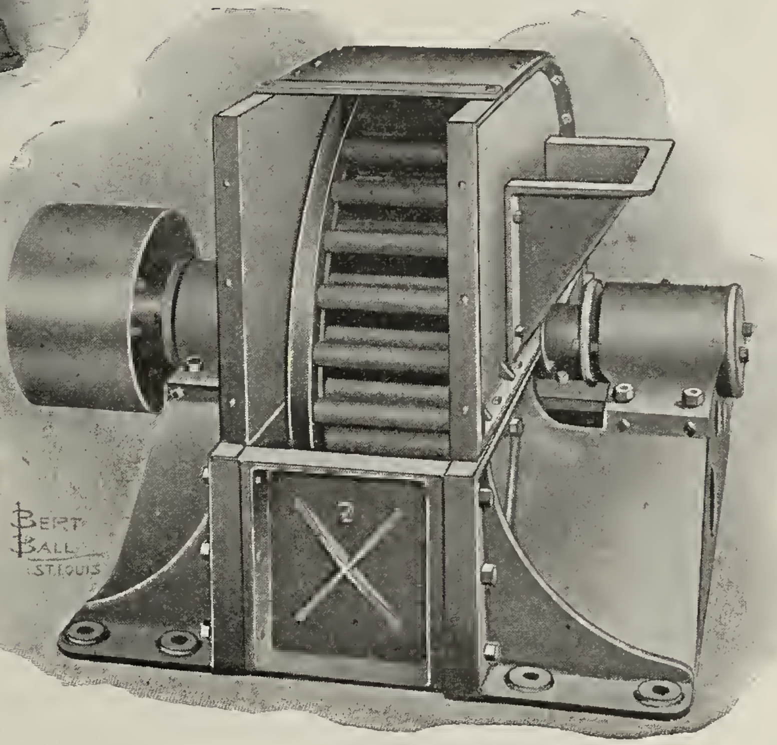


WONDERFULLY
IMPROVED.

Fitted with the Celebrated

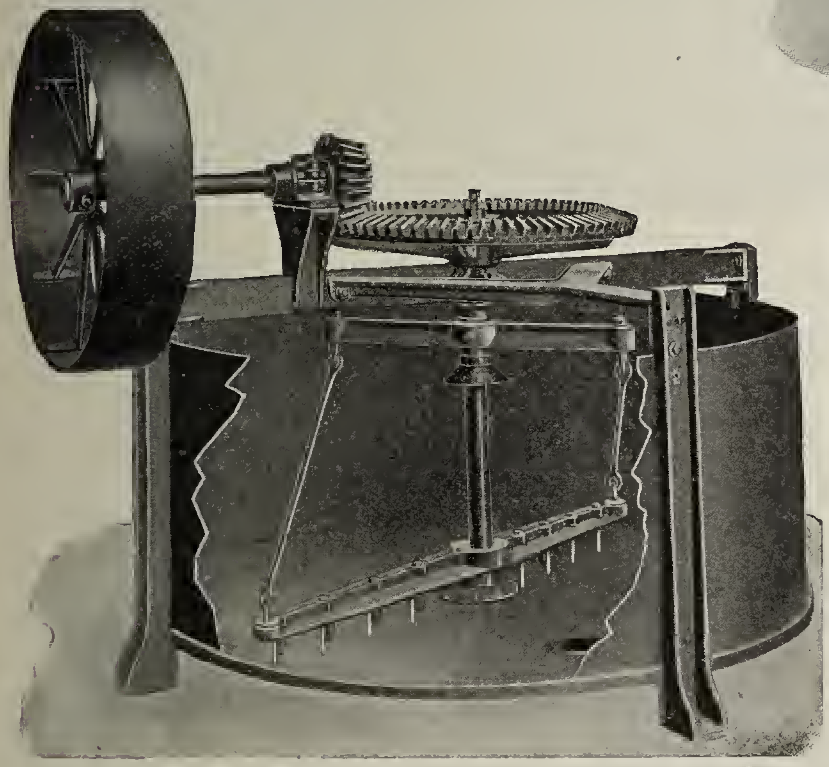
FERNHOLTZ MOLD BOX

Which is used by leading Brick Manufacturers in other Dry Presses.



The Fernholtz PATENT Clay Pulverizer.

No more rivetting Pins in Cage. Any one can put them in. Most economical Clay Grinder ever made.



The Fernholtz Iron Frame Clay Mixer.

"The Mixer that Mixes."

WE HAVE a first class repair department and can repair all kinds of Brick Machines and Machinery. We make a specialty of Molds for Fancy Shape brick at reasonable prices.

Dealers in BRICKYARD SUPPLIES.

If you don't see what you want ask for it. No trouble to answer questions.

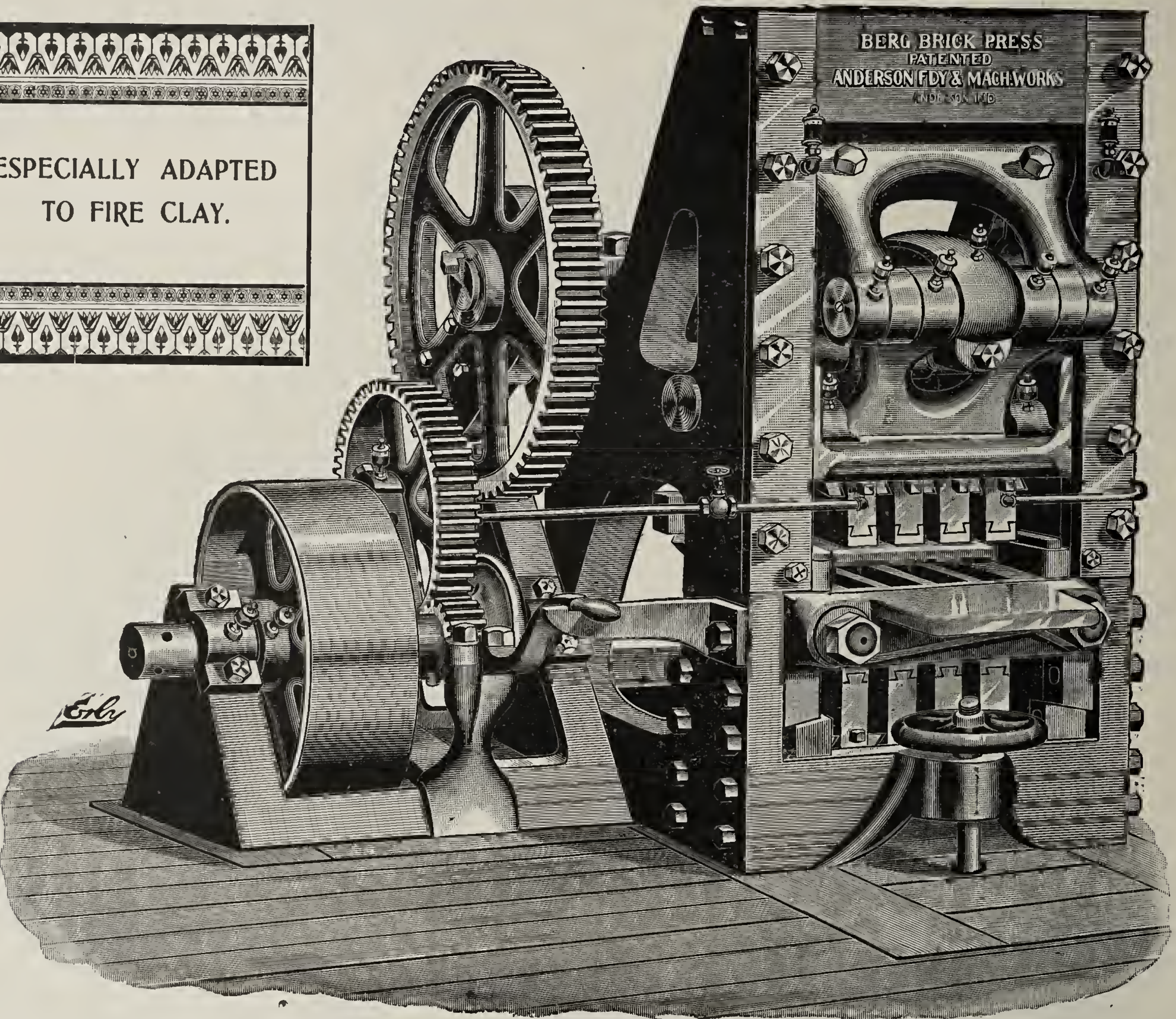
The Fernholtz Brick Machinery Co.,

CABLE ADDRESS "FERNBRICK."
WESTERN UNION CODE.

Boyle Ave. and Old Manchester Road, ST. LOUIS, U. S. A.

The BERG BRICK PRESS.

ESPECIALLY ADAPTED
TO FIRE CLAY.



The Highest Development of the Art of Brickmaking—so Pronounced by the U. S. Government.

Three distinct pressures.
Greater Pressure than any other machine.
Greater Strength than any other machine.
Will put more clay into given space than any other machine
Less working parts than any other machine.
No Plunger Stems, eye rods or Springs.

Mold Liners Made of Tempered Tool Steel.

Makes all size Brick and Tile from 2 to 24-inch.

SOLD BY

Chicago Brick Machinery Co.,
225 Dearborn St., CHICAGO.

MANUFACTURED BY

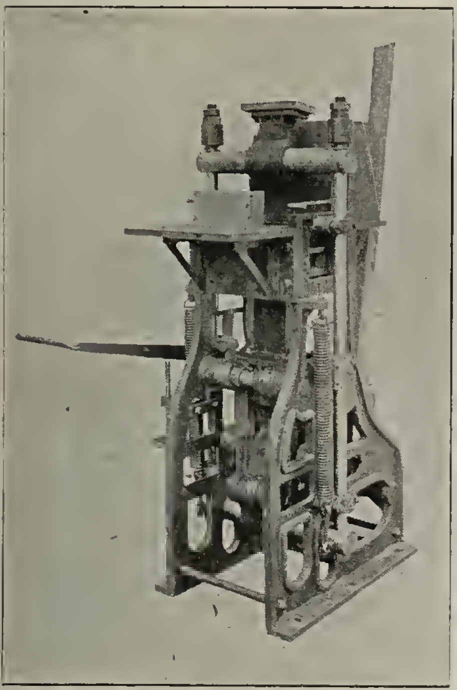
The Anderson Foundry & Machine Works,
Anderson, Indiana.

Mention The Clay-Worker.

THE NEW

Grath Hand-Power Brick Press

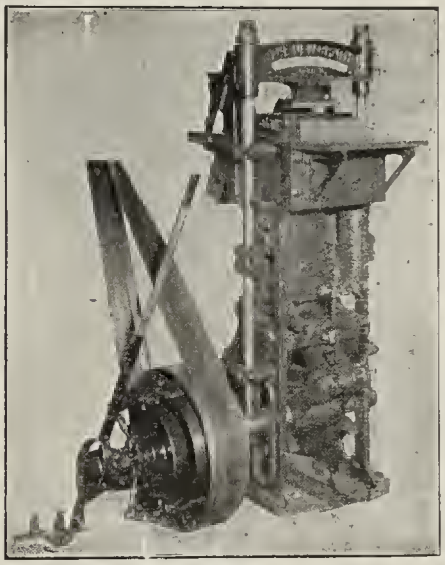
FOR MAKING PLAIN AND ORNAMENTAL PRESS
BRICK FROM SEMI-DRY CLAY.



The accompanying cut shows the only successful **HAND POWER PRESS** for pressing brick direct from the clay. The brick made on same are equal to those made on any steam power or hydraulic press. They have a polished face and perfect edges and corners. As will be seen, the press is equipped with charger and feed box. Two men can easily make 2,000 best quality press brick per day. By simply changing the liners and die plates, brick of any size up to 12½ inches long, 8½ inches wide and from 1 to 4¼ inches in depth can be pressed. In making brick on edge the mould is 9 inches deep. No brickyard is complete without a press of this sort. It is also recognized as the only successful press for making plain press or front brick for small yards that are making brick by the plastic process.

The Coffeyville (Kansas) Vitrified Brick & Tile Co. were the first one to order one of these presses, and to show what they think of same, they have only recently placed an order for two more of them.

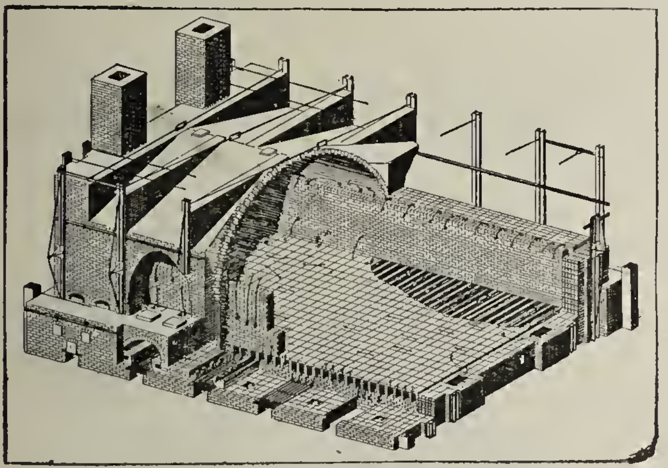
The Grath ONE AND TWO Mould Steam Power Press



The accompanying cut shows the latest improvement in Brick Presses which are built in two sizes. The One Mould, which has a capacity of 5,000 best quality press brick per day. The Two Mould having a capacity of 10,000 best quality press brick per day. This press is so constructed that all shapes and sizes of ornamental brick can be made on same by simply changing moulds and die plates, and is the cheapest as well as the simplest and most powerful Press of its kind in the market. The brick made are very dense with perfect edges and corners. The Press is guaranteed against breakage for one year. All parts subject to strain are of steel.

The Grath Gas and Coking Furnaces

Can be attached to ALL kinds of Kilns, either old or new, and produces better results with SLACK than lump coal in ordinary furnaces. PROTECTION GUARANTEED TO ALL USERS. REWARD FOR INFORMATION ON INFRINGEMENTS.



The GRATH Combined Radiating Floor and Direct Down=Draft Kiln,

(THE PERFECT KILN.)

BUILT ROUND, SQUARE AND CONTINUOUS.

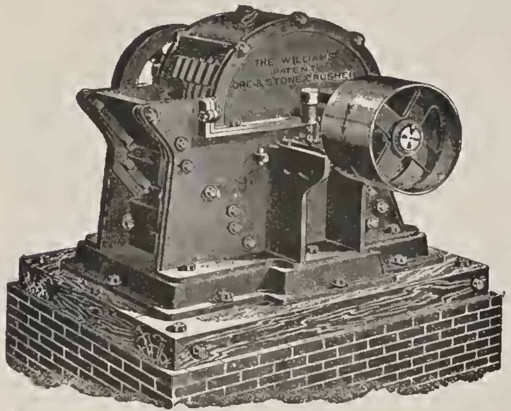
PATENTED.

BY OPERATING the Tile Dampers over the furnaces the heat is directed to any part of the kiln. When the dampers are closed all the heat from the furnaces is drawn into the flues under the Radiating Floor, then up the bag on the opposite side, then down through the ware. If the dampers are entirely open, all of the heat from the furnaces ascends directly up the bag and then down through the ware. If the dampers are split, part of the heat ascends up the bag and the balance is drawn into the flues under the Radiating Floor, up the bag on the opposite side, and then down through the ware. The heat passing under the Radiating Floor burns the ware in the lower part of the kiln by radiation to any degree of intensity. Thus it will be seen that all the material in the kiln is thoroughly burnt to any degree all at the same time. This constitutes the long sought for perfect kiln. For Catalogue and Prices apply to

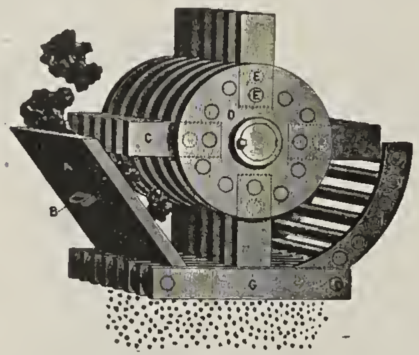
The Illinois Supply & Construction Co., 800 Columbia Building,
ST. LOUIS, MO., U. S. A.

The Williams Patent Crusher and Pulverizer Co.

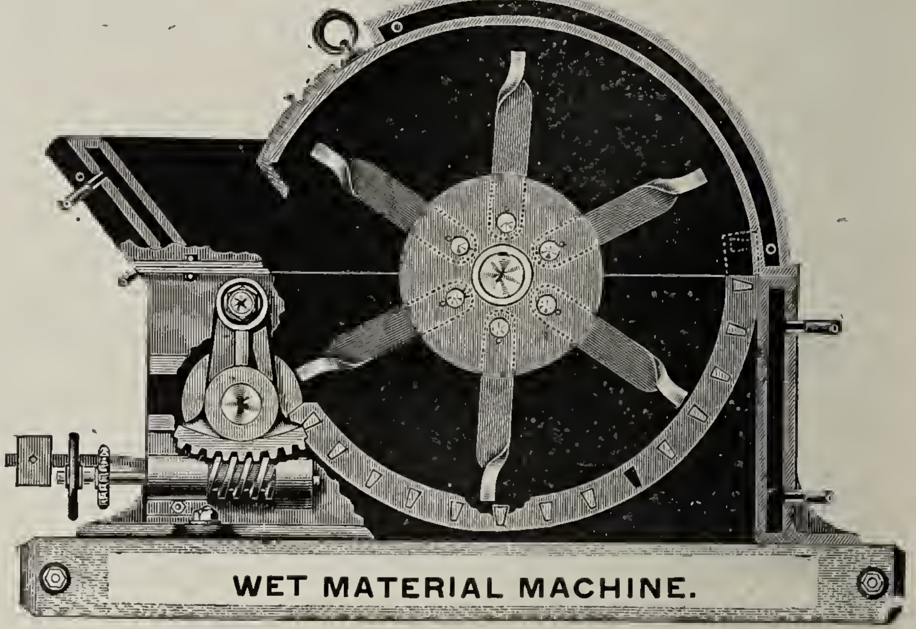
St. Louis, Mo., U. S. A.


THE WILLIAMS PATENT ORE & STONE CRUSHER

SHALE CRUSHER ahead of a Pan. 5 Sizes.

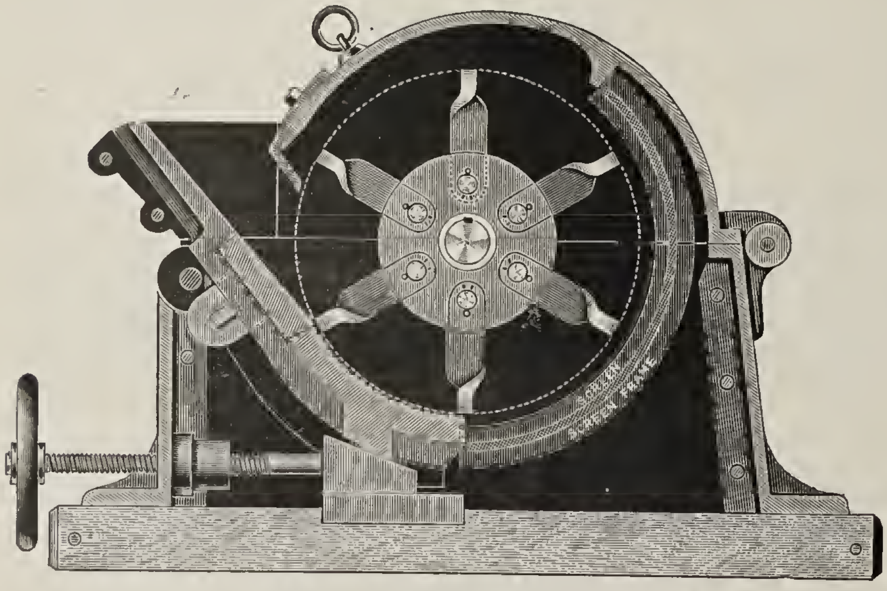


Interior of Same.

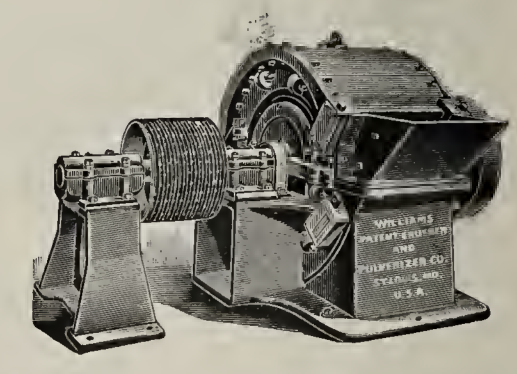


WET MATERIAL MACHINE.

WE NEVER FOLLOW BUT ALWAYS LEAD. Our Steam Screen leads them all. We guarantee to work satisfactorily any clay that will make a Brick, wet or dry, with less cost than any other machine on earth. : : : : : :



TAILINGS GRINDER (which finishes without additional Screening). Five Sizes.


WILLIAMS PATENT CRUSHER AND PULVERIZER CO. ST. LOUIS, MO. U.S.A.

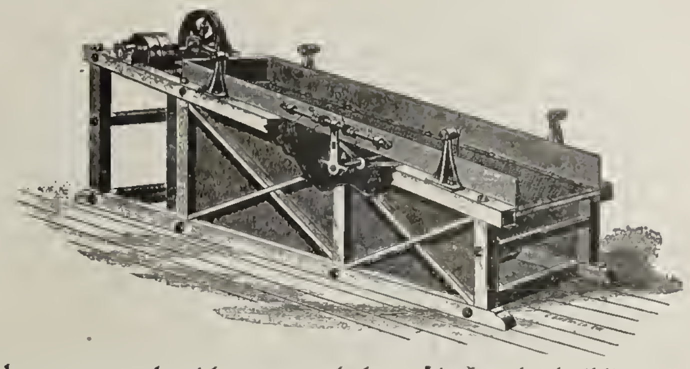
SHALE and CLAY PULVERIZER. Five Sizes.

Branch Offices:

NEW YORK OFFICE: Singer Building.
WEST VIRGINIA OFFICE: Bramwell.
PHILADELPHIA OFFICE: Stephen Girard Bldg.
LOUISVILLE OFFICE: 1301 West Main Street.
CHICAGO OFFICE, 741 Temple Court Building.
SAN FRANCISCO: Partridge Building.

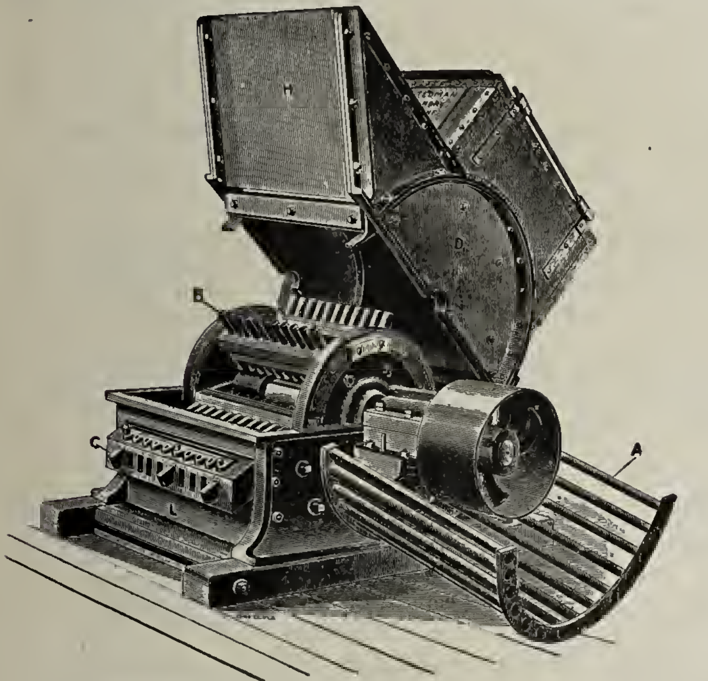
Mention The Clay-Worker.

STEDMAN'S AGITATING INCLINE SHAKER SCREEN.



A GOOD Screen for properly screening to any degree of fineness a great variety of materials, and especially clay, is a long felt want. Our Incline Agitating Shaker Screen meets the requirements of the trade in the most successful manner possible.

In this screen we have one of large capacity for small floor space and one that will screen fine without clogging, as the agitating device we have underneath the screen wire prevents any clogging of the screen holes when screening clay or any other material in a dry or semi-dry condition. The screen will run with little power and without any shake or jar to the building, as the moving parts are well balanced by an adjustable counter-weight within the rim of the balance or fly wheel.



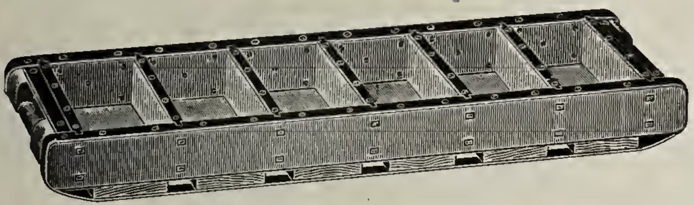
STEDMAN'S TORNADO CLAY PULVERIZER.

For Thoroughly Pulverizing Clay in a Dry, Semi-Dry or Damp Condition.

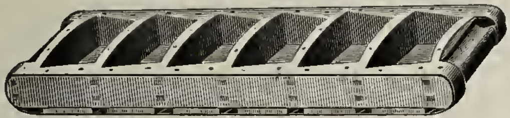
Its construction is such that it will not clog in pulverizing damp clay, and the journal bearings are constructed dust proof.

Write for catalogue, giving full description, references and testimonials.

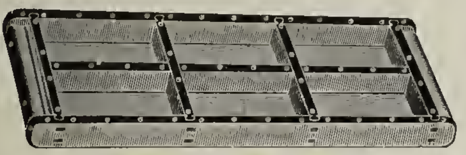
Stedman Foundry and Machine Works,
Aurora, Indiana.



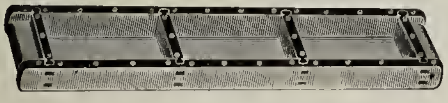
Six Brick Machine Mould.



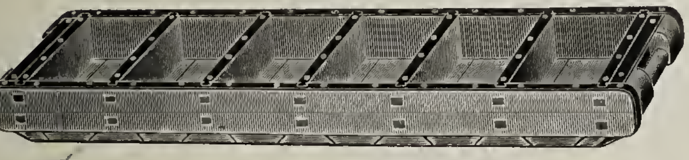
Circle Mould.



Hand Mould, Six Brick.



Hand Mould, Three Brick.



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THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United-States of America.

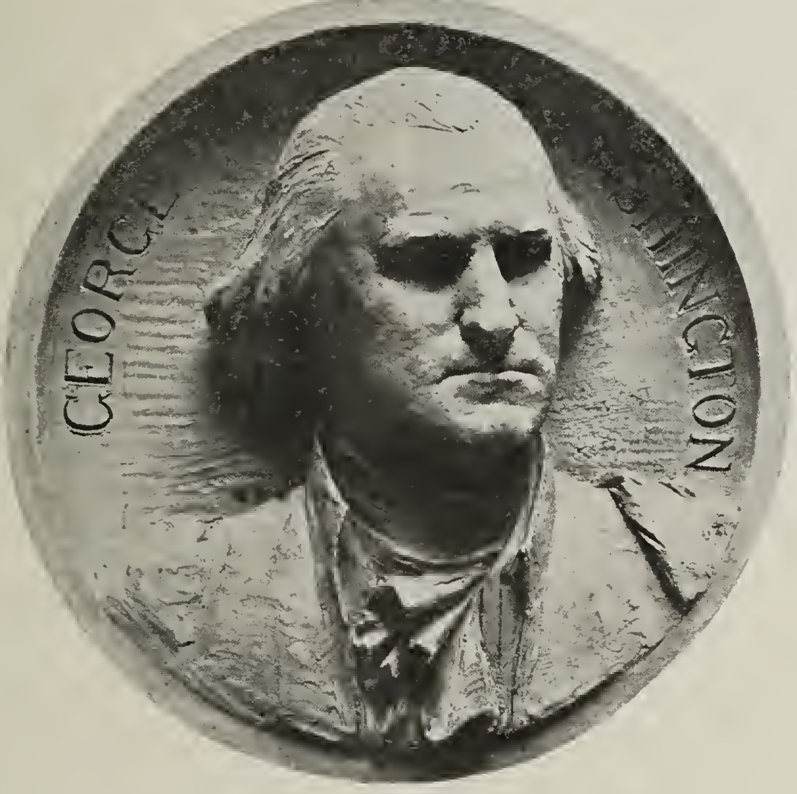
Vol. XXXVII. INDIANAPOLIS, IND., JUNE, 1902. No. 6.

Written for The Clay-Worker.

BRICK AND TERRA COTTA IN PHILADELPHIA.

Burned Clay the Most Popular Building Material.

ILLUSTRATING the march of progress which has characterized the closing years of the Nineteenth Century, the accompanying views are apropos as signally showing that what once contented the staid Quaker City folk, fails now most utterly in breadth and depth, internally and externally, architecturally and from a standpoint of hygiene. The low squatty two and a half story brick cottages, with white marble trimmings, dignified by the name of city residences, are fast being demolished and in their stead there rises a symphonic combination in burned clay, brick, set in the English and Flemish bond, fancy forms, geometrical designs, projecting, flat and in low relief, according to the fancy of the architect, with a juxtaposition of the burnt clay ornament, or terra cotta, done to the shade that will best harmonize with the color of the brick. In the central section of the city, many fine old residences of the revolutionary period are being razed to make way for the mammoth office building of eighteen and even twenty-two stories. In our illustration on the following page, a view is given of South Juniper street, one square from Chestnut street, where a foot front of ground readily commands from eager buyers anything from $5,000 to $15,000. Towering above its squatty neighbors is the Witherspoon or Presbyterian publication and office building, designed by Architect Joseph Houston. This is a solid and dignified monument of bricks and terra cotta, the best of the kind wrought into a mass of good lines and spaces, and wherein the spacious windows serve to admit God's own sunlight, that better air may serve to stimulate the efforts of those who, confined within the cramped environment of office work, may breathe as becomes the mental toiler of the day.



The Father of His Country in Terra Cotta.

Within a stone's throw four or five such buildings are to be erected during the fair months of this year, and our terra cotta manufacturers will have but little time for idling, and brick men will be making big burnings and haulings, for looking at the specifications, I find with but one single exception the call is for stretcher, hard and ornamental brick, with massive details of terra cotta.

The new building to be erected for the Land and Title Co., on the ground of the old and half demolished Lafayette Hotel, at Broad and Samson streets, from plans by E. H. Burnham, architect, of Chicago, is to be twenty-two stories high, faced with the finest brick in the market and relieved by terra cotta trimmings, costing approximately three million dollars.

In the facades of the Presbyterian building, at Walnut and Samson streets, thousands of dollars were expended in sculptural terra cotta, monuments, busts and medallions, which are exposed on the three fronts, and which contain all the elements of fairly good portraiture, to-wit: The one who was ever "first in peace and war, etc.," General George Washington, and many other celebrities of biblical and Presbyterian fame. Here is an example that might be emulated by many, since it serves to awaken public interest and keeps green the memory of those who were the pioneers of the past and the instruments of our present prosperity, as well as a reminder to the younger generation that as a nation we do not forget those who have so ably and honestly served their country. The sturdy backbone of brick is ever ready to stand most unostentatiously in the background to give the more favored terra cotta a show.

From the plans of Architect James H. Windrim a fifteen-story office building will be erected at the northwest corner of Twelfth and Chestnut streets, relieved by details of terra cotta in the string courses, cornices, balconies, corbels and columns, and for which the contract has been given to the Conkling-Armstrong terra cotta manufacturers, of this city.

South Juniper Street, Philadelphia, the Great Witherspoon Presbyterian Building in the Background.

For a building commensurate with its size, no building in the United States will equal in its elaborate and decorative effect the facade at Keith's million-dollar theater, now in course of erection on Chestnut street, between Eleventh and Twelfth streets, and while the plans are furnished by Architect Bruce Price, of New York City, the material and workmanship may justly claim to be of this city. Rising from the base, the main front is supported by columns of terra cotta and stretcher brick, while over the entrance an ornate and spacious marquis in finely modeled terra cotta will lend splendid effect to the medallioned sides and capitals. Four heroic corbels of Minerva, supporting right and left cornucopia, will support the third and fourth story, which will be relieved centrally by the application of a bow-shaped balcony, while the fifth and sixth stories will be further enriched by a right and left double-wing effect.

So far all the architect's plans call for the best effects and most expensive detail in brick and terra cotta, and stone, silent cold and stiff, seems to have been entirely ignored.

The argument being, as of old, that the softer and finer effects in color and modeling, and from a standpoint of economy, are the better obtained from the juxtaposition of these two adhesive and malleable materials, and again as better resisting our harsh atmospheric changes. The five buildings to be erected during the forthcoming summer months, and which will be revelations in the clayworker's art, will cost close upon ten million dollars.

The St. James apartment house, recently completed, at Thirteenth and Walnut streets, under the supervision and from the plans of Architect Horace Trumbauer, is another signal evidence of what may be done in lending grace and dignity to a city, details of which are here given.

Messrs. Conkling and Armstrong, the well-known terra cotta manufacturers, are the lucky recipients of the contracts for the above mentioned operations, and to whom my thanks are due for the use of the accompanying prints.

W. P. LOCKINGTON.

WRITTEN FOR THE CLAY-WORKER.

MOLDED BRICK.

By Geo. S. Tiffany.

THE TITLE RELATES to bricks made of clay in a soft, plastic condition, in molds. The term, "slop molded," is too suggestive of uncleanness to be applied to the art, and should be obsolete. We have something to say of brick made in this way. Our experience in clayworking assures us that the following propositions are true:

First—The compression of clay in the making of clay wares does not increase their durability. All pottery is still made of clay in a very plastic condition. To within the last half century the soft mud system of making bricks has been the only one. Bricks made many centuries ago are still in good condition.

Second—The compressing of clay, as in the repressing of bricks or molding of stiff clay through dies, increases the amount of clay in a brick of a given size, consequently increasing the cost of the clay and cost of transportation.

Third—The compressing of the clay increases its liability to crack in drying and burning.

Fourth—The sand molded brick may be dried in much less time than the stiff clay brick or the dry press brick.

Fifth—The compressing of the clay makes the bricks more difficult to cut with a trowel.

Sixth—The time required to safely burn soft mud brick and the fuel required for burning are considerably less for soft clay bricks than for stiff clay or dry press bricks.

Seventh—A greater variety of clays and of a much weaker character can be made into good bricks by the sand molded process.

It would seem that the only objects to be attained by any other system are cheaper methods and bricks more uniform in form or color. The dry press process makes a brick perfect in form and the color the clay will burn. The stiff clay or auger machine, with side cut lubricating die, will in many clays make an almost perfect brick in form and the color the clay will burn; but the sand molding process makes a brick the color the sand will burn, or a dirty combination of the two. You cannot get the rich colors from burned sand that you can from burned clay, and it is nearly impossible to get a sand and a clay that will burn to the same color throughout the kiln. The writer exhibited the Centennial machine in Philadelphia in 1876, and was politely, but decidedly, told that the machine would not answer for that market unless the brick could be sanded, for it was the sand that gave to Philadelphia brick their rich color and "velvety" surface. We got some of the brick, broke them in two, and found that the broken surface had a much richer color than the sanded surface; also that where the heat was greater than necessary to make a good body the sand burned to a gray shade, which spoiled the brick for best quality. There were but few courses in the kiln that could be burned to the desired color. Probably there is not a place where sand and clay burn more nearly to the same color or where more painstaking care has been given to the making of sand molded brick. In most places the sand fearfully defaces the brick, so that the property owner resorts to that most wretched of all expedients—painting a brick house. It has been a common practice in some cities to lay the brick walls with soft brick, grind the front to a smooth surface, paint the wall red and pencil the joints white. What a transparent, detestable fraud! Another practice, still somewhat in use where clay does not burn to a uniform color, is to sand the molds with worn-out molding sand from a foundry, or with a silicious iron ore, which give to the brick a dark red color. The color is but skin deep, and in a few years the wall has a mottled appearance, the middle of the face of the brick being a dirty yellow and the border brown, or black from soot and dirt. Clays that would burn to a cream or buff color are quite frequently molded in sand that burns a dirty gray. Paint or a water lime wash is applied every few years to cover up the wretched work. When will brickmakers appreciate the fact that there is scarcely a clay that, if thoroughly tempered, will not burn to a better color than paint or water lime can give, and, if properly burned, will hold its color indefinitely?

The writer lives in a brick house which has been built more than a third of a century. The walls have a mottled appearance, from buff to red, which harmonizes well with the foliage, especially in autumn. The bricks look as well as when first laid, and will a hundred years hence. They have a smooth surface and are washed clean by the rains. The mottled appearance is quite pleasing. It is a false taste that demands a uniformity of color in a brick front, especially so where a house is surrounded by shade trees. Nature teaches no such lesson. I look out of my window at a row of maples. The leaves are a dark green on their upper surface and are olive on their lower, and a gentle breeze this afternoon keeps them in constant motion—a kaleidoscope of changeable color. I cannot find a leaf, or tree, or bush, or vine that is of one uniform shade of color; not only the upper and lower surfaces vary, but the skeleton of the leaf is easily traceable by a different shade or color. If nature followed our ideals she would have the foliage all a cherry red and the limbs dead white.

Yes, a brick made from almost any clay would look well if we would not throw dirt in its face in the process of molding, and thus make it only fit for "backin' and fillin'."

But enough of fault-finding with present methods. We only indulge in it to "pave the way to better things," and with an earnest desire to help the brickmaker and improve the art. Can we dispense with the molding sand? We know of but two ways. In Canada, Nova Scotia or Maine, we cannot say which, we have seen what were called "water struck brick" made. Not having seen in print any description of this method, we will briefly describe it: A bottomless mold was used on a loose pallet. The mold and pallet were dipped in water, molds filled, carried and turned on the ground, the pallet drawn off with a sliding movement and the mold raised, leaving the brick on the ground. A horse turned the mill and the molds were filled by hand, but we were impressed with the idea that the "water struck" system of molding had a very desirable feature, and that it might be used in connection with the system of drying on pallets. There would be no objection to using sand on the pallets, for it would not touch the face of the brick.

The other method is to make the molding sand of baked clay, bats and defective brick. It could be ground to any desired degree of fineness and would burn to the same color as the clay. Perhaps it would be well to make very sandy brick for the purpose, for they could be more easily ground in a reduction mill. We have ground a barrel of sand from a soft sandstone in seven minutes with a reduction mill costing not over $200, and therefore have good reason to believe that a superior molding sand can be made cheaply in this way.

We are not interested in a business way in any machine or process. The soft mud or molded brick process has not kept up with the procession, but we firmly believe that it is capable of being brought to a much higher degree of perfection, and in part by the methods herein suggegsted.

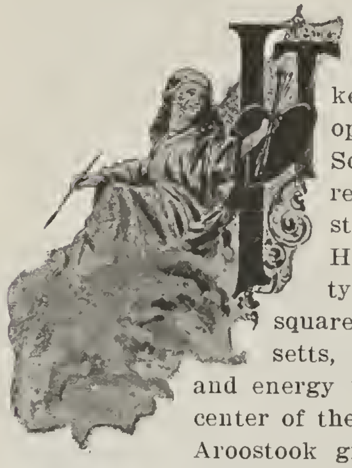
A Feature of the Decoration of Keith's New Theatre, Philadelphia. Executed by Conkling-Armstrong Terra Cotta Co.

AN UNFAILING SIGN OF PROSPERITY.

The savings of the wage earners of the United States, if the deposits in savings banks are any indication at all, evidence an amount of thrift and prosperity that is hardly in keeping with the sackcloth and ashes of the pessimist. Of course, there are hosts of depositors in savings banks who are both hands free of manual labor, but it is generally accepted that the savings bank is the toilers' bank. The banks of this class in New York City alone have resources on hand of $800,000,000. In the Bowery district, the increase of deposits in excess of withdrawals was $4,000,000 compared with the figures of the previous year. One hundred and fifty-four thousand depositors are represented, a number exceeding that of all the taxpayers in the city. There may be poverty, idleness, and lots of it, but there is something more than a scrap bone in labor conditions if the above figures are not in the Ananias business.

WRITTEN FOR THE CLAY-WORKER.

WAY UP IN MAINE.



IT IS AN ILL WIND that blows nobody some good" is an expression now applicable to the brick market of eastern Maine. The season opened with not a brick for sale. Scarcely were the first kilns made ready for the burning when a blaze struck up in the thriving town of Houlton, shire town of the rich county of Aroostook, which contains more square miles than the State of Massachusetts, and the blaze continued in force and energy until more than half the business center of the town was leveled. With the true Aroostook grit the business men of Houlton met, and, while smoke still curled up from the ruins, began planning to rebuild.

And their plans were to build of brick. This wisdom comes from stern experience, it being the third time within a century that Houlton has been razed by fire. So the demand for brick experienced a sudden augmentation, and to such an extent that it is believed some new brickyards will spring into existence to help supply the demand.

It may be possible, however, that the brickmakers of the Canadian side of the line may leap into the breach, as they did in 1883, when the business center of Houlton last burned. At that time "Sandy" Gibson, millionaire lumber king, cotton lord and brick baron of St. Mary's, New Brunswick, supplied the entire demand from his large brickyard at St. Mary's. He did this in spite of a 25 per cent. duty on brick and in spite of the long haul from St. Mary's to Houlton, and landed his brick at the buildings at about $7.50 a thousand as fast as masons could lay them. They were good brick, too, and many of them are in buildings that escaped the recent conflagration.

Houlton had three or four lively brickyards twenty years ago. Her last brickmaker laid down his burden nearly a decade ago. Since then she has been supplied from yards at Prisque Isle, forty miles away to the north, or Ashland, sixty miles further north, or Bangor, one hundred and forty miles south.

The clay about Houlton is a sticky substance, lying in low areas, and is expensive in mining and in working, and the quality of brick produced by the old Hobbs machines was miserably poor. If only some machine that would work the stuff into fair brick could be applied, there is little doubt that Houlton would continue to be a market for a small annual output at a good profit.

The brickmakers of Brewer got into the mud early this year, and, in spite of the extremely cold weather, succeeded in breaking all records for early kilns.

Time was when the Maine brickyards burned their first kilns about July 1. Gradually the date advanced. In some years the middle of June was the earliest date at which new brick appeared on the market. But this year two kilns of 300,000 each were fired the middle of May, one belonging to William Burke and one on the yard of Hugh O'Brien. Both were produced from Martin machines, and in this respect the sand process scores a decided victory over the old water starch process.

Hugh O'Brien expects to have his steam plant of 50,000 brick daily capacity in operation early in June, and will endeavor to give Sandy Gibson a run for his money in the control of the Aroostock market. Dan Mullen, at Prisque Isle and at Ashland, is increasing his forces, hoping to supply a large part of the brick needed.

Brickmakers were never so hard to find as this year. Men of all kinds are scarce, except the union promoters and the strike delegates. Five years ago the only unions existing in this vicinity were the Typographical Union and the Cigarmakers' Union.

Note the change. To-day there is a union of every kind of mechanic, artisan or laborer. Even the barbers have formed a union, and members of the Hod Carriers' Union last week refused to carry mortar in the construction of the new court house in Bangor, because a common laborer, who had defiled himself by shoveling mud in the gas company's trenches, was employed by the contractors to wheel brick.

They also kicked against working because a non-union man was culling the brick. There being no brick cullers' union, this difficulty was passed over, but the low-down, common laborer was ejected, and the dignity of the hod carrier was preserved from irremediable humiliation. Ten years ago a strike seldom came nearer than Boston. Now it is a dull week when Bangor can't muster at least one or two. I sympathize with the man who toils and I believe in union, but the conditions existing to-day are portentious of some serious developments. There is something radically wrong, and it demands a speedy remedy if disaster worse than the destruction of the elements is to be avoided.

In the flood of last March the Penobscot river carried off the railroad bridge and the carriage bridge connecting Brewer with Bangor, thus separating builders in Bangor from their material in the Brewer brickyards. At first the bricks were lightered across the river in scows. Now, however, they are being transported by rail over a cobwork bridge at much expense and extra handling. The carriage bridge will be replaced soon, and the inconvenience will be forgotten.

Simon Shorey, a veteran journeyman brickmaker, met a tragic death last week at Burke's brickyard. Nobody knows exactly how it happened. They had raised a ridge pole for the roof of a new kiln, and had, as all supposed, left it secure in its position. Shortly afterward one of the workmen passing by the kiln ground was surprised to find the ridge pole flat upon the ground, and Shorey lying by its side, with blood flowing from a wound in the back of his head. He lived five minutes, after reaching the hospital, but never recovered consciousness. He was buried at the expense of William Burke, and all the brickmakers attended the funeral. Shorey was about fifty-five years of age and a native of Three Rivers, Canada. He had no relatives here and nobody knows whether he had any living. He had worked in the yards for years, going to the logging camps in the winter. He was a quiet, sober fellow, but at his death had seven dollars in his possession.

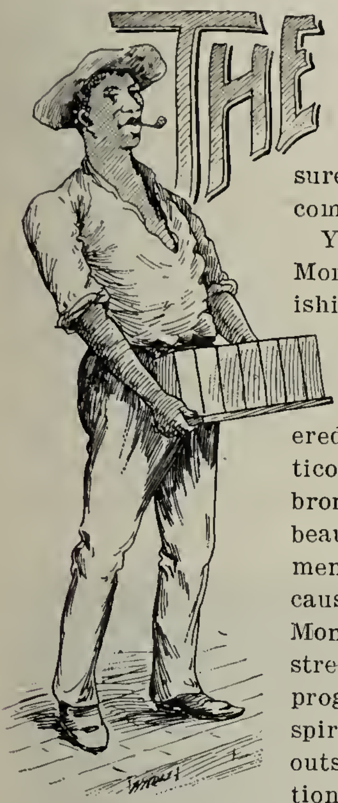
Prices of brick are fluctuating between $6.50 and $7.

DOWN EAST.

There is a great deal of slavery nowadays in the business world. Men are in bondage who are supposed to be free. It has come to pass that men now transact business while eating a mid-day meal, and that many public eating houses have to supply telephones as well as porterhouse steak to their customers. It is no wonder that opiates are necessary for the victims of insomnia, and men are crowding each other into the cemetery or the lunatic asylum. Such men are breaking down daily, and the cannon-ball route to the next world is doing a roaring passenger business. This nervous energy, to which the clock of time is but a mockery, is a disease. It is a case of business jimjams, in which every hen is a failure that does not lay two eggs a day, and a cow not worth its fodder if not in the habit of having twins. It is time for common sense to put on the brakes, and for business men to learn the truth, that speed is not always progress, and a kangaroo is not a man.—*Age of Steel.*

Written for The Clay-Worker.

BRICK PAVEMENTS IN ALABAMA.



THE WRITER HAS promised for a long time to send the esteemed editor of The Clay-Worker some photographs of brick pavements in Montgomery, Ala., and to give a short history of the same. Pressure of other duties has prevented my complying before.

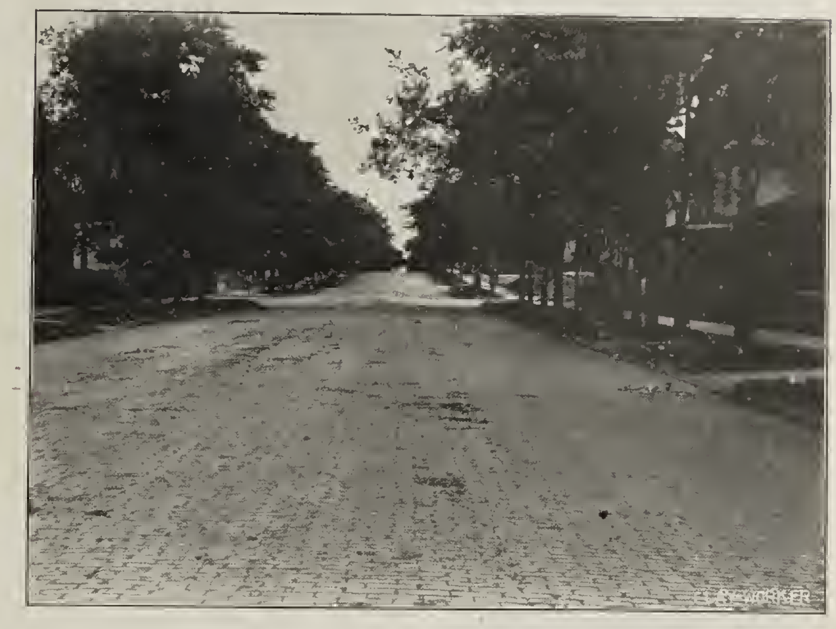
Your readers are all aware that Montgomery is the capital of the flourishing State of Alabama, and is also famous as the "Cradle of the Confederacy." The spot where Jefferson Davis stood and delivered his inaugural address on the portico of the Capitol is marked by a bronze tablet, and one of the most beautiful monuments erected to the memory of the heroes of the "lost cause" ornaments the Capitol grounds. Montgomery is a city of beautiful streets and residences. Its citizens are progressive and liberal, and it is this spirit that has caused Montgomery to outstrip every other city in this section in the matter of public improvements. The city owns and operates its own water works, has a magnificent system of sanitary and storm sewers, numerous and handsome public schools, being especially liberal in the provision for the education of the negroes, and has at all times been noted for the high character of its city administrations, which have been absolutely free from "jobbery," and, while always placing the interests of the city paramount to all other considerations, has always awarded contracts on their merits to the lowest responsible bidder, and in the execution of work has been fair and just in inspection.

The first pavement was laid some ten years ago, with granite blocks, on Commerce street, the main business thoroughfare. In 1894 vitrified brick entered the field for consideration in the South, through the factories at Chilhowie, Va., Robbins, Tenn., and Coaldale, Ala. Owing to several places having experimented with common building brick with disastrous results, Montgomery was skeptical about using vitrified brick. But the capable and well-posted city engineer, Mr. D. W. Ford, was familiar with the fine results that had been obtained from the use of vitrified brick in the North and West, and upon his recommendation contracts were let for some 40,000 square yards, half of which was laid with Robbins brick and half with Coaldale brick.

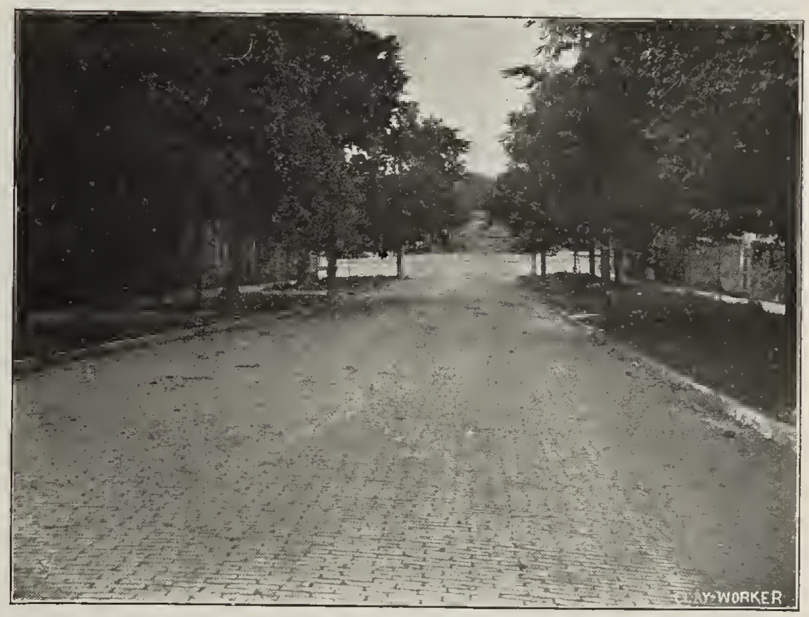
Dexter avenue, one of the widest streets in the South, was paved from the "Court Square" to the Capitol—some six blocks, and a rise of seventy-eight feet. Under such conditions, where traffic would be heavy and rapid, Mr. Ford displayed rare forethought in having the pavement laid on a six-inch concrete foundation and the joints filled with paving pitch. This pavement, which is shown on the following page, was guaranteed for five years by the contractors, and it is a high compliment to the engineering department and the quality of the brick that, upon the expiration of the guarantee period, the city agreed to accept in settlement a car of brick from the contractors, to be used for repair work from time to time. Although over a year has elapsed since then, not a single brick has had to be taken out.

So well pleased with this first experiment, Montgomery continued for six years to steadily improve its streets by brick pavements, and they now have many miles of them. And the present administration is planning to continue the good work.

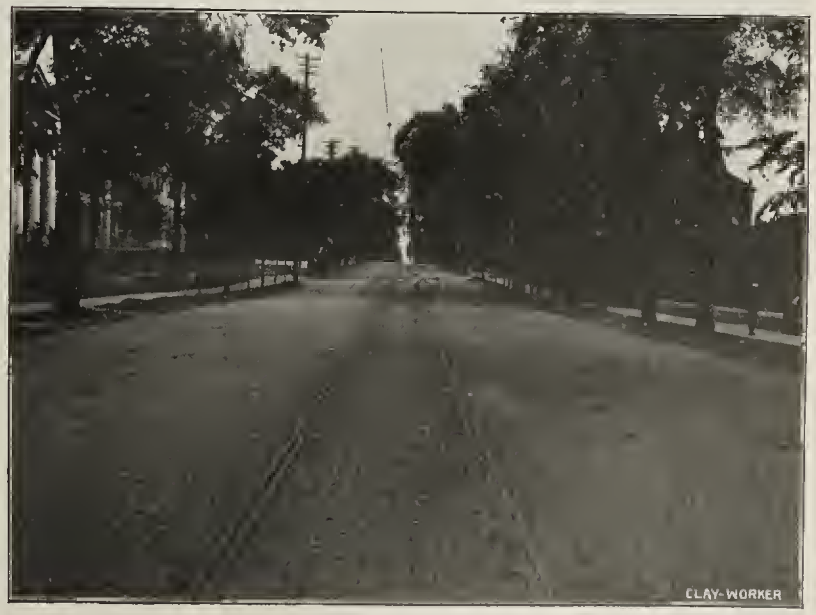
GLIMPSES OF MONTGOMERY'S BEAUTIFUL RESIDENCE STREETS PAVED WITH BRICK.



Lawrence Street, South of Washington Street.



McDonough Street, North of Washington.



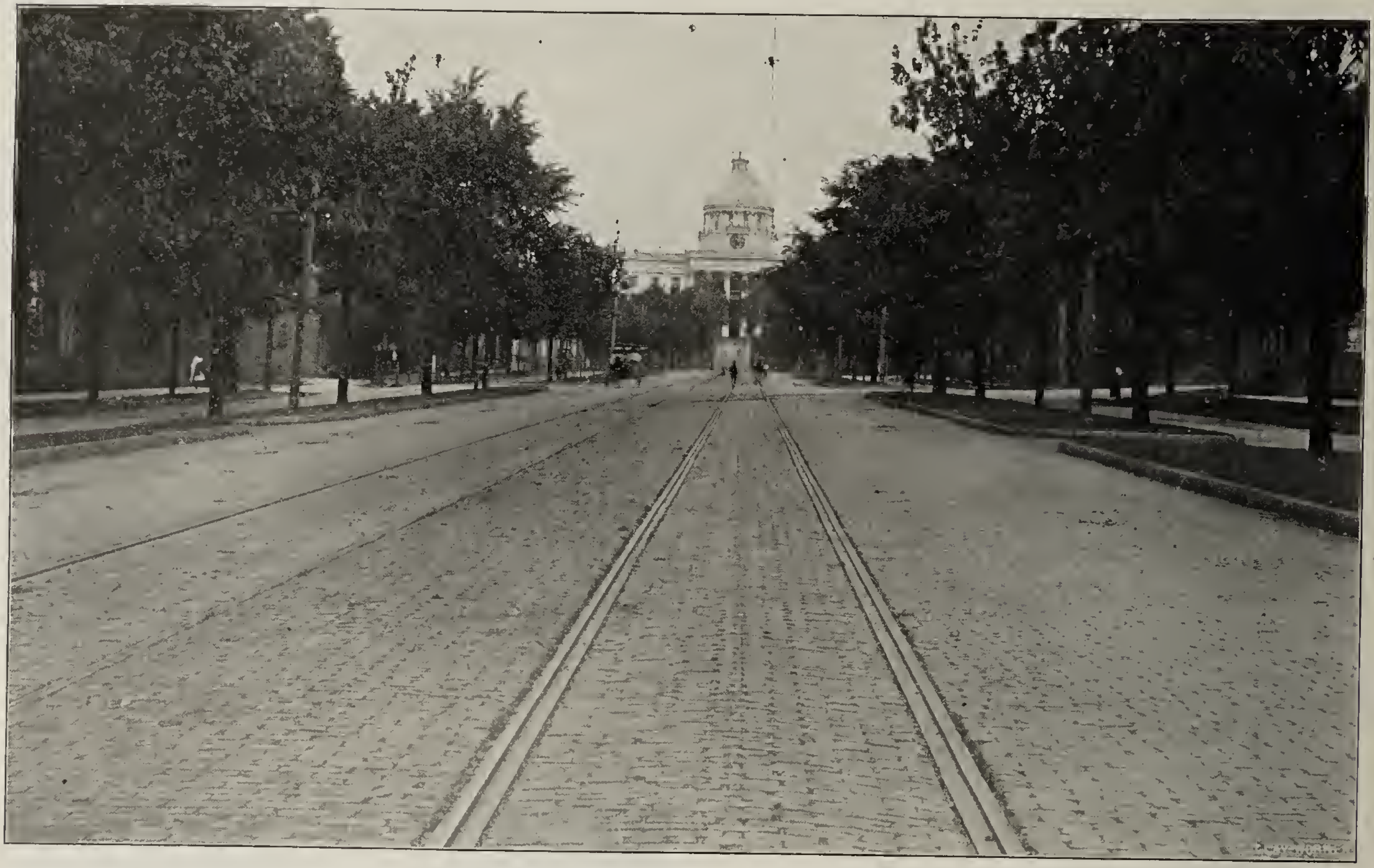
South Court Street, Near Adams.

Owing to the proximity of the plant and the high character of the brick, Montgomery has used mostly the Coaldale brick, and the indorsement of them by Montgomery has caused many cities in the South to use them. On several streets, residence and light business, the city has used an eight-inch gravel foundation, filling joints with same, there being an abundance of this material near by, and this has given them a cheap pavement. The city engineer, however, is a strong advocate of concrete, using four inches for residence streets, and a pitch or cement filler in any event. He maintains, and very correctly, I think, that in the long run the repairs saved will more than counterbalance the increase in first cost.

While improving its streets, the city has also laid many miles of sidewalks and curbing. These municipal improvements have made lasting impressions upon visitors, and the real estate people testify that the value of abutting property has been enhanced several times as much as the cost of paving.

Southern cities are slow to take hold in such matters, but it is hoped and believed that the example set by Montgomery will be emulated by many others. Already the "Magic City" of Birmingham has been stirred by a spirit of rivalry and several streets are being paved with brick. The industry is as yet in its infancy in the South, but the efforts of the paving brick plants in this section to turn out the very best quality of paving brick and the adoption by engineers of the best specifications will eventually bring about the desired end.

VERITAS.



Dexter Avenue, Montgomery, Ala. "Capitol of Confederacy" at Head of Street.

Multiplication of words increases the expense and decreases the effectiveness of advertising. Say what you have to say in as few words as it can be said—then stop. By so doing you can set what you have to say in larger type, so that it will command the attention of more readers than would a wordy discourse set in small type.—Ex.

ROAD CONSTRUCTION—BURNT CLAY FOR ROADS.

SOME YEARS AGO an attempt was made by a prominent brickmaker of Illinois to mix coal with the dirt of earth roads in such a way that by burning the mixture the road was paved with a covering of burnt clay. We are not sure but that letters patent were taken out covering the process. Be that as it may, the practice of using burnt gumbo for ballast for railroads and for surfacing public roads is now used and is described in the Review of Reviews by Charles Rollin Keyes, from which the following is an extract:

The railroads handle the clay and carry on all operations connected with its burning by machinery. The burnt gumbo, ready for use, can be delivered on board the cars at a cost of 25 to 35 cents a cubic yard. When burned by hand, as would naturally have to be done in highway improvement, the cost would be, perhaps, 10 to 15 cents more. The railroad gumbo pits are often a mile or two long and hundreds of feet wide. In the case of the highways, the mud would merely have to be shoveled out of the roadway, burned and shoveled back.

While for macadamizing purposes on country roads burnt gumbo is not quite so durable as some of the best grades of rock, it has many advantages to offset this one shortcoming, slight as it is. The process of producing burnt gumbo requires practically no capital or great skill to carry on. The most ordinary labor and a little common sense on the part of one person, as overseer, can produce the best of results. Of course, the road should be properly graded and crowned before putting on the gumbo road metal. A surface of burnt clay six to eight inches in thickness is commonly sufficient for good results, or ten inches in particular places, where unusual conditions exist or traffic is especially heavy.

By selecting for improvement the heaviest parts of the road first, since the worst stretches are often caused by the very material that makes the best grade of road metal, and systematically working under intelligent guidance, five years would find every principal highway in a county as passable the year round as a paved city street, and at very little more cost than is usually squandered on "working the roads." The county supervisor could easily superintend the whole work for his district, and, with local overseers as head burners, he could soon produce as good a system of highways as any one could wish for. Once properly prepared, two men could easily keep the roads of a whole county always in good repair.

With no more expenditure of money and effort than is now put on the country roads, ballasting with burnt clay would produce in a dozen years a system of highways equal to any of those for which France has so long been famous.

A burnt gumbo road is never muddy, for that property is lost in the burning. The surface of the road is hard and smooth. As a speedway for bicycles and automobiles it is ideal. For carriage and heavy wagons it has no superior. No vegetation can grow on it. It is practically free from dust, after the highway system has been well developed, so that mud is not brought in from the tributary roads. Moreover, the warm red highways contrast pleasantly against the green landscape at those seasons of the year when country drives are most enjoyable.

The process of burning clay is quite simple. Along the roadside cordwood is piled to form a low pyramid or ridge 8 to 10 feet wide. On this is thrown 3 to 4 inches of coal slack and 12 to 20 inches of gumbo mud, which is cut from the roadway or a pit, as the case may be. On firing the wood, enough air enters the pile to enable slow combustion to be carried on without the generation of too much heat, which would vitrify the clay.

When a "pit" is made, as often is necessary when burnt gumbo has to be hauled some distance, or, as is the usual way with the railroads, new additions of slack and mud are added each day on one side of the pyramid, while on the other side the burnt gumbo is allowed to cool and is then carried away. In this way the pit advances sideways a few feet a day until it has become several hundreds of yards across.

The gumbo clays have many notable qualities, besides being excessively sticky in wet weather, enabling them to be readily distinguished. They usually form what the farmer calls cold, sour soils. These soils cannot be tilled to advantage. The land occupied by them is almost worthless, except, perhaps, for scant pasturage at certain seasons of the year. The clays absorb and are capable of retaining an immense amount of water, often so much as twenty-five gallons to a cubic yard.

The best clays for making burnt ballast are distinguished by certain physical properties. They are very plastic, quite impure, very fine grained and tenacious. Their tensile strength is enormous, often as high as 400 pounds to the square inch. The shrinkage is very great—10 to 12 per cent. in the drying and burning process. These are the technical tests for recognizing these clays. A ready, practical test is to find the very worst stretch of a muddy country highway.

Washington Street, Montgomery, Ala., West of Lawrence.

If you want something you haven't got or have something you don't want, try the efficacy of an ad. in The Clay-Worker's "For Sale, Wanted, Etc.," column.

In laying out a plant, no matter how small, it is best not to go by the "rule of thumb" and trust to luck to come out right, but lay out the whole thing on paper to a scale, determining the position of every machine and the speed of all pulleys, machines, etc.

WRITTEN FOR THE CLAY-WORKER.

TALKS ON BURNING—FIRST PAPER.

THE OPERATION of burning is the most important of all the manipulations which clay undergoes before it assumes its final condition. To a large extent the success of the clayworker hinges on the change which the fiery ordeal brings about on his material, be it for its good or injury. The higher we go in the scale of ceramic products the more pronounced will be the effect of burning, and hence the more important. However well made a product may be before burning, no matter how much skill and patience has been devoted to it, if the burning is not done satisfactorily all this trouble will have been wasted.

It is not surprising, therefore, that this subject should occupy the thoughts of clayworkers and should call for the best efforts on their part. Much has been said and written on this very important topic, in fact, so large is the volume of literature in this respect that the reader is confronted by the danger of confusion, for let us be frank about it, much of the information available is contradictory and if analyzed carefully is found to rest on erroneous assumptions. Yet the subject of burning depends on natural laws, simple of application and easy to understand. Anyone who takes the trouble to become acquainted with a few fundamental facts will certainly succeed in grasping the entire problem of burning and, understanding it, will be able to direct the process in accordance with the results desired. In order to do this it is not necessary for a clayworker to devote years of study to this subject in class room or laboratory, but a few hours applied to the mastering of the terms and fundamental facts will open to him a knowledge which will be of direct value to him, and what before has been a task but dimly understood will now become a pleasure.

As I have said before, the literature bearing on combustion and burning is quite extensive, but scattered so widely and sometimes so difficult of access that many would find the study a laborious task, full of confusing statements and discouragement. Many of the statements will be found to be extremely technical and hard to grasp for the non-scientific man; others, again, so lax and empiric in reasoning that but little reliance can be placed upon them. Realizing this, the writer has undertaken to collect and arrange the knowledge available for the benefit of the readers of this journal, and it will be his endeavor to express the facts as directly and plainly as possible.

It is a task most difficult, since he cannot avoid some technical expressions without which the articles would become a mass of mere generalities without definite meaning. For this reason he will state the fundamental facts, before discussing burning proper, in concise language, which are to be mastered before the subject can be fully understood.

The writer undertakes the task, appreciating fully the difficulty of presenting the facts in the best and clearest manner, and though he may fail to present the subject in the most lucid way, he yet hopes that the readers may derive some help from the articles, and that some may be incited to go on in the mastery of this all important topic beyond the limits of this discussion.

Since the laws governing the process of burning are in themselves not difficult to understand, it is perhaps not unreasonable to assume that anybody who follows these papers with some attention may come to a complete understanding of the principles involved. In order to be of any benefit, however, it is absolutely essential that the articles of this series be kept together and complete for future reference after the first reading.

These papers are written especially for the benefit of burners from the standpoint of one of them. The writer, in the years of practical work around clay works, obtained actual experience in the burning of up-draft as well as down-draft kilns, and knows what it means to shovel coal and throw wood into a large clamp or into a 120,000 down-draft kiln. Having been day as well as night burner, in sole charge of the kilns, and having accomplished satisfactory results, he feels encouraged to address the hard-working men who serve the clay industry in the capacity of burners.

He fully realizes that the physical exertions of the average burner, feeding the ever hungry furnace-mouths from morning until evening and during the weary hours of the night, do not leave him much energy for the study of the principles of burning, yet during the easier hours of water-smoking and during the winter months he might find time to study slowly and carefully these simple statements expressing the ever true natural laws governing the work of the clayworker. Though men may err in their application, these laws hold good ever and always.

The question may well be asked what practical good is obtained from the knowledge of the principles involved? Such a knowledge will not enable every clayworker to revolutionize the present methods of burning, simply because hard experience and definite commercial reasons have already drawn certain limits, which even the most accurate science cannot overstep, limits set by the question whether or not it will pay. Many of the world's most ingenious and brilliant theories cannot find practical application because their execution would involve either too large a capital or their operation too great a skill. Science, however, will show to the clayworker where he is making mistakes in the operation of his present kilns. It will tell him how to save fuel, how to select fuel. It will tell him the relation between temperature and draft, it will make clear to him the perplexing action of the fire gases, show him how to measure temperature and how best to distribute the heat among the ware, and finally, how to proportion the sizes of the flues, grates and stacks. By teaching the clayworker the principles of all this it will give him the power and confidence to make success out of failure and to meet any emergency in the most intelligent manner.

This reward for an effort within the reach of all seems certainly large enough to awaken even the more sluggish brothers, and should stimulate especially the young men of the craft. What a knowledge of this kind will do is amply illustrated by modern metallurgy. To-day metallurgists are able to calculate the exact proportions of blast furnaces, and their numerous accessories, open hearth furnaces, smelting furnaces of all sorts, converters, electrolytic plants and generators. The American metallurgist is essentially a trained man, and to his peculiar training must be attributed the fact that American metallurgy is the most progressive of the world. What can be done in metallurgy must also to a large extent apply to clayworking, for both use heat in their most important processes.

The writer desires, however, to caution the readers against the belief that the knowledge desired is acquired too easily. It takes some work, some determination and perseverance and a readiness to throw away some deeply rooted prejudices. If a certain principle is not grasped at once, it must be read again and again until its meaning becomes clear. Nothing in this world is honestly gained without compensation—in this case a determined mental effort. At this point, however, the writer desires to say that it will give him great pleasure at all times to explain any point which has not been made as clear as it might have been, either by letter or through The Clay-Worker, as fully as possible. For the benefit of those who either have not the time or the inclination to study the more technical sections, a *summarization* will be appended at the end of every section, in which a resume of the preceding discussion is given in non-technical language. This, of course, cannot be as thorough and accurate as the main sections, but it will state the principles as exactly as possible in general language.

There are still a few people who like to jeer at any attempt, however earnest, to bring out the truth of the principles involved in our calling, and who cannot bear to hear the words "heat unit" mentioned without making sarcastic remarks. Such as these deserve the sympathy of all intelligent men.

Corrections and criticism of the statements made will be welcomed by the writer and will be considered favors, for the fundamental idea must always be the truthful representation of the natural laws.

—The Use of Technical Terms and Units.—

The question is often raised, why is it necessary to use such terms as heat units, carbon monoxide, specific heat, etc. The answer is a very simple one. The so-called technical terms are simply the most definite names for these things, names which state exactly what the thing is and which cannot be changed by everyone according to his pleasure. They are the standard, just as the word inch means the length representing the thirty-sixth part of a yard. But they mean more, as an example will show. Carbon dioxide is the technical expression for the gas ordinarily called carbonic acid; the name indicates that the element carbon, which we see represented in the best way by charcoal, which is almost pure carbon, and also by coke and coal, is united with two (di)atoms of oxygen, the gas representing about a fifth of the volume of air. We see that thus the name carbon dioxide designates not only the gas itself, but tells us of what it is composed. It tells us also, as we will see later on, how heavy it is in comparison with other gases and how much space it occupies. This certainly is an amount of information given by a single expression which could not be told by the common expression carbonic acid. We see thus that these technical terms are largely a sort of shorthand and save a good deal of time. A great many more reasons could be given in the defense of the technical terms, but we have indicated sufficiently how important they are.

AMERICUS.

(To Be Continued.)

A BUSY TENNESSEE PLANT.

Publishers Clay-Worker:

Inclosed find my subscription to The Clay-Worker for another year. I am a little late, and am glad you did not stop the paper, for we could not get along without it. We get our money's worth every month. Would have remitted sooner, but have been so very busy making brick. We got a good start and our Monarch machine, purchased from your neighbor, Mr. Hensley, is turning out 25,000 good brick every day for us. The brick barrows and other supplies furnished by Mr. Hensley are all right, like everything we get from Indianapolis. The demand for brick down here is good. We have the best prospects I have ever seen in this part of the country. So far this season we have made nearly two million brick, and expect to keep right at it until the end of the season. Long live The Clay-Worker and its editor. JOHN G. WALTERS.

A Glimpse of J. G. Walters's Brick Plant at Martin, Tenn.

"It is not always the difference in men that makes the difference in results; it is the difference of the *efforts* of men." This sentence explains why the plodder wins.

Good advice comes so cheap that we are all prone to let it pass us as not applying to our case until we get in trouble, then it occurs to us, "if we had only thought." Another Indiana man has been caught trying to put on a belt, the stick he was using giving him a rap that broke three ribs. Some men will never learn to take time at a dangerous job like putting on belts, so the ranks of the crippled and the dead are kept filled. The man who is in too much of a hurry to wait ought to take the place of a setting hen for a cure.

Written for The Clay-Worker.

CUBA, NEW AND OLD.

(Third Paper.)

TRANSPORTATION is a serious problem yet to be solved in the island of Cuba, and a mighty difficult one for the eastern provinces, where irregular, saw-teeth mountains rise one after the other. Roads, better understood by the word "trails," wind over and around the hills, and except near the towns are used for traffic only by pack trains. All well enough for commodities easy of transportation, but paralyzing to anything so bulky or weighty as clay products.

Some twenty years ago a plant to manufacture roof tile (tezas), floor quarries (losettas) and brick (ladrillos) was installed in the city of Santiago with French machinery, which machinery is a dream to look at in its finish and perfection of detail; its shining bronze and polished steel, so much prettier to look at than our workaday American machinery, and, strange to relate, the auger, a machine large enough to be of 20,000 to 30,000 daily capacity, was to be operated by a 4-inch belt; a nut for machine men in the States to crack, since it was back-geared about 12 to 1, with 200 revolutions per minute and power used about fifteen-horse. Neither history nor tradition records the power used, but rumor has it that the clay was worked soft (very probable) and some brick and tile made. The clay was brought by pack train some twelve miles over the mountains, and, however all this may be, the operat-collapse. Again, it was attempted, with the same results, and again it was tried as a sort of popular enterprise, since which ing and financial ends did not harmonize, necessitating quite a time it has enjoyed a perennial "black eye" and "La Industrial" is in a state of inocuous desuetude. As all the people connected with these enterprises are dead, and as King David said, "All men are liars," it is difficult to get tangible facts, but the tales that are told are simply great.

Looking South Up Hospital Street, from Corner San Basilio. A Hard Problem for a Municipal Engineer.

—Cuban Clays Hard to Work.—

A couple of years ago a soft-mud machine of a well-known make was brought down here to a place where sand is as scarce as the proverbial hen's teeth, and then a man to run it, who turned tail when conditions were not to his liking and clay cut up antics not down on the American programme, so it has grown to be accepted that these Cuban clays are not adapted to mechanical methods. Because brick check, crack, split or burst in drying in open air, it is not prima facie evidence that these same brick cannot be dried somehow. Because the methods in vogue in New Jersey or in Missouri do not seem to work here, it is not to be said that brick cannot be made here, and by machinery, too; there are some evidences to the contrary. A hint to the machine men, however, would be not to promise too much. A little experience has proved that Cuban clays need a treatment of their own, and will have it—a wise thing to keep in mind at all times, since clays are like women, no two alike.

San Pedro Street, Looking South. Typical Cuban City Houses. An Asphalted Street, from Corner San Basilio Street.

A bit of Pennsylvania history may not come amiss here in the case of a wonderful clay. (Wonderful! Of course!—they are all wonderful.) An up-to-date machine man, who sold the machine whether it was adapted to the clay or not; a little knot of men who were going to make brick, and a barrel of money, incidentally, and were ready to spend $50,000. They had the money and could buy the brains. They were told that the Lord Almighty made the clay and they would have to adapt their processes to the Lord's product. It cost them $150,000 and more to find that they couldn't buy the brains and that their processes wouldn't work, whereupon abandoning their bluff and taking up a kindred branch of manufacture, with more common sense and less bravado, they are rapidly winning back what they lost. It don't do to be too "cocky" in the clay business. Nobody knows it all, unless it be the man who never made a brick, but has money to buy brains. He generally knows more after he gets through than when he starts. If he has staying qualities and common sense, he in the end generally reaps a good reward, but is not so "cocky" by a long shot.

—Cuban Clays Very Tender.—

Cuban clays as a rule are tender; I wish a word could be found to express that in an exaggerated sense. One brick man at the other end of the island says that if the cutter "cusses" a pallet boy it will check every brick in the range of his voice, and this brick man is a modest man, too.

A Typical Cuban Roof. Buzzards Waiting for Breakfast.

Here we have a hot sun, a brisk day, dry, cooling breeze by day, with generally a good breeze, and an atmosphere laden with moisture by night, largely supplying again the moisture taken from the brick by day, and not for the good of the brick. The question is naturally asked, "Why not use an artificial dryer?" But which one? What system? Those trying to find out the *rightest* system are going slow. They want to know before spending their money in dryers; not encouraging, to be sure, to the dryer men, but markets as yet will not justify spending much money for Cuban trade.

Carretillo, or Cuban Dray, Under Mango Tree. Part of Brick Works in Background.

Going back to the question of transportation, roads as a rule are bad, trails, not roads, which in the rainy season, i. e., from May to November, are frequently impassable for wagons. Cuba is poor, poor, poor, and cannot spend money for the betterment of her roads. She simply hasn't the money. A railroad is being built to connect Havana with Santiago and Santiago with ports on the north shore. This is to be in operation within the year, and will be of vast import. Controlled by American railroad men, it promises to build up by liberal management, rather than tear down by the repressive systems in vogue since railroads were started here. Water transportation cannot be of much avail, for navigable rivers are rare, and the south coast almost barren of sheltered anchorages. All this necessitates, or will necessitate, locating clay industries near the market, with building and keeping the roads in condition, by the brick man, of course. The boroughs are too poor to help. The citizen looks on approvingly, but why should he help when the brick man has to do it, so he doesn't help.

—Transportation Problems.—

To carry 1,000 brick four miles costs more than the average American receives for his brick. It is said that a lot of two and one-half millions were shipped from New York to a point on the south coast. They cost $6 per thousand f. o. b. New York and $35 per thousand when laid down at the job, in the interior. Another case of some 400,000 cost $6 f. o. b. New York. When turned over by the custom house to the purchaser anywhere from 25 per cent. to 40 per cent. were broken, many not even being bats. This, however, surely was a bad lot of bad brick. With the movement of this heavy cheap material, what means of transportation can the poor brick man adopt? Rail rates are $1.50 per ton for a six miles' haul. Wings are not handy. Santos Dumont's balloon, while dirigible, is not tangible, but the brick man aforesaid will find some way to solve that problem, after mastering others that harass him in the earlier stages of the game.

Brick Works. Grasses in Foreground Show About Six Weeks' Growth.

The American in the North has his winters to contend with. In Cuba it is the *dry* and *wet* seasons. Unless favorably situated, in the dry season he will find himself short of water, and irrevocably so; in the wet season a veil may well be drawn over the whole picture at times. By dry and wet seasons it must not be understood that the one is persistently dry, nor the other habitually rainy. It simply rains more and harder from May to November, with plenty, lots of sunshine; while from November to May there are numerous showers and many cloudy days, and these showers are quite wet. One, a few weeks since, accompanied by a gentle zephyr, succeeded in drenching the interior of a shed fifty feet away from the eaves, and the eaves were only ten feet from the ground, while roads were cut, gullied and turned into young rivers in twenty minutes' time, but at times in the wet season, ye Gods! how it does rain—sheets—bucketsful cannot express it. It simply drops in mass. Forty-seven inches is the average rainfall for a whole year in New York. On the 12th of last September 26 inches fell in twenty-four hours, not a record-breaker, either, and then—where is the poor brick man? Arrangements have been made with the Recording Angel to skip the language fitted to such occasions. It surely will not do to print.

BELCHER.

Written for The Clay-Worker.

BRICK TELL THE STORY OF ANCIENT HISTORY.

ANTIQUITY lends respectability. Few will deny this proposition. Historically it will be unquestioned. And in a general sense the statements are susceptible of convincing proof. While there may be instances in which the full force of the proposition doesn't apply, the exceptions may be said to prove the rule. It is true of persons, of localities, of buildings and of industries. Antiquity is responsible for much that is worthless, more that should never have existed and a good deal that is disappointing and unreliable. Ancient records have an air of respectability arising from their age, but they are not always trustworthy. The ravages of time and the defacement of ancient landmarks by the spoiler have contributed much to the misunderstanding of ancient peoples and their occupations. Defacement has often resulted in reading inscriptions wrong and from these false premises has arisen much of the distortion in the information of ancient peoples.

Defacement has been characteristic of monuments chiseled in stone. For instance, Rameses II, one of Egypt's most famous Pharaohs, defaced earlier monuments and carved his own autograph upon everything he found. He couldn't bear to think that any exploit worth mentioning could go down to history without his name, and there is evidence to show that he actually changed the inscriptions in numerous instances and had earlier victories and other noteworthy events credited to himself. There the monuments stand, defaced, and their historical value impaired, if not utterly destroyed, by the egotistic old vandal who considered that he was really the entire exhibition. It is an interesting study in antique self-consciousness, but it proves beyond question that the Egyptians understood the art of advertising as well as some more modern horn blowers.

Old Rameses, or whatever his name may have been, undertook to impress the dignity of his mightiness upon enduring stone, to be forever read by future generations. It worked well so far as the monuments are concerned. The inscriptions are there, and the learned gentlemen who have succeeded in deciphering the involved mass of hieroglyphics, in which the most civilized nations of antiquity did their writing, say that the old king succeeded admirably in carrying out his plan. For many years it was supposed that he was all he claimed to be, and scholars continued guessing as to his ability, the extent of his civilization and various other interesting questions which arose. It might not be exactly as he said, but they believed that in the main he was telling the truth. He didn't intend that any investigation of his various acts during his battles and conquests should occur. And so well did he succeed that it was practically admitted that this conceited monarch was about all there was of the ancient world. This might have been the case till to-day, but there was another class of workers in Egypt beside stone cutters, though the latter must have formed a very considerable proportion of the population. It is on record, so the wise men who read carved bugs and snakes and animals tell us, that there was about the same feeling toward this other variety of labor then that there is now. That is to say, that the stoneworkers insisted that their work was more enduring and that they were building for posterity long continued. They would have been astonished if they could have looked ahead 4,000 years, but their vision was limited, and they wrought only for themselves and their own immediate descendants. They didn't expect that their work would be admired and studied by a race then unknown, and that the mixed up mass of pictures they cut in the solid granite would be deciphered centuries afterward and their master be proved a liar.

The entire ancient world had its brickmakers. As near as can be determined from the fragmentary records, the cuneform script, the Coptic writings, the Tel-el-Armana letters and sculptures on the monuments and in the temples, brickmakers were despised by stone workers. If one may believe all that is there written the brickmakers were slaves, and it is written that a certain memorable taskmaster, whose name was Pharaoh, ordered that certain Hebrew slaves should be compelled to make bricks without straw. That is, they should be compelled to find their own straw as best they could, but must still make as many bricks as they did before when the straw was supplied. Straw isn't a very important component of modern brick, but at that stage of the game it was considered necessary, because the bricks were only baked in the sun, and unless they were mixed with something that wouldn't dissolve there was grave danger of the brick melting and flowing away during the first rainstorm or the annual overflow of the Nile. Therefore, they were made with straw and dried as hard as possible in the sun.

History declares unmistakably that these same slave brickmakers were the agents which proved the Pharaohs liars. Not only that, but they were the ones who constructed the absolute proof of the statement. Perhaps it will be held by some that it is sufficient recompense that there is now indubitable evidence that Pharaoh was a deceiver; that he didn't win all the fights he claimed to have won, and that he didn't enslave all the people he says he did. The despised slave brickmakers were the mightiest agents of that long past time, in that they have preserved to modern days what may be termed practically complete pictures of the world at that age. It was their handiwork which has given scholars the authority for declaring that Rameses was not as great as he has said he was, and the stone workers, they who no doubt despised the brickmaking slaves, were the agents by which he has been declared a prevaricator for all succeeding generations.

For many years, possibly centuries, the sculptures and the inscriptions on the monuments and temples were considered authentic. But the desert in that land of wonderful surprises had claimed for its own, ages before, certain clay tablets made by the slaves of 1500 to 2000 B. C. Upon those clay tablets were written letters from kings and subordinate officials in conquered lands and adjacent territories, which proved that very many of the monuments and temples were built before that King was ever thought of who had such a propensity for claiming things. He virtually claimed the earth, and, as has been pointed out, for centuries he was credited with practically owning it.

The deserts of Egypt and adjacent territories are masses of shifting sands. As the centuries passed the sands gradually covered city after city, until there are few ruins left. The sculptured columns and broken monuments seemed to indicate that great cities had once existed there, but it was impossible to say when or how great they were. Some Yankee conceived the idea of digging, and straightaway a mass of information was unearthed which set back creation many thousand years and gave this old globe and its peoples an antiquity which had never previously been dreamed. It was not the great monuments with their zigzag traceries which did this. Not much. It was the little tablets of clay, the letters of those old times. Upon them were written, either when they were soft or in some manner afterward, communications of importance. Then messengers took as many as they could carry and carried them to the great King. After he read them he stored them away in vaults. They wouldn't stand the weather as the modern brick does, so they were carefully covered and in some cases sealed up with the royal signet. It was a bulky way of storing state documents, but it was long before the invention of the papyrus, and was the best they knew. It is well to look upon them with respect, because they not only represent very successful examples of brickmaking, but they are also the first examples of writing extant. It doesn't matter that the writing was in soft clay or engraved with some sharp instrument in hardened clay, it was writing just the same, and the entablatures are interesting reading because they give the only luminous picture of the contemporary life of that time. Tahutimes II, who lived 1497 B. C., received hosts of these tablets from all over what is now Palestine and Syria, and they give valuable testimony concerning the doings of the peoples of those days.

One king particularly, who was finally conquered and became only a satrap, occupied most of his tablets with boasting of his victories and telling of the numerous times when he was awarded the "gold of bravery," which was probably some form of medal. Possibly it was from this vainglorious old party's tablets that the autograph-writing Pharaoh took his hints, by means of telepathy.

After these tablets had been buried in the vaults and sealed up the winds gradually sifted the dry sand over them, and they were preserved from injury. The dynasties succeeded each other. City was built upon the buried ruins of city, and in the course of time came the egotistical gentleman who conceived the brilliant notion of claiming all the earth he could see. He didn't know about the brick tablets buried deep under the sand, which also contained the ruins of a series of cities. Perhaps if he had he would have been more careful in some of his statements, or, at least, would have destroyed the proof that these statements were untrue.

So he caused his stone cutters to carve the story of his prowess and scholars read it in later ages and believed that he was the real "it" of the ancient world. When the inquisitive Yankee began to dig, lo, there were found innumerable brick tablets bearing records of priceless value, and the sum of the statement of them all was that Pharaoh was not what he proclaimed himself.

Who, in the light of this revelation, will not accord to the humble brickmakers due meed of praise and who will longer question that brick is more valuable, even in a matter of historical accuracy, than stone? Surely no one will be so obtuse as to further doubt the antiquity of brick, nor should anyone say that the Hebrew slave brickmakers have not now been fully revenged for the indignities heaped upon them by cruel taskmasters, who compelled them to make bricks without straw, and thus become the forerunners of the unnumbered coterie of workers who do the same thing to-day, albeit under widely varying conditions. BURTON.

BUTTONHOLE TALKS.

—The Passing of a Good Man of Pleasant Memories.—

SO SOL SMITH RUSSEL is dead. I can't sense it. Why, night after night and year after year I have seen the curtain go down on his scenes, but by vigorous stamping, hand-clapping and yelling we could, and did, bring him out in front of the curtain, to convulse us again with his quaint remarks. But that is all ended. This curtain that has now gone down is black and fixed and final. No call can reach behind it, and no one can be called before it. The play is ended and player gone. Memories, however, live, and we can treasure them, and can recall the past reverently and thankfully, glad that we knew him when we did, and while we did, and as we did.

"Bringing to the stage a homely form, a homely face and homely plays, he yet showed honesty, clealiness, dignity and worth, and they won him honor and esteem, and he played his plays gloriously. His playing and his living were alike honest, loving and lovable.

"So living and so acting, he left the legacy to his family not only of goodly, tangible worldly wealth, but the better one of a clean life and a good life and a name universally beloved.

"All the good preaching doesn't come from the pulpit, and Sol Smith Russel preached appreciative and appreciated sermons from the stage on purity, integrity, honor and love, and he preached them well, and he reached thousands who never darken the church's doors, and he made them better and nobler. Nor is his work done. He may be dead, but the recollections will carry on the work, and men and women will still think of him and his plays, and thus grow better.

"It always impressed me well for the ultimate and innate good of mankind that his plays were crowded all the long months of the World's Fair in Chicago, and that the people never tired of the 'Poor Relation' and of 'Peaceful Valley.' In these homely plays worn and torn city men were recalled and turned back to boyhood incidents that did their bodies more good than doctor and their souls more good than preacher. We wept with him, and we laughed with him, and we lived with him, through the play, and then we went home better than we came, and we kept better, too, and where he came he brought healing.

"'Way back, when he was only an unknown sketch artist and monologist, with the old bell ringers, we liked him. Then when he got a sketch of a play, just enough of a play to string his specialty songs on, we liked him better. Then, in the later years, in 'Peaceful Valley' and 'Poor Relation,' we just loved him, and we loved him more and more as the years passed. Some way we never thought of his dying. We wanted him more and more, and we looked forward to his coming, and we shall hardly know how to do without him.

"People criticise the theater and they seem to have the right. There are pretty tough plays and tougher actors, but Sol Smith Russel carried his individuality to the stage with him. He was honest and clean, and he played that kind of plays, just as though he was living them, and we just laughed with him, and wept with him, and loved with him, and loved him, and longed to see him again more and more, as we shall continue to long for him in the future.

"Anyway, our memories are our own, and we shall hold them and be better for them as we live them over again. He lived right and he must have died right, and his welcome must have been ready on the other shore." GATES.

POTTERY LEADS.

For the Wage Earner It Is the Most Profitable Business of Them All.

It is generally believed that for the workmen the iron and steel working manufactories pay the best wages, but the United States census reports substantially contradict this.

If these reports are to be believed the pottery and sewer pipe business is far the most remunerative to the wage earners. This is basing the wages paid upon the amount of manufactured produce turned out.

The statement is most surprising, but if the showings of the several Ohio valley towns from East Liverpool to Bellaire are to be believed there is no doubt of its accuracy.

The following figures from the census report of 1900 show the manufactured product of Steubenville to have been $5,235,161, of Mingo Junction, $7,563,573, and of Toronto, $809,446, a total of $13,608,180 for three towns. The census does not give the separate product of Irondale.

The figures for East Liverpool are $5,459,043, and for Wellsville $1,548,190, a total of $7,007,233 for Columbiana's two river towns.

THE CORONATION CUP.

We give a photograph of the presentation cup which will be given to the King's guests at the coronation dinner in June. The cup was manufactured by Messrs. Doulton, at Burslem, and is of fine glazed earthenware—cream inside and out—and will half half a pint. The order is for 500,000.—*British Clay-Worker.*

Written for The Clay-Worker.

THE NEW YORK BRICK MARKET.

THE WEATHER HAS been as fine as could be so far, with but little rain. The first pits were not washed. The yards in this section have been molding about six weeks, making three pays—two or them have been ringers or full time, which is remarkable so early in the season.

The Hudson river yards which belong to the combination did not turn a wheel until May 5, so that they have been molding about a month, with but a few days' detention from rain. To judge from appearances at present date, so far as supply and demand are concerned, if a wheel had not been started until July 15 there would, from that time until the end of the season, enough brick be made to meet the demand. There is plenty of old stock still under the sheds, with nearly all the yards having burned their first and some their second kilns.

Last year, with a fair demand, there was an agreement to stop in September. Some of the members of the combination were not satisfied and made all manner of excuses to be allowed to mold later. One of tbe yards here was permitted to run a week later than the rest. To-day he has at least two, if not more, cargoes of last year's brick, and twelve arches burned of this season's output. It certainly would be an advantage to all to have a shortage instead of such a surplus each year, if for no other cause than to keep the brick off the market, as the temptation to ship, no matter what the conditions are in the spring, summer or fall, is so great that some brick manufacturers cannot resist that feeling to send to market.

—Old and New Methods of Brickmaking.—

The present way of carrying on the business of making brick is of such a character that one may well wish he was back to the good old way of the fathers of the present bosses. To go back is impossible, for the volume of trade is so much greater. The fraternal feeling that existed among the brickmakers of thirty or more years ago would be a decided improvement over the present. To-day the feeling dominates to care for no one but self. The result is, that no one seems to think that an agreement, if made for mutual interest, is binding on them as individuals, to the extent that one should consider it, but take the slightest excuse to make it a self-benefit, not a common. For what will help one will benefit all. Each day one can see that the brick industry is fast getting on a seashore where the breakers will soon be heard if there is not a change in the present way of dealing with each other.

Mutual confidence is needed among the tidewater brickmakers more than ever before. If they would pull together there would be some chance for the business, but as now conducted there does not seem to be anything but a struggle, and finally to drop by the way. Great expectations were looked for last year from the formation between the seller and manufacturer of brick, and it proved that it would be just what was required, even in the face of a hard struggle, between the dealers buying the brick which were on the market and letting the others lay. It sustained the price, and what brick were sold went at a profit. Though such a condition ruled those who had not signed, not one of them was man enough to join and help; instead, as the end of the season drew near there were several who left the combination, and this spring several more joined the ranks of those who are willing to profit by their friends' loss.

—A Lesson for Brickmakers.—

The present season has also proved that one must strive to make the best possible grade of brick. Poor stock has and will lay in the market day after day and week after week, to the manufacturer's loss. This has been one of the causes of discontent with the combination. The manufacturer thinks that every shipment should be sold promptly. He does not consider for a moment that the dealer is not going to buy a cargo of brick where the percentage of bats is large. It is a warning to those who lease yards or are about to so, that they should lease a yard where the clay is strong and the sand of the best.

The notion seems to exist in the minds of many who have heard of, but never seen, the clay in that place that nothing but the best of brick are made there. Good, poor and indifferent is to be seen under the sheds in that town. This spring one of the sail vessels from here was sent to Haverstraw for a cargo. The men being used to handling whole brick were surprised to find that there were hardly enough whole brick to pick up the handful of six brick off the barrow. When the captain reported at the agent's office he was told that they were not sold, and for two weeks the same answer was given. Then the owner of the vessel bought the cargo and sent it to Passaic, where he could dispose of it. When the parties who bought it saw them piled, they would not take them, so he had them on hand. The vessel was three weeks making the trip, with cost of wages about $106 and board for crew about $60, making a total of $166. Freight, $8, to say nothing of tow bills. Men who make such brick are the ones who make the agent's life miserable, for they seem to think that their brick are as good as Mr. So and So's, or of a far better class.

—Transportation of Brick.—

By water is the only way to reach the New York market. To dispose of the stock vessels must be the means to do it. Some years ago nothing but sailing vessels were used. At the present time barges predominate. As for sailing vessels, they are not in it. Anyone who owns a sailing vessel has a piece of very unproductive property.

A small yard cannot keep a barge going if the demand is fair, so that the barge could make two trips a month. There have been times when a barge carrying two hundred thousand has made four trips in thirty days, but I afraid those days have gone, never to return. A vessel which carries about sixty or seventy thousand would have a good run where the yard made about four million. If the demand is not such that at least six or seven trips a month can be made, there is no money in the investment, and but little at that number of trips. There is one yard here which has all its stock carried by the vessel owned by the boss.

The earning capacity, as before stated, is in the number of trips made. The first month that she run in 1901 ten trips were made, which was good work, but was not made in any month during the rest of the season. The first two months of this season seven trips was the best she could do. The captain sails on commission of 60 per cent. of the freight. The vessel carries 62,000, and the freight paid is 9 shillings per thousand, making each freight $69.75, or a total for the seven trips of $488.25, for which the captain gets $292.52, as his share. He employes three men at $35 each, and the board of each is $20 per month or a total cost to the captain for three men for wages and keep of $330. His share of the earnings, $292.95, leaving him in debt to the tune of $38.05. His own wages are worth as much as any one of the rest, so add $70, board for two months, $40, and he is behind for the two months $148.05. It makes a very hard question to solve for the owner of the boat. He wants his brick carried, but at the rate they sell, and the time it takes to dispose of them, he well knows the man who sails cannot make both ends meet. He also knows that if the captain does not pay the men's wages or the provision bill, the vessel is liable for it, but not for the captain's individual wages or provisions. If he says to the captain, "Take all she earns, but keep her in repair and furnish all that is needed on the vessel," he knows that the boat will not earn it.

The demand has all to do with what a boat will return to the owner, as well as handicapping the yard. With a small vessel you cannot load her and let her lay at the dock till the cargo is sold, and then go around and get a crew to man her, as it requires men who know more than how to handle brick, as there are ropes and sails to be attended to, and it takes men who know how to take hold of things.

—The Outlook at Present—

Is not very rosy, as there is no increase in the issue of building permits. From January 1 the present year up to May 22 there were granted to builders 727 permits. In the same length of time last year there were 1,725, a falling off of 998, nearly 1,000 behind last year.

The Paterson fire was some help to the brickmakers, and it might have been much better had the manufacturers acted rationally. There was a silent agreement, so to speak, the week of the fire, that the price was to be $6 delivered on the cars, but before the week was out there was a cut in price by one of the manufacturers, who foolishly thought he could supply all the brick that would be needed. The same parties have been the means of ruining the local trade just in that way. To-day the yards are putting brick on the cars for $5.55 per thousand. To do that they are going to kill their horses when hot weather gets around. The teams have to draw 1,500 brick at a load, and make five loads a day, or 7,500 for a day's work. For outside teams they pay $4.50 a day and 12 cents gateage, and put a man on with the driver to help load under the shed, and go to the cars and stowe the load. To pay for the team, hire of man and gateage, its costs nearly a dollar per thousand to get them to the cars.

—The Brick Market—

To quote the words of the brickmaker, is "rotten"—no call but plenty to choose from, and the best is not good enough to fill the want of the buyer. The prices are like some of the stars, fixed, and when a cargo is sold it gladdens the heart of the seller, as well as the manufacturer, to think they have been bale to dispose of one more shipment. The prices are from $5.50, $5.62½, $5.75, $5.82½, $6.00 and $6.25. "You pays your money and takes your choice." A. N. OLDTIMER.

Written for The Clay-Worker.

BRICK INDUSTRY IN BUENOS AYRES.

THE PRINCIPAL BUILDING material here is brick. There are no statistics to be found, but the quantities used are very large. The brick are burned, not sun-baked, and are of the same proportions and weight as the common building brick of the United States. Those manufactured by machinery weigh 2,800 kilos (about 6 pounds) a thousand. Those manufactured by hand are of red and yellowish white color and well burned. Those made by machinery are red. They are manufactured in the suburbs of this city. Those made by machinery are used in small quantities. It is hard to find out how many are made a day. Those made by hand are dried in the sun, those by machinery in sheds. They are burned in ovens containing from 60,000 to 80,000 bricks. They are piled edge up and down all around and lengthwise in the center. Every two or three layers of bricks has some coal, and as the earth employed is very porous, and the brick being mixed with horse manure, the fire blazes easily. Those made by hand are burned with wood. Those by machinery are burned in the Hoffmann oven and English coal is used. From eight to ten hours is needed to burn those made by hand, if made of the second layer of earth, in twenty-four hours. At present those made by hand sell at $6 U. S. gold per thousand. Those made by machinery, $12 U. S. gold per thousand. Accounts are settled every month. The bricks are laid in mortar. The mortar used in the suburbs of the city, as a general rule, is mud. Business houses and residences in the city, the mortar used is mixed with lime from Cordoba and Azul (the latter hydraulic), and the sand used is from Montevideo, Uruguay Republic. Pottery as a rule consists of pipes for drainage. There are two tile factories well constructed after the French style, but they had no success. As a rule slate and brick is used for roofing in the city and galvanized iron in the country, and the tiles are manufactured by machinery. There are fourteen tiles to the square metre (a metre is equal to 39.37 inches), like the French Sackmann type No. 1. The native term for brick and tile manufactories is "Fabrica de Ladrillos" and "Fabrica de Tejas." The expenses to obtain photographs, etc., are very high, else I would send some views with this. D. M.

Buenos Ayres, Argentine Republic, Feb. 6, 1902.

A NEW FORM OF BRICK.

THE ACCOMPANYING sketch will give the readers of The Clay-Worker an idea of the appearance of a new form of brick invented and patented by A. W. Hockman, of Salem, W. Va. The chief advantage claimed for the brick is the secret mortar joint. The brick can be laid in common mortar and have a clean surface. The mortar joints do not show, and there is no danger of discoloration or efflorescence, which so often results when brick are laid in the ordinary fashion. As the mortar joints are not exposed to the weather, there is no scaling or crumbling so common in ordinary brickwork, and the cracks resulting from settling of walls do not show in walls set of these brick. Walls or chimneys faced with these brick present a very attractive appearance, and are time and weather proof. The inventor will be pleased to give further particulars to interested parties.

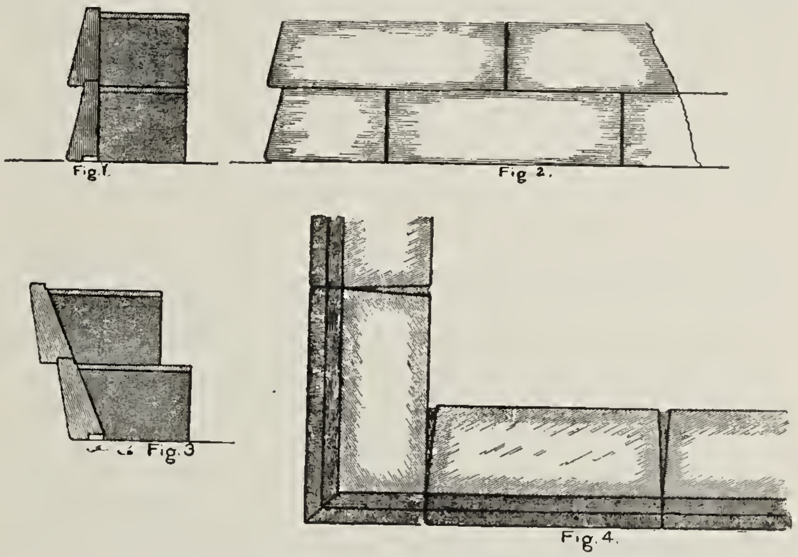


Fig. 1—Shows end view for straight plumb wall.
Fig. 2—Shows straight and plumb wall, when completed.
Fig. 3—Shows end view, projecting corners.
Fig. 4—Shows top of brick, as laid in wall.
The diagonal lines between blocks represent the mortar.

ONLY ONE CHANCE

—To Visit the Seashore on Cheap Tickets.—

Only one special excursion to the seashore will be run via Pennsylvania Lines this summer. The date fixed for it is Thursday, July 31. On that date special rate round trip tickets to ten of the most attractive seaside resorts along the Atlantic Coast will be sold and special through car service will be arranged for the convenience of persons wishing to visit Atlantic City, Cape May, Avalon, Anglesea, Holly Beach, Ocean City, Sea Isle City, Wildwood, New Jersey, Ocean City, Maryland, or Rehoboth, Delaware. The return limits on tickets to either resort will cover the customary ten days' vacation. For special information regarding fares, etc., consult local ticket agent or address W. W. Richardson, D. P. A., Indianapolis, Ind.

WRITTEN FOR THE CLAY-WORKER.

ANCIENT AND MODERN PERSIAN TILES.

THE PRODUCTION OF GLAZED and enameled tiles and bricks in Persia dates back to such remote antiquity that there is no record of its commencement. Many fine specimens have been found in excavations of Babylonian and Persian cities, and several museums possess valuable collections of these. Many of these ancient tiles have their decorations complete, each in itself, like our ordinary tiles of to-day, but others form parts of extended designs. A beautiful example of this is to be seen in the museum of the Louvre, at Paris. This is a complete panel from the ruins of the palace of Artaxerxes Mnemon, a Persian potentate who reigned about 400 B. C. The panel consists of about 190 tiles, bricks or blocks, whatever we may choose to call them, for each is 14 inches long, 8 inches wide and 7 inches thick. The panel was originally on the upper part of a wall of the palace, and the decorated wall was from a half to three-quarters of a mile in length. The panel at the museum shows two lions in low relief, beautifully executed. Forty-eight of the tiles or bricks go to form one of the lions. The colors, though fired 2,300 years ago, are still beautiful and bright.

Tiles of the older times are softer and smoother than those of later date. The work of the thirteenth and fourteenth centuries of our era is harder and it is more frequently in relief. The material of the body was excellent and was, evidently, most carefully prepared and selected. The delicacy of execution, the beauty of the coloring and the excellence of the enamel make these tiles, both the very ancient and those of later date, models worthy of our emulation to-day. The secrets alike of the body, the coloring and the glaze are lost, and though attempts have been made, both in Europe and in Persia, to reproduce the effects of ancient tiles, they have, so far, not met with success. The body of the tiles in the Louvre appear to be a white clay, but we could not learn that any attempt had been made to analyze it.

In early Persian days man's efforts at decoration had to be devoted, principally, to the palaces of the rulers. In later times, as in our own history, the clerical power became greater than the regal, and the Persian tiles of of the thirteenth and fifteenth centuries A. D. were principally used in mosques, tombs and other holy places. The designs, due to the influence of the Mohammedan faith, which now dominated, were mostly conventional floral and geometrical, but it must be remembered that the Persians, being of the Shiite sect of Mohamedans, were not so strict in regard to representing animal forms. In Persian arabesque decorations we may occasionally see animal figures, notwithstanding the injunction in the Koran never to make any representation of a human or animal figure.

In the old tiles the ground is, usually, of a golden color, sometimes shaded with blue, giving great delicacy to the designs. This is an effect which has been industriously sought after by modern ceramists, but without success. The art was lost in the constant wars of invasion and extermination, which left none of the original inhabitants. The ordinary domestic ware was of the same kind of material, and had the same fine glaze and color tones. Specimens of this ware are highly prized by collectors.

The manufacture of tiles is carried on in Persia at the present day. These are used chiefly as decorations of mosques and monuments, and are made both as wall and floor tiles. They are made in thicknesses varying from ¾ in. to 3 in. The arabesque designs are very good and thoroughly Oriental.

The material of the body of the modern ware is nine-tenths pulverized quartz and one-tenth of a very plastic clay. The glaze is made from sand and potash, both very plentiful materials in Persia.

The modern Persian tiles, though not equal to the ancient ones, are still very beautiful, and there is no doubt they would find a ready market, in Europe and this country, but for the difficulty and costliness of transportation in Persia. The freight alone, without commission or duties, from Teheran, the capital, to the nearest seaport, is $80 per ton. When we examine the methods of manufacture we find them astounding. For tools and machines there is nothing but a pestle and a mortar and a common knife, while the workshops are simple mud hovels. The firing is done in small square kilns, with wood fuel, and both up and down draft are used.

GEORGE J. M. ASHBY.

SYRACUSE BRICKMAKERS RUSHED WITH ORDERS.

Every Yard in the City Is Running Full Time—Big Demand Is Reported for Vitrified Brick.

Syracuse brick manufacturers say that there was never a bigger demand for brick than at the present time and most are behind on their orders. The New York Brick and Paving Company is turning out 60,000 a day and sells them as fast as they can be made. This company ships a large number to Eastern cities for paving purposes. It has the advantage of the canal low freight rates. There are sixteen kilns at the plant, the waste being used for macadamizing purposes. The company gets its clay from a point on the canal thirteen miles distant. The plant runs all winter.

The Onondaga Vitrified Brick Company, at Warners, is equally busy. This plant is located right near its clay supply, which is inexhaustible.

A new brickyard for the manufacture of common brick is being installed near Belle Isle, on the Erie canal, by Ballard & Son. The Kirkville Brick Company, which did not run its plant last year, is making repairs preparatory to starting up this year. C. & L. Merrick have several large contracts, which will keep them busy all the season. George W. Pack & Son have commenced to burn several large kilns of common brick. Agents for out-of-town concerns say that they cannot get brick enough to fill orders, and the delay is sometimes embarrassing.

BIG FOUR NEWS.

A NEW TRAIN to St. Louis, will be inaugurated by the Big Four on June 15th, 1902, which will be known as the Exposition Flyer. The schedule is as follows:

Lv.	Cleveland	5.00 P. M.
Lv.	Shelby	6.35 "
Lv.	Crestline	6.50 "
Lv.	Galion	7.00 "
Lv.	Marion	7.27 "
Lv.	Bellefontaine	8.25 "
Lv.	Sidney	8.54 "
Lv.	Union City	9.45 "
Lv.	Muncie	10.28 "
Lv.	Anderson	10.55 "
Ar.	Indianapolis	11.45 P. M.
Ar.	St. Louis	7.30 A. M.

Making all connections for the West and Southwest. For further information and particulars call on or address Agents "Big Four Route."

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TRANSPORT IN CLAYWORKING.—I.*

THE SUBJECT of transport in connection with clayworking is of great interest and importance, and has, perhaps, hardly received the detailed attention in printed records that it merits. We think, therefore, it will interest our readers to have information on this head in a short series of papers dealing with it systematically. For, in the strict sense of the word, all the operations of brickmaking from beginning to end involve transport, without cessation, and by an immense variety of means, which need study and experiment without stint in order to obtain the most efficient results.

So varied are the operations involving transport that, in order to treat the subject exhaustively, it is necessary to describe appliances which are of such well-known types that it would almost seem superfluous to speak of them.

It is, however, undoubted that by attention to the smallest detail only can perfection in manufacture be obtained, and the humblest instrument needs careful design as much as the most important.

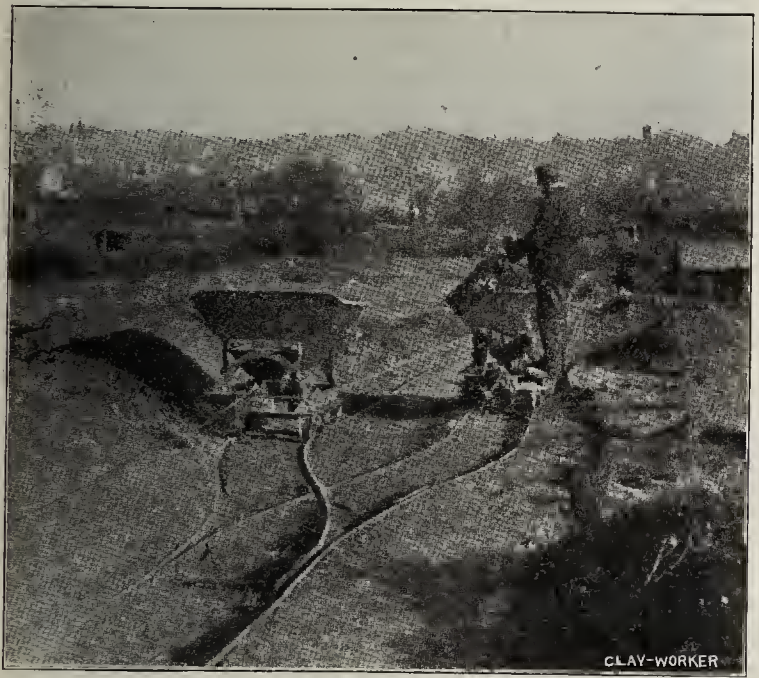

FIG. 1.

Transport essentially involves the application of force, and the classification of the subject may be conveniently made in reference to the methods by which force is applied to the material to be moved.

These are: (1) Gravitational. (2) Manual. (3) Animal. (4) Mechanical. (5) Natural.

The subdivisions of these methods may be conveniently given as each is dealt with.

—Gravitational Transport.—

This is the simplest method, and, except in its application to portions of operations involving other methods, of comparatively infrequent use. Strictly speaking, gravitation enters into every operation of transport, but not as an aid to it. It is rather in opposition to gravity that most operations for transport are performed. Thus in using a crane the aim is to overcome gravity by mechanical means, while, at the same time, gravity is used in the final operation of depositing the lifted material where it is required.

The subdivision of our subject, however, implies that the force is made use of as the means for obtaining the desired shifting of the material from one point to another. Gravity is employed simply in such operations as: Dropping clay from the top of the bank into wagons below; tipping clay into the hopper of a brick machine, or into a wash-mill; running washed clay in troughs or pipes to the wash backs. Such operations as these do not need description or illustration.

Gravity is frequently made use of to a greater or less extent in connection with light railway transport. A slight slope in the levels is sufficient, when the cars are provided with well designed bearings, to enable gravity to come into play as the motive force. Thus in clay-getting it is customary to set portable railway so that the loaded cars may run down a slight incline to a desired point, such as, for instance, the starting point of the hoist. The empty cars may be easily pushed up the incline by hand when returned to the bank.

In some cases, where clay lies some bit above the manufacturing plant, gravity may be employed still more effectively, the full clay wagons being made to pull up the empty ones. They are connected by a wire rope, perferably ¼-in. in diameter or little more, passing over a rope pulley at the top of the slope. The railway may be doubled all the way or may be provided with a passing place only, as shown in Fig. 1. Symmetrical switches are placed at each end of the passing place, acting automatically in use, and requiring no attention. Fig. 1 is a photograph of this arrangement in actual use.

An important and largely used application of gravity in connection with light railway is to be found in modern drying tunnels in England and America. On the continent a level track with mechanical means of movement is generally preferred, but here we give a slope of from 1 in 120 to 1 in 80 to the tunnel rails, and force is required only to start the movement each time a car is removed and a fresh one inserted in the tunnels. Gravity suffices to move the whole train of cars on the track when once they are started, and they are stopped at the exit end by a block when the car's length has been traversed.

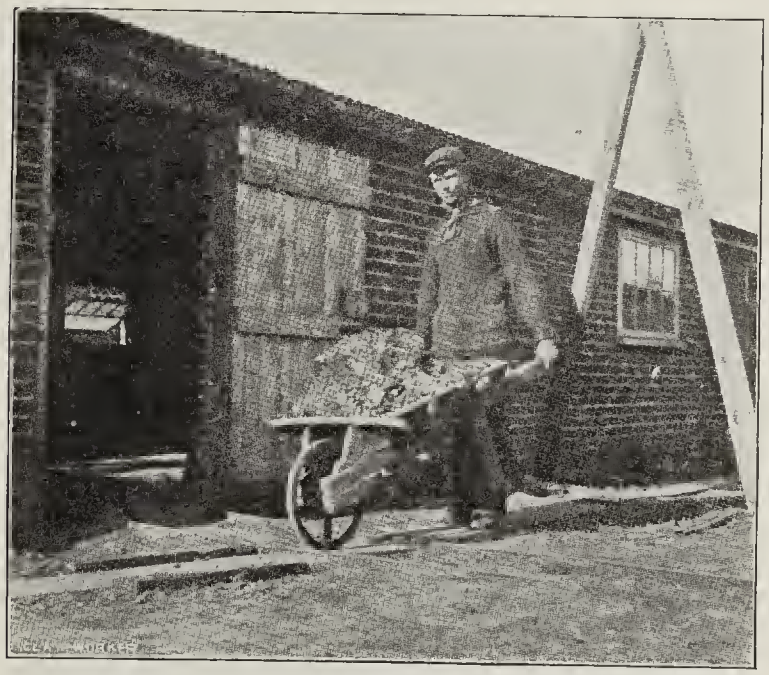

FIG. 2.

In this arrangement the slope should not be so great that the cars start without a slight push, or they are apt to acquire too much momentum to be stopped without shock. The means or appliances for use in transport of the above kind may be more conveniently described under the next head.

—Manual Transport.—

There is greater variety in the means of transport actuated by man power than by either of the other forms of power mentioned in the subdivisions of the subject. They may be classed as follows: The hand; the spade; the barrow; the hand-cart or truck; the winch; the railway car. To these might be added the rowed boat or barge, but that it is not used practically in the brick trade.

—Hand Transport.—

Hand transport is not much resorted to at the present time, except for minor portions of work, which can hardly be of significance to our subject. There are, however, works of high-class character in which a considerable amount of carrying of bricks by hand is resorted to. We have seen, for instance, pressed bricks, made by the semi-dry process for glazing, carried in small quantities from the machine to the biscuiting kiln, in order to avoid any possible damage that might arise from barrow transport.

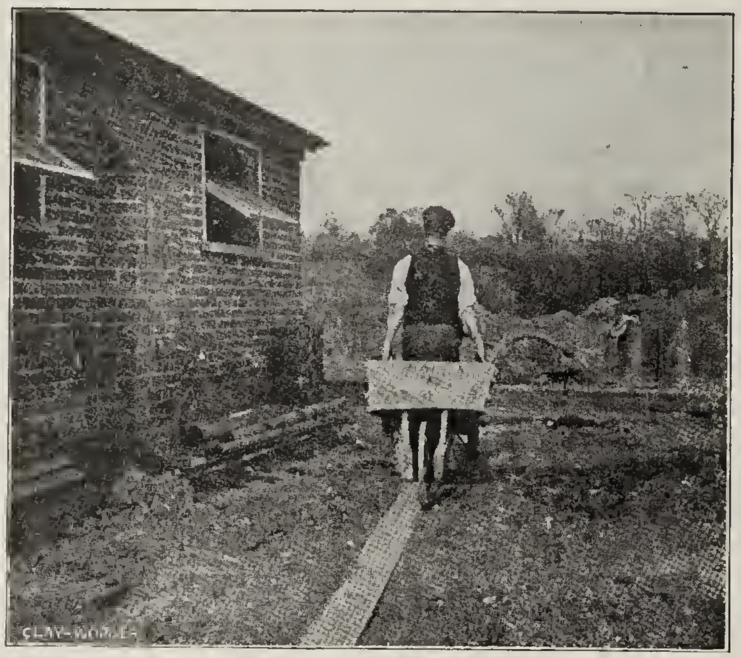

Fig. 3.

The method is, of course, very costly, and must be looked upon as entirely unwarrantable, in view of the improved means available in these days. A form of hand-transport of considerable importance is that known as "pugging up" in the hand brickmaking trade. In this process, boys carry lumps of pugged clay from the pug mill to the molder's tables. In most works this operation is not easily avoided, but, where it is possible, pug mills are arranged to deliver the clay on to the tables either direct or by means of an elevating pug mill, such as has been described in these columns on other occasions.

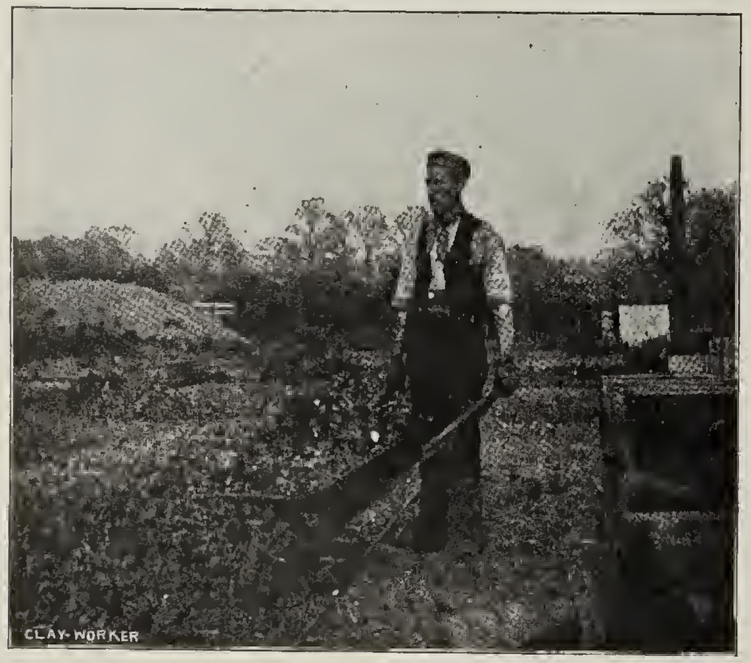

Fig. 4.

In old records we find such transport mentioned as having been performed by child labor to a cruel extent, but legislation has done away with the possibility of its continuance. In St. James' Magazine of 1871 we find it stated that a boy of eight in a Staffordshire brickyard used to walk fifteen miles daily, carrying a load of 43 pounds of clay on his head in each journey of forty yards, backwards and forwards. The boy weighed only 52 pounds.

Hand transport is of chief importance in these days in the loading of manufactured goods, but, though largely practiced, is a minor operation, because of the small distance over which it usually takes effect. Such transport takes place from cutting table to off-bearing barrow, from barrow to drying floor and back, from crowding barrow to kiln chamber or to brick stack, from brick stack to cart or truck, and so on.

Immense bulk of material is of necessity handled in this way, and but few attempts are made to modify the processes involved, by means of mechanical appliances.

—Spade Transport.—

This again is an operation of minor importance as regards distance traversed, though as regards weight dealt with it is second to none in magnitude. All the clay and all the fuel used on a brickyard is handled with spade or shovel at least once and transported by its means to a position of advantage for the next step in manufacture.

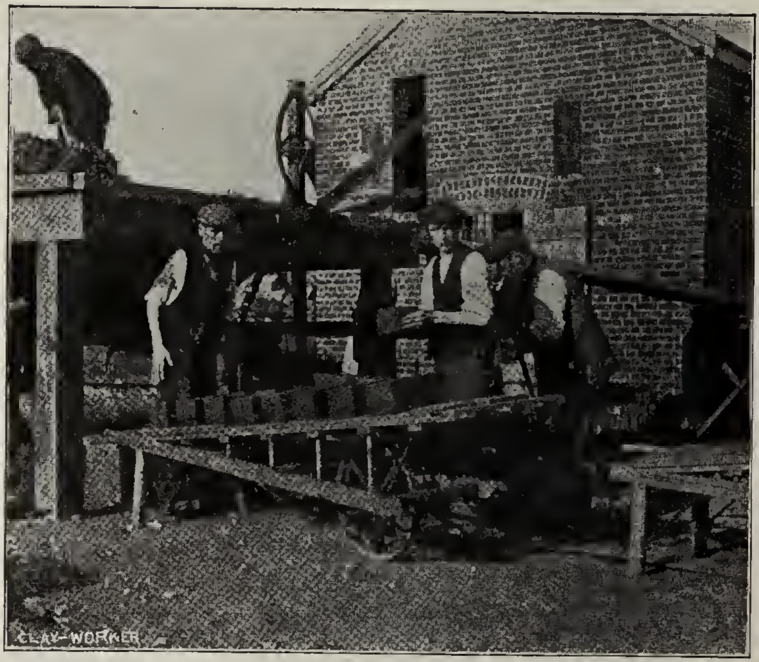

Fig. 5.

The tools used do not need illustration here, but may be mentioned before passing to the next subdivision. Under this head would come the crow-bar, the pick-axe, the grafting tool (or long-bladed spade), the earth shovel, the fork, the coal shovel, and coke fork.

The drill and blasting cartridge and the steam navvy are perhaps the only modern digging implements taking the place of any of these, and are of limited application; while the automatic crane skip and the bucket elevator may perform some of the operations of coal transport usually undertaken with the shovel.

—Barrow Transport.—

As the amount of material moved at one operation increases, so the means used becomes of more importance as labor-saving appliances, and the barrow is a step forward. The barrow in almost all its forms is essentially a conveyance with one wheel and a pair of handles. Two-wheeled barrows are not efficient and are seldom used, and the addition of a third wheel converts the appliance into a truck. The barrow without wheel, or stretcher, finds a limited application on some works, for such operations as the transport of heavy pieces of pottery.

The brickyard barrow is of three types—(1) The navvy barrow, (2) the off-bearing (or cradle) barrow, and (3) the crowding (or kiln) barrow. With these all the operations of transport by barrow are performed.

—The Navvy Barrow.—

This is of one form only, made of wood or steel. Wood is the more usual material, the frame being of oak and the body of elm. The wheel is cast in one piece with the axle and has a narrow tread. A "road" is usually laid to wheel it on, formed either of wheeling plank or iron wheeling plate, the former 9-in. by 3-in. in section and the latter 6-in. by 1¼-in. The barrow holds from two to three bushels of clay (2½ to 3½ cubic feet), and eight to eleven loads go to the cubic yard. Figs. 2 and 3 are photographs of the wooden barrow going and returning with clay on iron wheeling plates. Fig. 4 shows a steel barrow loaded with coke. The wooden barrow can be made or bought for 10s. 6d. to 12s. 6d. ($2.50 to $3.00), and the steel barrow costs about 35s. ($8.40).

—The Off-bearing Barrow.—

The newly made brick is transported to the dryer on the off-bearing barrow, which takes various forms, according to the kind of brick to be carried and the form of dryer. The oldest form is that known as the cradle barrow, designed for use in carrying hand-made bricks from the molder to the drying hacks. The body or platform on which the brick-bearing pallets are laid is about 7 ft. long and 1 ft. 10 in. wide, and is designed to take thirty bricks flat on pallets, 12-in. by 5½-in. in two parallel rows.

The wheel is usually 20 in. in diameter, and has a tread preferably not more than 1½ in. wide. All off-bearing barrows are provided with springs. When brought to rest in position in the hack path the length of the barrow corresponds with the length of the hack blade which the contents will occupy, so that the minimum of hand carrying is required in hacking.

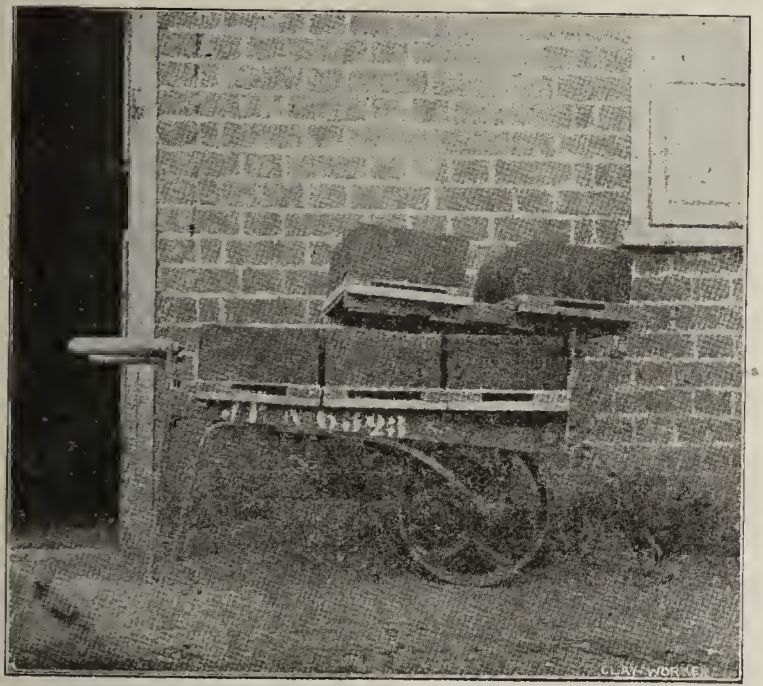

FIG. 6.

Fig. 5 is a photograph of one of these barrows in process of loading at a wire-cut machine. The body is carried on springs, and the balancing of the barrow requires some skill on the part of the off-bearer. It is, however, the most convenient form for use in hacks. It costs usually about 27s. 6d. For wire-cuts, cut off by a side delivery table, the body is shortened, so as to take three boards transversely, carrying 30 to 36 bricks. It is then of convenient dimensions for use in inclosed shells with drying floors.

A double decked steel barrow for off-bearing is shown in Fig 6. This is designed to take 24 bricks on pallets or up to 50 bricks on boards placed transversely. The shorter upper deck is pivoted, and is raised out of the way when the pallets have been removed from it, so that the lower deck is left clear.

This barrow is designed for use in sheds with racks, being short and easily turned into the gangways. In steel it costs about 75s. ($18.00).

One foreign type of off-bearing barrow is worthy of mention.

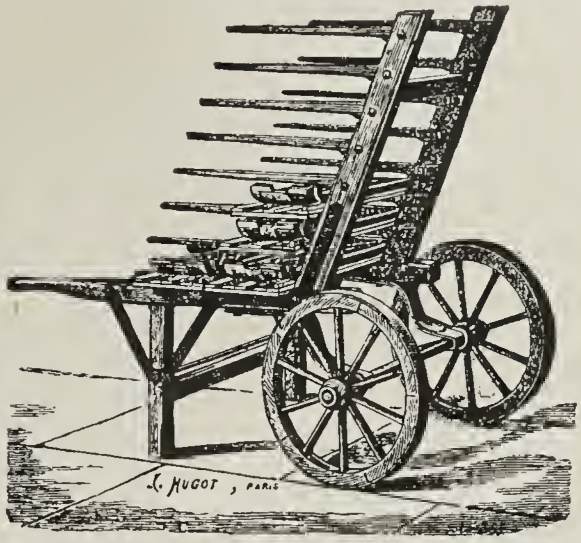

FIG. 7.

It is shown in Fig. 7, and is used for carrying the large French type of tile from the press to the dryer. The illustration sufficiently explains the design of this barrow. Other off-bearers on two wheels are so much in the nature of hand trucks that they will be described under that head.

—The Crowding Barrow.—

For the conveyance of dry bricks to the kiln for burning and from the kiln to the stack or cart the crowding barrow is used. It is practically of one type only, and variation in slight details of size and shape do not alter its general construction.

It holds 50 bricks, and is designed to carry the load principally on the wheel, which is about 20 in. in diameter with a tread 1½ in. wide. Fig. 8 is a photograph showing one fully loaded crowding barrow and one being discharged on to a small railway wagon alongside the kiln. This barrow costs usually about 22s. 6d. when constructed of wood. In steel it costs 47s. 6d. ($11.40).

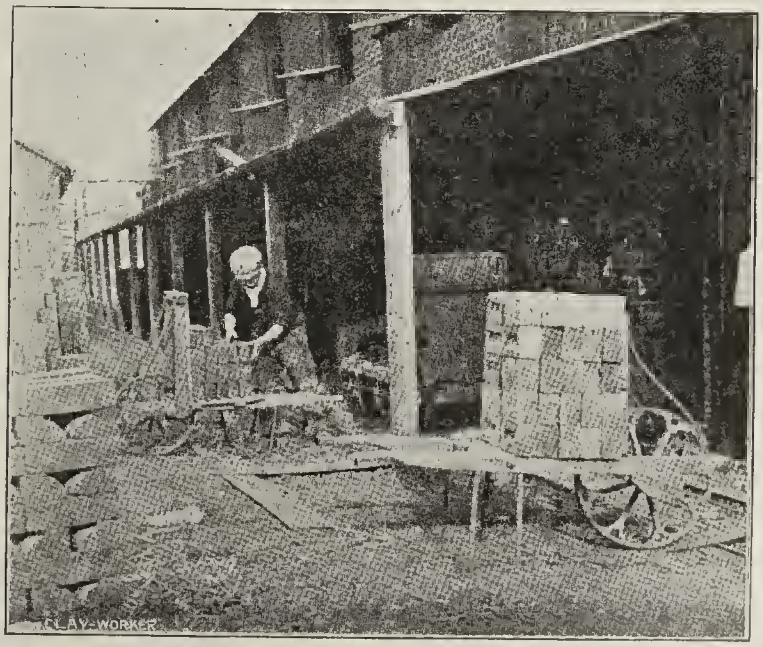

FIG. 8.

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*We are indebted to the *British Clay-Worker* for this article and the illustrations.

BY THE LIGHT OF THE KILN FIRE

A BRICKMAKER'S SERMON.

WE HAD a new parson up at our church last Sunday. That is to say, he was new to us. But he didn't appear as though he was any way new to himself. He rather looked like a man who had, a long while ago, got acquainted with himself, and, incidentally, with humanity in general, and that he had improved the acquaintance by rooting out of his makeup all the weeds of folly and selfishness and forgetfulness. But he was new to us, and his sermon sounded new to us, although he told us at the outset that it would be simply an old story, the oldest, perhaps, that had ever been told. It was a soul-stirring sermon, so full of earnest, forceful, yet homely, phrases, that even the sleepers' benches remained wide-awake till the close, and one and all prounounced it the finest exhortation to Christian action that ever was heard in our city. And many of us waited to express to the good old priest our appreciation of his uplifting and purifying efforts.

"Yes, it is a marvelous sermon," said he. "I never made a better, and I doubt if any man ever will, for the words did not originate with me, but came from one whose spirit held communion with God. The author of that sermon was a simple man who knew nothing of the law or the custom of copyright, and who had no use for such. He first preached the sermon to a roll of manuscript and sent it with the manuscript to his congregation in a distant city. The sermon is new to you, and I seem new to you. But neither of us are new. I am in my fortieth year as a preacher, and that sermon was written by St. Paul." And then he told us where we could find the sermon to read at any time we longed to again experience that awakening of the best within us, and he cited I Paul to the Corinthians, chapter xiii:

"Charity suffereth long and is kind; charity envieth not; charity vaunteth not itself; is not puffed up; doth not behave itself unseemly; seeketh not her own, is not easily provoked, thinketh no evil; rejoiceth not in iniquity, but rejoiceth in the truth; beareth all things, believeth all things; hopeth all things, endureth all things. Charity never faileth."

And I said to myself, when I had heard: "Here is a sermon for clayworkers to ponder upon, after the good time at the convention and the many and varied thoughts and emotions that each man brought with him away from that great event."

If everything came your way, and you were very, very happy, have charity for the man who was less favored by circumstances. If you felt some disappointments, exercise charity, and see how lightly the burden of your discontent is cast away. There is nothing like charity. When the earth has fulfilled the mission that the great Creator set before it, and all that is material shall have vanished into nothingness, when even the most indestructible fragment of brick shall, by vanishing, mark the last adieu of this great globe, charity will still exist as the perpetual reminder of what had been done well.

We don't give much time to these thoughts in our business. It is not compatible with the rules of business that have been formed for us by centuries of custom, but we should make a valiant effort to bring in charity as the principal rule of our lives, in business as well as socially.

Something of the import of this sermon must have penetrated the consciousness of the young brickmaker who, in his time of misfortune and suffering, fell to the care of the handmaidens of charity at Carney Hospital, in Boston. His may not be poetry, but there is certainly a hint of the inspiration that moved St. Paul when he wrote that thrilling "new sermon" that our "new preacher" preached.

Listen to the young brickmaker's description of his vision of Charity. Though written some seventeen years ago, it has never been published:

A SUNDAY AT CARNEY HOSPITAL, BOSTON, MASS.

Sunday at Carney! How solemn and still
The world seems to be from this perch on the hill!
The numberless roofs lying under our view,
The trees intermingled and sun shining thro',
With a glimpse of the bay, winding 'round to the south,
Reminds me of scenes of my innocent youth.
When a boy, down in Maine, I have stood many times
In a warm, pleasant spot, where the sun often shines,
And looked down a valley, so calm and serene,
With silence unbroken and life seldom seen;
Where the axe of the woodsman, some winter before,
Had cleared the dark forest and left nothing more
Than the stumps, huge and bare, and the masses of brush
By the shores of a lake fringed with straggling bush,
And the sun, shining o'er it so mellow and sweet,
Turned each stump to a house, and each vale to a street,
And each mound to a block, and the small placid lake
To a wonderful sea, bearing commerce and freight,
Where the world brought its trade and the world took its goods
To this thriving metropolis, down in the woods.
And my fancy took wings, and I pictured each plan
By which this great town should grow even more grand,
Until turning to prospect another new street
That would rival Fifth avenue revised and complete;
I noticed a change, for the sun having sunk,
Each house had reformed to the same blackened stump,
And the wide-spreading harbor, with freight and with goods,
Disappeared with the city way down in the woods,
And I thought of you, Boston, as on you I gazed,
How, alike to that city so suddenly razed,
Some day in the Heavens your sun will sink low
And the tide of forgetfulness over you flow;
And over your grave in the long-coming years
New scenes will go on, but for you there's no tears,
For your pride and your grandeur, your bad and your good,
Will be lost like my city way down in the wood.

* * *

I was drowsy and slept when I'd writ the last line,
And I dreamed I went walking with old Father Time;
And we stood on the height and gazed down on the scene
Where the mansions and cities of men once had been;
And I wept, 'twas so sad—all was left of this world
Was the ocean, as restless and shifting it swirled;
So lonely, its restlessness seemed to be born
In a longing to flee from itself, so forlorn.
And I said to myself, "What I thought came to pass;
"All cities are dead, like the flower and the grass;
"And the bud and the blossom, the fruit and the tree
"Are buried and lost in this merciless sea."
It had come, it was true, and in sorrow I stood,
For it seemed like my city way down in the wood.

Then we rose, and behold! Like a bright shining star—
Like a light on the height rose a city afar.
And we went and looked on it, and (like the lost chord)
Was my city laid out as a hospital ward.
But its streets were of silver, its houses of gold,
And its occupants countless, in millions untold—
And so bright and so happy, so calm and serene,
One glance was worth all that my eye had e'er seen.
And the voice of my pilot these words to me said,
"Life's good shall live always; its evil is dead."
And I woke with a start as I said "This is good;
"It is not like my city way down in the wood."

* * *

Though I give my body to be burned and have not charity, it profiteth me nothing. Better burn brick unto charity than your body without it.

THE DREAMER.

CLAY FOR DOOR KNOBS.

Clay found on a farm a short distance back of Chester, W. Va., is extensively used in the making of knobs. A company has been purchasing the clay found in this section for some time, and the claim is made that it is the best for the purpose found in this section in recent years. The clay is brought to the factory by the owners of the farm upon which it is found.

WRITTEN FOR THE CLAY-WORKER.

LIGHT AND HEAT—FIFTH PAPER.

By Master Mechanic.

HAVING GIVEN in our foregoing papers the fundamental theories in regard to how combustion takes place and produces heat, our next consideration will be different fuels and their values.

What we understand under the name of fuels are the substances that by means of the air can be burned, and of which the principal constituent is carbon, generally associated with hydrogen. The hydrogen generally helps to produce flame. There are two classes, natural and artificial. Under natural fuels we have:

Wood.
Peat.
Lignite.
Bituminous coal.
Anthracite coal.
Natural gas.
Natural oil.

These occur as forms of carbon mixed with hydrogen, widely distributed upon the earth, as products of vegetable growths, or in a fossilized form from a former existence as such.

—Artificial Fuels.—

These are products brought forth by man in changing various forms of carbon and hydrogen into other forms, fitted for special purposes. Under this class comes the combustible matter of both vegetable and fossilized, which are not compact enough to be burnt readily, and are, therefore, molded into blocks and briquets for fuel.

The other products are:

Charcoal from wood.
Charcoal from lignite.
Coke from coal.

The volatile matter evolved by this process are:

Carbonic oxide.
Hydrogen.
Hydro carbons.

Carbonization also produces other substances which are now being utilized and have commercial value. These are not to be classified with fuels, however, but are only mentioned as former waste material going off as smoke.

—Wood.—

Under this name can be classified all forms of vegetable growth, but we usually mean the split-up tree trunks, and limbs of such, which have not been subjected to fossilification. Hard and soft is the general term for wood in commerce.

When first cut wood contains a large amount of moisture, some as high as 50 per cent., so-called air-dried wood, yet contains from 20 to 25 per cent. of water. When kiln dried it may be made to have only about 10 per cent. of moisture, but when exposed to the atmosphere it soon takes up double that amount again. Thus in air-dried wood we always have nearly one-fourth (if not altogether) of water.

The subjoined list of the most common woods, with their relative value with average soft coal, is taken from one of the latest works on the subject, and we find it varies greatly with latest data of former experiments.

	Weight Per Cord.	Weight on Value in Coal.
Hickory and hard maple......	4,500 pounds	1,800 pounds
White oak	3,800 pounds	1,540 pounds
Red oak, black oak, beech.....	3,250 pounds	1,300 pounds
Chestnut, elm, poplar..........	2,350 pounds	940 pounds
Pine	2,000 pounds	800 pounds

The last item of pine in this list leaves a wide margin between hard Southern and light white pine.

From the foregoing we can assume that two and one-half pounds of wood is equal to one pound of soft coal as fuel. Chemically wood has about the following proportions:

Carbon	50 per cent.
Hydrogen	6 per cent.
Nitrogen	1 per cent.
Oxygen	41 per cent.
Ash	2 per cent.

This refers to wood perfectly dry, otherwise the percentage of hydrogen and oxygen would show up very much larger. As in practice only air dried wood is used; we can take, that one pound, with the inherent amount of water, would be equal to do the work of 5,879 B. T. U.

Wood when corded up has 14 parts of solid wood to 11 parts of spaces between the sticks. Some woodmen, however, often increase the spaces very materially above our estimate, which is a well-known fact. As the water in the wood requires a proportionate amount of the fuel to evaporate it before it can act as fuel, it can be easily seen what a great detraction moisture causes from its efficiency. It behooves every user of wood for fuel to keep it as near dry as possible. Yet in many of the brick factories it is placed in the open without any protection from the rain, which often causes a great hindrance to the burning, besides the loss in the additional quantity when the weather is moist.

From wood charcoal is produced. This is the result of slow carbonization, when the wood is confined and air is admitted only in quantities enough to keep up a low heat, at a temperature of about 536 degrees F. Wood furnishes in weight about 23 per cent. of coal This, however, can be increased by a very slow process.

WELL PLEASED WITH THE INVESTMENT.

About three years ago the Bellevue Porcelain Works, Schenectady, N. Y., installed a dryer designed by the American Blower Company, of Detroit, Mich. In regard to the results secured they recently advised the manufacturers as follows: "In reply to yours of March 10, asking about the apparatus you installed for us a few years ago, would say that we consider it one of the best investments we have ever made. From the very start it has given us excellent satisfaction, and has cost us practically nothing for repairs up to date. We have worked the apparatus very hard and must say the engine has stood the wear and tear remarkably well, and is in splendid condition to-day. We can strongly recommend the outfit to any one desiring a blower for similar service.".

GOING TO YELLOWSTONE PARK.

Pennsylvania Lines Will Run a Special Train in August.

The Pennsylvania lines announce a personally conducted tour to the Yellowstone National Park, leaving Indianapolis at 11:35 a. m., August 14. The party will make the journey to the park on a special vestibuled train, consisting of Pullman sleeping, dining and baggage cars, and will be gone about twelve days, half of this time being spent in a coaching tour of the Park.

The distance traveled will be 4,000 miles, through what is conceded to be the most interesting part of the North American continent. Arriving at Cinnabar, Montana, arrangements have been completed for either hotel or camping tours, as each may be inclined. The cost of the hotel tour will be $130; of the tenting tour $115. This includes all necessary expenses, such as railroad and sleeping car fare both going and returning, with all meals en route, and board, lodging and transportation while in the park.

A handsome itinerary of the tour has been prepared, which will be mailed free upon application to W. W. Richardson, district passenger agent of the Pennsylvania lines, Indianapolis, Ind.

Written for The Clay-Worker.

THE POTTERIES OF ZANESVILLE, OHIO.

In AND AROUND Zanesville the potteries are so numerous that to visit or describe each one of them would be almost out of the question, but it is safe to say that those talked of in these pages are at least the representative, if not the ideal, plants.

Following the directions furnished by another clayworker, I boarded a Brighton car, and was soon crossing the Muskingum river, and being carried through some very picturesque scenery along that stream, after which the car took us through the town of Brighton, one of Zaneville's prettiest suburbs, stopping at last within a few hundred feet of both the J. B. Owens Pottery and the

—Mosaic Tile Co.—

On entering the office of this concern I was turned over to one of its superintendents, Mr. H. C. Mueller, who is probably better known to most of the readers of this magazine than any other remarks here can make him. Associated with Mr. Mueller was Mr. E. J. Jones, whose father, A. O. Jones, will be remembered as a former paving brick manufacturer of Zanesville. Mr. Jones is a graduate of Prof. Orton's school, and is now in charge of the burning and experiments at the Mosaic plant, and it is to him that the writer is indebted for his visit there. Mr. Jones, in starting through the factory, showed a number of clays in their crude form, and when asked from whence they came, designated one from Pennsylvania, another from New Jersey, and added that they were gathered from many distant parts of America, though all the common clays are found near Zanesville. The white clay, and, in fact, all the fine clays, are washed before grinding, while the common clays are weathered. Mr. Jones thinks that all clays should lay in store at least two weeks before being worked up. All the clays are dried on a metal floor before grinding, the heat being supplied by gas burners. The grinding is accomplished by the use of ball mills, of which there are five at the Mosaic plant, each 36x48 in., and the product of the Blandy Machine Co., of Zanesville. After grinding the clay is run through a slanting screen having 1-16-in. perforations. The clays are then weighed, and, in order to get the exact amount of water needed for sprinkling, the water is also weighed. Then the clay is put into a large bin, commonly known as a dampening bin, where the water is added, the clay being stirred all the time to insure equal distribution of the water. The elevators here come in play, and the ground material is sent up to the second story, where it is again screened before going to the presses. In one instance, though, instead of an elevator and screen, a fan mill is used. The fan runs at a speed of 1,200 revolutions per minute, and by this means the material fine enough for use is fanned up stairs, the coarser material falling back to be run through the ball mill again. Many of the things in this department are particularly noticeable, especially to the outsider, for instance, the degree of fineness to which the clay is ground. Not only must it be sprinkled to prevent its blowing away, but the fact that with every change of clay all the corners and crevices of the room must be dusted and the dust taken away to prevent its mixing with clay of different composition.

In the press room there are nine presses of various kinds, two hydraulic and three steam presses of Mr. Miller's design, and three small hand presses and one large hand press for making caps for wainscoting, and various special designs. These presses have capacities ranging from one large tile to 100 of three-quarter tile, at one pressure. On coming from the presses the tile are brushed and fettled and set on edge in the seggars in which they are burned. In addition to this machinery for making tile, there is also a Blandy dry pan for grinding the broken seggars to be worked over. There is also a molding room where the seggars are made.

After the tile are set in the seggars they are carried to the drying racks—on the heads of employes—where they are left for from two to five days. The dryers are heated by steam pipes. From here they are carried to the kilns, of which there are four, three of them being 20 feet in diameter, the other one 16 feet. They are built on the center stack plan, and have doors large enough to admit one man. The flues extend from the sides of the kiln to the stack and admit the heat from openings about 6 inches square. The kilns were designed by Mr. Langenbeck, one of the superintendents. Gas is used for fuel, and both seger cones and a LaChatelle pyrometer are used in noting the progress of the burning ware. Mr. Jones has also a little contrivance which enables him to gauge the heat at the various parts of the kiln, which he says is a difficult matter in using gas. By means of a rubber tube he has a water glass connected with the feed pipe, and by frequently noting the height of the water in this glass, is enabled to distribute the heat more evenly throughout the kiln. About four days is the time ordinarily required in burning. The three large kilns have capacities of about 3,200 seggars each. The 16-foot kiln is used only for burning glazed ware, while a still smaller kiln is used for experiments.

After burning, the seggars are carried into a sorting or shading room, where the girls sort the tile according to their various shades. In shipping the small tile, they are usually worked up in metal forms according to the design furnished by the buyer, and sheets of paper pasted over them before packing, the glazed tile being pasted on fine tissue paper. Ordinarily the tile are shipped in boxes or barrels, and there are extensive packing rooms, as well as large warerooms for storage.

The Mosaic Tile Co. is in charge of Mr. H. C. Mueller and Mr. Karl Langenbeck, superintendents, and these two men have a patent composition known as Plicaro cement, which may be laid on an old floor and on which the tile may be laid. The cement has the double characteristic of both firmness and light weight. One of the important features of the plant not yet mentioned is their machine shop, in which all the dies, etc., are made. It is well-equipped with numerous tools and machines, and means much to the repair account, since the dies for this work must be kept in excellent condition.

—American Encaustic Tile Co.—

This is not only the largest of the clayworking industries of Zanesville, but bears the distinction of being the largest encaustic tile works in the world. The enormity of the concern is perhaps most noticeable in the size of the buildings, which, I have been informed, cover about seven acres of ground. At any rate, I found it no easy matter for one unacquainted with the place to locate himself.

On arriving at the office of this monster concern, my first talk was with the manager, Mr. James Wheeler, who in turn gave my card to the assistant superintendent, John Roe, through whose kindness I was enabled to watch the workings of the world's greatest concern of this kind. In taking me to the bins where the raw material is stored, Mr. Roe called my attention to their postoffice, with its money order department, and complete in every respect. Besides this, they have also their own telephone exchange connecting all parts of the works.

The clays are stored in extensive bins, arranged in two parallel rows in the clay house. On the outside of each of these rows is a switch, on which the cars of clay are set when shipped in, while between the rows of bins is a single track, accommodating cars in which the clay is carried to the grinding machinery. There are sixteen different kinds of clay, and as almost all the tile are made from a mixture of two or more of these, the mixing is of much importance. Instead of mixing after grinding, a small car is pushed up in front of the bin in which the desired material is stored and the required amount of clay, according to the track scales, loaded in. The car is then pushed to the next bin, the required number of pounds of this clay put in, and so on. After this the car is run on to an elevator, on which it is carried to the floor on which are the ball mills. After having been ground in the ball mill, the material is run through a revolving screen and into another bin, from which it goes to the plungers, where it is washed. On leaving the plungers the ground clay is forced into canvas bags, which, in turn, are put into the filter presses. These machines are operated by compressed air, and here the water is pressed out of the clay, the bags taken out of the presses and removed from the clay when the clay is loaded on dryer cars and pushed into a tunnel dryer of the direct heat type. The bags are sent to a washing machine similar to those used in laundries. and are made ready for use at another time.

On leaving the dryer, the blocks of clay, after the severe pressure of the filter press and the heat of the dryer, are equally as hard as pressed brick at the same stage of their manufacture. They are then put into the disintegrators, of which there are nine, the clay is ground again, and this time, instead of being screened, is run through a fan mill, up to the next floor, and there into another bin, from which it is fed into the presses. Here there are about thirty presses of various kinds, those for the small tile, where 100 tile are pressed at one time, being so complete that when the form is set in the clay is automatically sifted into the dies, pressed, the carriage thrown back and the tile pushed out on an off-bearing belt. The large tile, though, have to be fed by hand and taken away from the presses in the same manner. All the tile are brushed and trimmed before they are set in the seggars.

After the seggars are filled they are carried to another dryer, consisting of racks or shelves over steam pipes, where the ware is given its last treatment before going to the kilns.

There are twenty-nine round, center stack kilns, each 16½ feet in diameter and all burning gas. The time of burning the biscuit (unglazed) ware is about four days, during which time the burning is regulated by a pyrometer of their own design, as well as shrinkage and trial pieces. After this burn the seggars are carried to the sorting room, where the tile are sorted as to shade, size and shape. Those tile which are to be glazed for use in wainscoting, etc., are then sent to the glazing room, where they are dipped in the glaze and again brushed or fettled. When again set in the seggars they are not allowed to touch each other, but are set on end with the back or bottom of each tile resting against a pin, thus burning with the glazed surface unmarked. Mr. Roe called attention to a kiln of glazed ware which was just being opened, the tile in which were given a dull finish, known to the trade as mat finish. This is quite new and a very popular tile. The glazing burn occupies from forty-four to forty-eight hours. There are about one hundred distinct glazes, and in the glaze room these are stocked by number. While practically all the glazing is done by hand, some very simple ways have been devised, as, for instance, in the glazing of onyx ware, where a sponge is simply dipped in the glaze and then "dobbed" on the tile.

Mr. Roe's laboratory for experimenting contains a number of beautiful bits of pottery of many kinds, among which was a ware to all appearances the same as the genuine Greuby ware, and which Mr. Roe worked out alone. He does not burn his experiments in small kilns as is the rule with most men of his class, but burns the experiments just as the other ware and in the same kilns with it. They have, though, two or three small kilns in which to burn special orders. After the glazing burn the tile are again sorted, and instead of being jammed into barrels or boxes, are laid carefully on shelves and are so packed for shipping that one layer does not touch the one next above it. Some of the glazed tile are of very artistic designs, and in these cases the decorating is all done by hand with as much care as is used in the decoration of art ware.

The power plant of this concern is one of its most interesting features, since all the machinery is propelled by other power than steam. There are two large engines, which are used to run the dynamos, as electricity is principally used. Each room or department has its own motor,is dependent on no other and has no other dependent on it, besides the long established claim that electricity is a much more regular power than steam. Besides those machines dependent on electricity, however, there are some, the filter presses and some of the tile presses, which depend on hydraulic or compressed air for their power. At this plant, too, is quite an extensive machine shop where all their own dies are made and practically all of their machinery repaired. In this shop alone are some ten or twelve men. Besides the machine shop they have also a cooper shop where all the barrels in which the tile are shipped, are made.

There are a number of switches in and around the works, two to the clay bins, and others to the power house, stock rooms, etc. At the office I was informed that about 650 people are on the pay roll, and noted that perhaps thirty of them were engaged in the office, which in itself is quite an interesting feature of the big works.

—S. A. Weller Pottery Company.—

Though not the largest in Zanesville, the Putnam Avenue Pottery of this concern is one of the most complete, and it was indeed quite interesting to The Clay-Worker scribe, not only to follow the preparation of the clay but to look over the stock of finished ware, a few pieces of which represent in money as much as an entire kiln of brick or sewer pipe.

The clays used are of various kinds and come from many parts of the continent, though their methods of preparation are much the same as those used at the encaustic tile works, but being handled, if possible, more carefully. The grinding is done in ball mills, but the wares, instead of being turned out of presses or machines, are practically all molded by hand, and even the molds are made in the pottery. For making their seggars, though, they use both dry and wet pans. In the drying perhaps more care is taken than at any other kind of pottery, since this extends through three stages, the first in racks over steam pipes, the second in open air, after which all the wares are washed and retouched, and the third in the kiln.

There are fifteen kilns, each 16½ feet in diameter, in three of which coal is used for fuel and in the other twelve, gas. All the wares are burned in seggars, the time of burning varying greatly according to the class of ware, though much time and care must be exercised in all the burning.

The wares turned out are of a most expensive class, including vases of all kinds, jardinieres, pedestals, umbrella stands, and utility ware of all kinds Their leading wares are known as Dickens, the underglazed ware, and Luelsa, the full glazed ware. The enameling departments and much of the room given to designing were safely walled against intruders such as those in the interest of The Clay-Worker, though he is deeply indebted to Mr. E. C. Appelgate, its superintendent, for the many things which were shown him. The stock rooms alone are of enough interest to warrant one's making a visit, and, though Mr. Appelgate was probably much confused by the questions of a worker of clay not familiar with the higher art wares, he was probably quite thankful that it was a party of one only and he was not forced to answer the questions of members of the gentler sex. The wares are packed in crates with straw, a very little straw often enveloping a piece of clay worth its weight in yellow metal.

In addition to the Putnam Avenue Pottery of this concern, to which an extensive addition has just been built, the S. A. Weller Co. owns another pottery known as the Marietta Street Pottery, where there are twelve kilns. At the Marietta Street Pottery about 150 people are employed, and these, in addition to the 300 at the Putnam Avenue Pottery, are also turning out wares of the same class. Mr. Appelgate is the superintendent of both plants.

WRITTEN FOR THE CLAY-WORKER.

WITH MILWAUKEE BUILDERS.

THERE IS UNUSUAL activity at all of the Milwaukee brick yards and so great has been the demand for the product that large numbers of extra laborers have been employed and each plant has been working over time. The demand for brick was never greater than it is in Milwaukee this year. The rapid growth of the city has operated in two directions to greatly increase the demand for brick. On the one hand, there has been great activity in the building of factories, notable among them being the works of the Allis-Chalmers Company, at West Allis, which alone is requiring millions of brick. On the other hand, more large apartment buildings are being erected now than at any former time in the history of the city.

The Milwaukee Building Supply Co. is furnishing the brick for three very large apartment houses almost within a stone's throw of each other on the East Side, in a district which has long been one of the finest residence sections of Milwaukee.

The Milwaukee Building Supply Co. is also furnishing the brick for a very large warehouse, which is being erected by the Pritzlaff Hardware Co.

Preliminary steps have been taken by the Common Council of Milwaukee looking to the erection of some six or seven new public school buildings during the coming year, all of which will, of course, be constructed of Milwaukee brick.

Prices are about the same as last year, $8 a thousand prevailing for common brick and $10.50, or thereabouts, for the pressed brick, with correspondingly higher prices for the selected qualities.

The Chase Brick Co., of which Clifford Chase, vice president of the National Brick Manufacturers' Association, is one of the leading spirits, is operating its yards independently this year, its three-year lease with the Milwaukee Building Supply Co. having expired during the spring months.

New yards are reported at North Greenfield and South Milwaukee, which are suburbs of Milwaukee. At the former place, H. G. Ruck has established a yard and is turning out a very high quality of brick. He reports orders enough to keep him rushed during the entire summer. At South Milwaukee a new yard has been in operation for three weeks, conducted by Hertel & Noerschel.

The new continuous kiln which was erected by Burnham Bros. for their west yards, at an expense of $15,000, has been in operation now for nearly a year, and has so far stood the test successfully, and promises great things for the future.

WRITTEN FOR THE CLAY-WORKER.

NATIONAL CAPITAL NEWS.

WITH THE WEATHER and the strikes—carpenters and plumbers—and Congress whooping up the lawmaking business, Washington is having a "warm time." But at present there is not so much "warmth" in the building line; there is some slackness in this particular owing to the aforesaid strikes. Yet there are enough people at work to keep things moving and to keep the brickmakers busy. It is probable that the differences between master builders and carpenters will soon be adjusted, and that the plumbers will have their matters of disagreement settled, and then business should go booming along, fulfilling the prosperous presage of the spring. In fact, it has been predicted that we shall have a more prosperous summer in the building line than that of last year, which was a good time of money making for the brickmaker and the builder. And for these the future looks cheerful, in the matter of good things to come in the way of government buildings, some of which were spoken of in my last letter to The Clay-Worker, and private enterprises.

An important one of the latter kind will be the new Willard Building, to be erected on the east side of Fourteenth street, near Pennsylvania avenue, the place known as "Newspaper Row," and the building will be particularly for newspaper workers' offices. The structure will be quite handsome and large, fitted with all conveniences of a modern business place of the kind named. The front will be of light stone, brick and terra cotta.

Two new government edifices in prospect are the Hall of Records and Patent Office. The former is an assured fact, and will be built somewhere on Pennsylvania avenue—perhaps between the Capitol and Treasury Building. It should make an imposing appearance, for it is proposed to give a whole square's space to its ground dimensions and surroundings.

The new Patent Office project is yet somewhat in embryo. But this idea is undoubtedly a good one, for there is much need of more space for carrying on the great amount of work done in connection with the patent-granting business and its kindred interests. A few years ago it was found necessary to remove the greater portion of the thousands of invention models and place them in a separate building, but with the space thus gained there was still a lack of room. One thing in favor of the prospects of the new building is the ability of the Patent Office to furnish all money required for this purpose. This self-supporting government business has deposited to its credit in the United States Treasury $5,329,000. Last year the income of the office amounted to about $1,500,000, and of this $152,000 was clear gain above all expenses. The number of patents issued last year was 27,373. Of course, the inventor in the clay industry field was represented in that splendid record of inventive genius. And he should do a great deal more, for there is opportunity in connection with clay products and machinery to call forth "creative" thought.

Another very important government enterprise for the District of Columbia—and one which must interest largely the brickmaker here—is the sewage disposal project, which, though launched some time ago, has not made extensive material progress. There have been quite a number of changes in first plans for the improved sewer system, which will allow better results. The amount required to complete the work is something over $2,600,000. The pumping station, which will take up the sewage and send it in a pipe across the Anacostia river and across country to a point far from the city, on the Potomac river, has not yet been built. The foundation for this will be constructed by the District government, but cost will be charged to the contractors, the Alis-Chalmers Co., which furnishes the pumping outfit.

An important matter concerning street paving has come up before the Senate District Committee. It is suggested that citizens whose property abut on streets to be paved shall pay 50 per cent. of the cost of improvement. In many other cities the property owner assists the city in this particular, but in the District of Columbia such expense is borne equally by the District of Columbia and general government. The matter has not yet been settled.

Speaking of streets reminds me of a rather peculiar incident connected with some recent doings in improvement matters. For opening up New Hampshire avenue—extending it—the authorities condemned a number of negro shanties which stood in the way. The owners of these places received from $400 to $700 each for them as condemnation damages, and then were allowed to buy back the shacks at from $5 to $20. Now, the negro being too sharp to tear down his house and rebuild, simply moved the unsightly shanty back from the line of improvement and sat down, content with his bargain. And this has caused a great deal of angry feeling in the whites who have residences in that neighborhood, and who hoped for the abolishment of the quarters of the "coon."

NICODEMUS.

NATIONAL BROTHERHOOD OF OPERATIVE POTTERS MEET AND ELECT OFFICERS.

The twelfth annual convention of the National Brotherhood of Operative Potters, recently held at Trenton, N. J., was the largest and most successful meeting yet held by that organization. The following officers were elected for the ensuing year: A. S. Hughes, East Liverpool, O., president; J. T. Duffy, East Liverpool, secretary; F. H. Hutchins, Trenton, N. J., first vice president; William Adams, second vice president; James Braithwait, Trenton, third vice president, and John T. Wood, East Liverpool, treasurer. The next convention will be held in Wheeling, W. Va.

NORTH MICHIGAN RESORTS.

Through sleeping and dining car lines of the Pennsylvania and Vandalia lines from Indianapolis to North Michigan resorts and Detroit and to summer resorts, via Detroit, will begin running June 22. For particulars address W. W. Richardson, D. P. A., Indianapolis, Ind.

Do not advertise yourself. Advertise your goods and let your goods advertise you.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

A Pioneer Tilemaker Lives to See the Fruits of His Good Work.

Editor Clay-Worker:

Please find inclosed postoffice order for subscription to The Clay-Worker. The demand for brick is strong in this part of the country, for both paving and building brick. We are at present turning our entire attention to making building brick, there being a good local demand for all that we can manufacture.

John Dawson, Sr., a member of the firm, is spending the summer in the State of Washington for pleasure and health. He is seventy-seven years old and active and strong for his age. WALTER E. DAWSON.

Fremont, Ia., May 29.

Who Supplied the Roofing Tile—School Jokes.

Editor Clay-Worker:

When I wrote the description of the Edward Wyman school, which appeared in last month's Clay-Worker, I was careful, as is my custom and habit, to get every detail correct. During my many years I have perhaps offered more sacrifices upon the altars of the deities of accuracy, whoever they may be, than of any others. Of the twelve high gods that dwelt on Mount Olympus none of them, from Jupiter down, concerned himself espcially with the truth. We moderns have better ideals, so that I felt very badly when the following letter from the Illinois Supply & Construction Co., was forwarded by the editor, with a request for an explanation: "In the paragraph relating to the roof you state this is the production of the Standard Tile Co., of St. Louis, Mo. Where did you get this information? Tile for this school building was furnished by this company and manufactured by the Celadon Roofing Tile Co., of Ottawa, Ill. I wish you would make this correction in your next issue as it would be doing the Celadon people an injustice without making the above correction."

The facts are these; the data for the article were, mainly, obtained from the architect, Mr. W. B. Ittner, who said that he believed the roofing tile was made by the Standard Co., but he referred me to the Hayden Slate Co., the roofing contractors, for positive information on this point, as well as some other matters, such as the quantity of tile, cost per square, etc. Mr. Hayden, principal of the Hayden Slate Co., on being applied to, stated that the tiles were made by the Standard Co. This answers the question as to whence the information came.

On receiving the letter of protest I called at the office of the roofing contractor and asked whether the article in The Clay-Worker had been read and was told that it was very good and "O. K." I then produced the letter. Mr. Hayden thereupon referred me to his superintendent, Mr. Meagher, who said that the tiles were: "About half-and-half, some of them furnished by the Standard, some of them by the Celadon Co." As both the Hayden Slate Co. and The Illinois Supply & Construction Co. are St. Louis concerns I leave it for them to settle between themselves.

—Humorous Side of School Life.—

The Edward Wyman school is in full and successful operation and the junior classes are contributing their share to the world's fund of school jokes. The following are a few things that have been collected by one of the teachers who sees the funny side of education:

A note was received from the father of one of the boys who had been absent the day before. It said:

"Dear Miss ——: Please excuse my son John for not being at school yesterday. He was at the funeral of his aunt. I will see that it does not occur again.'"

A new boy was admitted to her room and she began preliminary work of enrolling him.

"What is your name?" she asked.

"Well," said the youngster, "they call me Jimmie for short, but my maiden name is James Jones."

Here are some of the answers that were made to questions, the nature of which can be easily inferred:

"A vacuum is nothing shut up in a box."

"An optimist is a man who attends to your head. A pessimist is one who attends to your feet."

"A fort is a place for soldiers to live in. A fortress is where they put their wives."

"The marriage custom of the ancient Greeks was this, that a man married only one wife, which was called monotony."

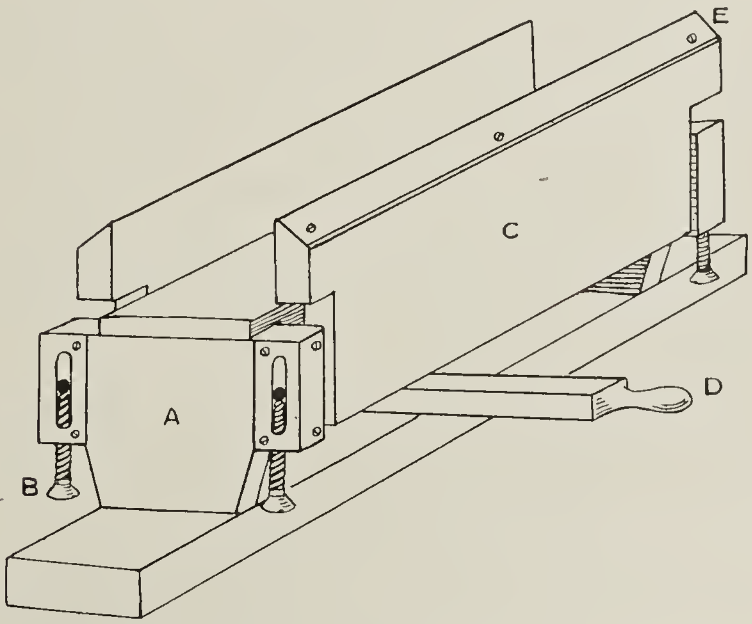
"Grass is what you have got to keep off of."

GEO. J. M. ASHBY.

A Device for Cutting Arch Brick.

Editor Clay-Worker:

Inclosed I hand you a sketch of a brick cutting device which we are using with much advantage. It is a great improvement over anything I have run on to for this work. We make dry press brick and cut our arch brick with this device before sending them to the kiln. With it one man can cut from 600 to 1,000 arch brick in ten hours, depending on the thickness desired. It will always clamp and hold firm a brick so it can be cut straight and true, whether cutting headers or stretchers. We think those familiar with this kind of work will readily understand the modus operandi of the device. A is a frame with angle irons on each corner, with adjusting screws (B) in each corner. C are wings which hang on iron pins, which rest on adjusting screws (B) by means of which the machine is adjusted to size desired. The wings (C) have a steel strap on top to guide knife in cutting. D is tightening lever, which has a block on its end, which is bolted to frame A. When this lever is pulled square with machine, it forces the bottom of wings (C) apart and clamps brick. The cutting is done with an ordinary draw knife. I hope this will be as interesting to some of your dry press readers as many of the articles in The Clay-Worker have been to me. The Clay-Worker is a fine paper and a great help to brickmakers.



S. E. GOLDNER.

A New Texas Plant.

Editor Clay-Worker:

Inclosed find subscription to The Clay-Worker. We could not get along without it, and think every brickmaker should read it regularly. We organized a company here some time ago, known as the Lockhart and Luling Brick and Tile Company, of which A. B. Storey is president and James G. Burlson secretary and treasurer. We have got our plant started in good shape and are turning out a nice red brick. We are located midway between Lockhart and Luling, on the S., A. & A. P. railroad. The brick trade is better this year than ever before. We have had plenty of rain, and the crops are all in good condition, and that means prosperity.

Elandel, Tex. GUY BIRKNER, Manager.

Buffalo Brick and Building News—Busy Towns Nearby.

Editor Clay-Worker:

I recently made a hurried trip to nearby towns and discovered one place—Linesville, Pa.—which is probably unknown to the readers of The Clay-Worker, but it is an interesting community. It is situated in the western part of the State, forty-three miles from Erie and six miles from the Ohio State line. One of my first discoveries was that it is a no-license town, but that wet goods can be obtained at the drug stores in bottles, if wanted. It is in the center of a rich farming country, and has a population of about six hundred, has six churches, besides one sect known locally as the "Holy Rollers."

The town boasts of a planing and saw mill, grist mill and a co-operative farmers' organization—a branch of the American Farm Company—which has established a silo, feed mill and general store, or purchasing and sales agency. Here the neighboring farmers who have taken stock can sell their products, which are shipped in carload lots to the leading markets. Farm machinery, supplies, etc., are purchased in quantities and sold to the members of the company at cost. This, a combination of farmers, strikes me as being the latest phase of the trust movement.

I noticed that a number of the buildings in Linesville were constructed of corrugated glazed hollow blocks. I was particularly attracted by a neat cottage built of this material. I was told that the blocks cost 8 cents apiece and are laid in the wall for $25 per thousand pieces, the contractor furnishing everything but the blocks. Brick retail in Linesville at $11 per thousand. Most of them come from the factory of the Harper-Norton Shale Brick Company, at Conneaut, O. This latter company has been very busy this year, having booked large orders for the Shelby Steel Tube Company's factories at Greenville, Pa.

Leaving Linesville, I got a passing glimpse of Whipple's brick and tile yard, at West Vernon. Two horses were tramping about a tempering pit, pulling an old-style tempering wheel. I noticed that the brick were dried by rack and pallet system and burned in a couple of small kilns.

At Cambridge Springs, the great water cure, I saw large quantities of paving brick piled along the sides of the main street, and learned they were from the plant of the Jamestown Paving Brick Company. Cambridge Springs is a city of hotels, the largest of them, The Rider, being credited with six hundred rooms. It is a fine place and the water is said to have health-giving properties. It is an all-the-year-round resort. Why would it not be a good place to hold an N. B. M. A. convention?

My time being limited, I took a trolley car to Erie. I found the trolley car a little palace on wheels, equipped with smoking compartment, toilet room and telephone, and thoroughly enjoyed the hour and a half ride to Erie. Of course, I visited the brick works of H. C. Dunn, and found them turning out wire-cut brick at the rate of 40,000 per day. The brick are piled on high cars, holding 500 or more each, and run into a steam-heated dryer, and thence to the kilns, of which he has three types, an ordinary down-draft, two large up-draft with outside furnaces, and his famous continuous kiln. His facilities for loading from kiln to car or wagon are excellent. In my opinion, Brother Dunn has a model yard.

Here at Buffalo the brick and building situation is very satisfactory. The demand is good; prices staple. William H. Brush, the worthy ex-president of the N. B. M. A., is running his yard to full capacity. Charles Berrick, the veteran brickmaker, told me that he had less than 100,000 brick held over at the beginning of the season and found a place for all he could make. In short, all the local yards are busy, and I believe when the season is over, 1902 will break the record in the amount of aggregate sales. NORTON.

Brickyard Tribulations—Questions for Burners.

Editor Clay-Worker:

Please find herewith express money order for subscription to The Clay-Worker. The sample copies you have sent us have more than paid us for ten years' subscription to The Clay-Worker. It is a splendid journal and of unspeakable worth to a brick manufacturer.

The brick industry in this section of Georgia is still in its infancy, and the rule seems to be to make them hold together. We have been trying to put our output above the ordinary, and the orders we are getting with the high praise bestowed on them is well worth the trouble. Good burners are hard to get here and labor is scarce. I have had to study and learn how to burn a kiln. The burners I have hired have ruined them for me. I can burn them without cracking, and that has saved us a lot of money.

I would like to get your advise on coloring our brick. We use the old-fashioned kiln. Our clay is varied in color, being deep red, slate color with red streaks, bluish marl and yellow. I find in burning that some of our red brick turn pure white with red centers; the others burn a deep cherry red and sometimes just the opposite will occur. We use wood for fuel. I burn as follows: I watersmoke my brick six days, by that time I have the fire clean through kiln but light; then I gradually increase fire until I get a good fire through from end to end in about six hours. You will understand that I have the overhanger brick all red when I start the hard fire, after running the six hours as above. I close one set of eyes after filling and seal up tight and cross fire the head for thirty-six hours, taking down and filling up the opposite head every hour or hour and a half. Then I change over and fire other or opposite head for twenty-four hours; then fire the center, provided it has not burned down in cross firing, until it comes down and gets fire through it in good shape. We are building our kilns 42 and 40 brick high, 42 brick wide. Our clay is a stiff pure clay, contains a little mica in very minute particles. The brick ring like steel and are very hard and have a finish like repressed brick. Would be very glad if you could give me reason for the white brick. We dry under sheds.

THE JAKIN BRICK COMPANY,

Jakin, Ga., June 12, 1902. Per J. B. Bivings.

A SUCCESSFUL HOOSIER ENTERPRISE.

"Good, distressingly good, for it is hard to keep up with our work," said Mr. Gerard, of the National Dry Kiln Company, of Indianapolis, in reply to the stereotyped query: "How's biz?" Their office and works bear out the statement fully, for they are building additional stock sheds, and using every available foot of space for workmen. "Here is a letter recently received from one of our patrons, which tells in part why we are so busy," continued Mr. Gerard, and we read the following:

Laurel Brick and Tile Company,
Laurel, Miss., June 9, 1902.

National Dry Kiln Company, Indianapolis, Ind.:

Gentlemen—In reply to yours of the 4th, we are glad to say that the four-track brick dryer bought of you is all O. K. The equipment is first-class in every respect, and the dryer is capable of doing even more than you claim for it.

Thanking you for your courtesy and promptness in all of our business relations we are, yours truly,

LAUREL BRICK & TILE CO.,
Per J. W. Parker, President and Manager.

WRITTEN FOR THE CLAY-WORKER.

DETROIT DOINGS IN THE BRICK AND BUILDING LINE.

A COMPARISON of figures shows that for the month of May last permits were issued for 307 buildings, to cost $485,500, and 55 additions, etc., to cost $47,100, making the total cost $532,600, while the record for May, 1901, shows there were 268 permits for new buildings, costing $530,100, and 74 additions, etc., costing $55,900, amounting to $586,000.

There was a lull of short duration among the manufacturers last month, owing to a strike among the mason contractors' laborers. A wage scale was soon adopted agreeable to both employer and employe, and the delivery of brick was renewed with increased vigor.

Architects report that there will be no cessation in the demand for brick for some time. They are overcrowded with work. There are several important structures for which contracts have been let, but as yet permits have not been taken out.

Plans have been prepared for the county asylum addition. The building will be fireproof and three stories high. It will have a frontage of 130 feet by 67 feet in depth. Vitrified paving brick, with Bedford, Ind., limestone trimmings, will be the material used, and the cost will be $50,000.

The unlooked for has happened. Brick have dropped in price, having fallen from $7.50 to $6 per thousand. Why this state of affairs should be is hard to surmise, as the demand has not decreased, but rather increased, and the outlook for June denotes a still greater call.

Heavy and frequent rains during May did considerable damage to the manufacturers, especially so to those who have not adopted the pallet rack system. To some the loss in green brick would almost pay the cost of pallet racks, had they had their plants so equipped.

Demand will soon be made on Detroit manufacturers to supply brick for the new $60,000 courthouse building at Mason. It is doubtful if any of the manufacturers will be able to supply the necessary amount and at the same time keep their regular mason contractors amply stocked.

May witnessed the incorporation of two new brick manufacturing concerns, namely: Jacob Daniel & Bro. Brick Co., capitalized at $12,000, with Jacob and Albert Daniel, John Dabke and Dr. F. H. Henry as stockholders, and the Allery & Smith Brick Co., with a capital of $10,000, held by John J. Allery, Horace G. Smith and Chas. H. Rowe. Mr. Jacob Daniel is a successful brick manufacturer of several years' experience, having succeeded his father, who was among the early manufacturers in this vicinity. Mr. Horace G. Smith is also an experienced manufacturer, having conducted several plants. He was last associated with R. H. Hall, when they erected and put in operation one of the largest brickmaking plants in Michigan, which is situated on the banks of the Detroit river, a few miles from Detroit.

Porath Brothers have purchased several acres of very desirable clay ground in this locality, where they will erect a plant on modern plans, embracing all improvements. The firm is composed of young men, but who, nevertheless, know a good brick when they see it, as their father, Julius Porath, is one of Detroit's first contractors, and whose purchases of brick yearly are a very large amount. It follows that they have had ample opportunity to learn something about brick. Being energetic and thrifty men, there is no question but that their new venture will prove eminently successful.

The manufacturers here are very downcast that the price of brick should take a drop. Wages are very high—higher, perhaps, than ever before. With brick selling as they heretofore were, at $7.50 per thousand, the manufacturers realized some profit, and then not more than they honestly deserved, but with brick selling at $6 per thousand, and wages remaining unchanged, likewise the cost of fuel, of oats and hay, etc., if there is a profit it is indeed very small, and not at all in harmony with their investment. It has been mentioned that the manufacturers form a company, and that each and every manufacturer be placed under a bond for a certain amount that he will abide by the rules and regulations of the company, and if it be proved that he is selling at a figure less than that set by the company his bond to be declared forfeited and he be dishonorably expelled. This may have a "trust" odor, but it is no doubt a good means to protect the honest manufacturer from the underbidding of his avaricious brother manufacturer.

J. G. GREUSEL.

MODERN BRICK MACHINERY IN USE IN NEW ZEALAND.

The following extract from The Press, of Christchurch, New Zealand, is a true indication of what modern machinery will do. When Mr. T. N. Horsley visited the United States he called at The Clay-Worker office and we found him very anxious to get new and modern machinery of the best makes.

—Messrs. Horsley's New Plant.—

"At the invitation of Messrs. Horsley Bros., a party of leading architects and builders paid a visit yesterday afternoon to the firm's works, at Farnley, St. Martin's, to inspect a new brickmaking machine which has recently been imported. During the past three years the Messrs. Horsley have tried two types of machines for the manufacture of brick but both proved unsuccessful. Last year however, Mr. T. N. Horsley visited America, and after personally inspecting a great number of machines, he fixed upon one known as the American soft-mud brick machine, manufactured by C. & A. Potts & Co., Indianapolis, Ind., as being the only one suited to local conditions. It has now been working for a fortnight, and has, says Mr. Horsley, given every satisfaction. The machine turns out brick at the rate of about 1,800 an hour, the daily output being 14,000, as against 8,000 under the old system of making brick by hand. During the two weeks it has been running something like 160,000 brick have been manufactured. The modus operandi may be indicated in a few words. The clay dug out of the bank is wheeled direct into the upper-story of the machine house, whence it is fed through rollers which reduce it to a powder. The pulverized clay passes down a shoot into a pug mill 12 foot 6 inches in length, where, with the aid of water and a series of slowly-revolving screws, it is churned until it acquires the necessary consistency. The action of the screws forces the mud up to the far end of the mill, where it enters a press box, which presses it into molds of the requisite size and shape. The machine molds five brick at a time, and as each mold is lifted out another takes its place. The bricks thus manufactured are superior in appearance to those made by hand, having a smoother "skin" and squarer edges. The machine, which is driven by an ordinary steam engine, appears to work very smoothly, and the proprietors are well pleased with the results so far achieved. The machine is the first of its kind installed in Christchurch.

After inspecting the works, the visitors adjourned to Mr. R. W. Horsley's residence, where success to the new machine was drunk. Mr. T. N. Horsley, in responding to the toast, said there was a general impression among builders and architects that there would be a great scarcity of bricks during the coming winter, but personally he did not believe that there would be any shortage at all. It was unfortunate that the new machine, which was expected in January, did not arrive until last month, but he was confident that they would be able to turn out quite enough brick to meet all demands. Other manufacturers were waiting to see how the new machine worked, with the intention of investing in a similar plant if it proved a success. He understood that one maker had already decided to put in a machine next winter similar to their own."

CLAYWORKING INDUSTRIES OF ROUEN, FRANCE.*

—Brick.—

THE BURNT CLAY products used here for building purposes comprises the following: Plain, ordinary brick; hollow, perforated, tubular brick; facing brick; vitrified brick; floating brick; tiles, ordinary and black; flagstone; "tuyaux," or burnt tubing, for canalization of gas and liquids; and burnt earth (terra cotta) for decoration of buildings.

Brick Molding.—The clay for molding brick is sometimes prepared by hand mills, but this method has become too slow and tedious, and horse-power is used almost exclusively. The mills in this section, when driven by horse-power, produce from one to two cubic yards of clay per hour. Instead of being fashioned into brick immediately upon issuing from the mill, the clay is taken to a table by which the molder stands. The mold is soaked in water or sprinkled with sand to keep the clay from adhering thereto.

It is a common sight in Normandy to see women and children carrying clay to the molders' table and taking it away in the form of green brick.

The number of brick turned out by a molder, under favorable conditions, will run from 600 to 700 per hour. In this district, machine-made brick has not reached any great development. The machine is only used where the output is more than 10,000 brick per day.

Brick Drying.—There are four processes of drying: Air drying; in isolated or grouped shelves; in ventilated rooms, and in ventilated and heated kilns. The last method is mostly used, the fuel being oil, lignite, and peat. It takes from 75 to 110 pounds of oil to burn properly one metric ton (2,204.6 pounds) of brick, according to the consistency of the clay and the degree of temperature.

Dimensions of Brick.—French brick are of the following dimensions:

District.	Size.	
	Centimeters.	Inches.
Burgundy	22 by 11 by 5.5	8.66 by 4.33 by 2.165
Marseilles	22 by 11 by 5 22 by 11 by 7	8.66 by 4.33 by 1.967 8.66 by 4.33 by 2.76
Paris	22 by 11 by 6.5	8.66 by 4.33 by 2.56
Vaugirard	22 by 11 by 6	8.66 by 4.33 by 2.36
Proposed by Ceramic Union	22 by 10.5 by 5.5	8.66 by 4.13 by 2.165
Proposed by architects of the Nord	22 by 10.5 by 6	8.66 by 4.13 by 2.36

Cost of Production.—The cost of making brick in Rouen and vicinity varies from 4 francs (77 cents) to 8 francs ($1.54) per metric ton (2,204.6) pounds).

Brick Machine Makers.—Some of the principal manufacturers of brick machinery in France are: Chambrette Bellon, Beye, Cote d'Or; Boulet et Cie., Paris, Seine; E. Delahay, Tours, Indre-et-Loire; G. Pinette, Chalson-sur-Saone, Saone-et-Loire; Chavassieux Long, Marseilles; Davidsen, Paris; and Dalbouze, Paris.

—Roofing Tiles.—

Round tiles are very much used in southern Europe. The length varies from 15 to 20 inches, and the greatest width is from 7 to 86½ inches. This gives a very heavy covering, but has the advantage in warm countries of preserving the building against too much heat.

Black Tiles.—There are four ways in France to make tiles black—coloration of the clay with oxide of manganese, immersion in tar, baking in an atmosphere charged with hydrocarburet, and baking in the presence pulverized carbon. The most common form employed is that of plunging the tile in some tarry liquid which has a temperature of 50 deg. to 60 deg. C. (122 deg. to 140 deg. F.). The general belief is that the tar does not improve the resistance of the tiles to the temperature.

Burning Tiles.—In burning, as in the burning of brick, great care is exercised to keep the ashes from coming in contact with the tiles. The manner of placing the tiles in the kiln depends upon their shape, and particular care is exercised to prevent their warping, while at the same time they are put in as small space as possible, with sufficient opening to assure circulation of gas and flame. Different kinds of fuel are employed, but gas is preferred, on account of easy regulation of temperature and absence of ashes.

Value of Tiles.—The value of tiles in the Rouen district is two and a half to three times greater, with equal weight, than that of common brick. The well-known Angers machine-cut roofing tiles are listed as costing 52 francs ($10.04) per thousand; with sides rounded, 62 francs ($11.97) per thousand.

The proper clay for the manufacture of tiles is not widely scattered in the north of France. The expense of transport is very high, compared to the value of the product, yet the manufacturers are able to send their output to quite a large radius, some being even exported. Small manufacturers—those who do not employ fire kilns continuously—are rare, owe their existence to local conditions, and are becoming fewer and fewer. Most of the large manufactories are located near the clay beds, and it is exceptional that clay is carried to be worked up at the centers of consumption.

Tilemakers.—The following are the names and addresses of the tilemakers in this department—Seine-Inferieure:

Rouen—M. L. Oliver, 74 rue de Centrale; M. Fd. Limare, 32 Brampe St. Hilare; M. Fontaine, 19 rue de l'Industrie.

Havre—M. Fanchon, 91 rue J. Lecesne; M. H. Derret, 10 to 32 Duquay-Trouin.

Dieppe—M. Lucas, at Janval; Le Gros fils, Caude Cote.

—Porcelain Manufacture.—

Porcelain was first manufactured in France at Vincennes. In 1730 the proprietors of the Vincennes works moved to Sevres, where they established a manufactory which Louis XV bought in 1739, and it has since remained the property of the State. The output of this establishment has long been celebrated in Europe for its beauty of material, purity of design, elegance of form and richness of ornamentation.

In France there are three principal centers of porcelain manufacture: Limoges (Haute-Vienne), Berry, and Paris and environs. The first, Limoges, is probably the greatest of these, and has been especially productive for the last few years. Last year it had 380 more furnaces than in 1900, and each month of the year (1901) showed a superior production to corresponding months of any preceding year. The total number of furnaces in Limoges in 1901 was 3,380, as compared with 1,956 in 1889.

Sevres Porcelain.—Sevres is a soft, vitreous porcelain. In 1884, the manufacturers of Sevres, after long and tedious research to find a porcelain which would take decoration better than hard porcelain, and be capable of receiving the blue turquoise of copper, produced a new kind of pottery to which has been given the name of Sevres. The glass composition of this, after being heated and pulverized in water, gives the following: Silica, 77; lime, 10.3; potash, 5; soda, 7.7. It then enters into the composition of the following clay: Sand of Fontainebleau, 49.02; glass, 27.45; chalk, 16.66; Dreux clay, 6.86. After baking the composition becomes: Silica, 80.31; alumina, 2.62; potash, 13.27; lime, 1.5; soda, 2.3.

Hard Porcelain.—The fabrication of hard porcelain is centered in France, with rare exceptions, in the Departments of Haute-Vienne and Cher. In Germany the industry is more scattered, but the principal centers of production in that empire are in Saxony, Bavaria and Bohemia. The industry exists also in Belgium, Denmark, Russia, Italy, China, Japan and the United States. Hard porcelain is not manufactured in England.

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*Written for The-Clay-Worker by U. S. Consul Thornwell Haynes.

It is said in France that to manufacture 1 kilogram (2.2046 pounds) of porcelain, 8 kilograms (17.6 pounds) of raw material must be used.

The chief coloring matters employed in France in the decoration of hard porcelain are:

Blue—Oxide of cobalt, the tint being varied with a mixture of chrome or oxide of uranium.

Gray—Oxide of iridium and platinum, the tint being usually rendered more agreeable by oxide of cobalt.

Yellow—Oxide of uranium.

Brown—A mixture, in varying proportions, of chromate of iron and oxide of manganese.

Rose—A mixture of anhydrous alumina and chromate of potassa.

Fire Porcelain.—In France this is the name given to all porcelains in which liquids are heated. This fire porcelain is used in laboratories and for domestic use, such as evaporators, retorts, crucibles, saucepans, etc.

The composition of the clay differs but little from that of other hard porcelains; it is, however, less silicious and more aluminous. The following is the composition of the fire porcelain of Bayeau, which has a high reputation in France: Silica, 61.61; alumina, 30.01; oxide of iron, 1.56; lime, 3.56; potash, 3.26.

—French Faience.—

The pastes or bodies of fine French faience are composed of pure white clay, of kaolin, sand and flint. Common faience has for its elements marly sands and common clays, marly clays, loamy clays and calcareous marls. The substances which form the base of the glaze are the same for fine and common faience, viz., silex, feldspar, the alkalies, minium, or white lead. In the better sort of faience, boracic acid is used to a considerable extent, and, in the more common sorts, oxide of tin, which gives a certain enamel-like opacity to the glazes, which hides the dark or red colors of the inferior clays.

The most important centers of faience manufacture are the Departments of Seine-Inferieure, Nievre, Meurthe-et-Moselle and Loire-Inferieure. In all there are only 400 establishments, which use a force of over 500-horse-power and employ 6,000 persons, of whom 1,500 are women and children. The annual output is valued at about $3,000,000.

WRITTEN FOR THE CLAY-WORKER.

ST. LOUIS BRICK AND BUILDING NEWS.

BUSINESS STILL continues about the same with the brick and terra cotta manufacturers, and is in a good, healthy condition. All the yards are working full time and are turning out their usual amount of material.

A spurt in business is expected at almost any time. It has been looked for from month to month, but it has never materialized. When it does come, some records will be broken. Prices continue the same as last reported, namely: Merchantable brick, $7.25; ordinary brick, $7.75; strictly hard, $8.25; red pressed brick, $17.50; sidewalk and paving brick, $8.50. It is rather surprising that more building is not being done. It is true that quite a number of large buildings are going up, but not as many as there should be.

Quite a number of dwelling houses are in course of erection, but not enough to supply the demand. The result is an increase in rents all over the city.

Figures from the records in the office of the Building Commissioner show a slight decrease in the value of building permits issued since January 1, 1902, as compared with the same period last year. During the first five months of 1901 the values reached $4,917,721, and for the same period this year the figures are only $4,865,154, with an excess, however, in the number of permits issued. For the periods mentioned, in 1901, the number of permits issued was 503, this year 805.

Discussing these conditions, the Building Commissioner asserts that the comparative small showing in local building operations this year is attributable both to the postponement of the World's Fair and the high range of prices in some character of building materials.

Prices of brick remain the same, but lumber is nearly double and iron has gone up and hard to get at any price, almost. Labor continues about the same.

There is very little speculative building being done. Nearly all the permits issued recently are to individuals who have been planning their own homes for several years.

The plant of the Mitchell Clay Manufacturing Co., at 5625 Manchester avenue, was totally destroyed by fire early on the morning of May 23. The fire is supposed to have been caused by a spark from one of the chimneys. The loss on the building and machinery is estimated at $45,000. The loss is fully covered by insurance. The Mitchell Company employs a large number of men, and they will be thrown out of employment until the plant is rebuilt.

The St. Louis Clay Burning Co., a new company recently organized and located on the outskirts of the city, are putting up kilns and will be running in about sixty days. They will manufacture street paving brick.

E. J. Ryan, who has had a yard at Newstead and the Wabash tracks, is putting up a new press brick plant on the new Terminal Belt road, in the county.

The Hydraulic Press Brick Co. are also putting up a new paving brick plant next to their works on the Missouri Pacific tracks and Kings Highway. The kilns have been built and the works will soon be in operation. They will get clay from the Missouri Pacific road.

George R. Grimes, of Terre Haute, Ind., is at the head of a construction company recently organized at St. Louis, to be known as the George R. Grimes Construction Company. While the company will do a general contracting business, they will give special attention to brick streets. St. Louis is to be congratulated.

Laclede J. Howard, of Evens & Howard, is convalescing from a severe attack of pneumonia.

The award of the contracts for the three new schools the McKinley High School, which will use about 375,000; the Froebel School, which will use about 375,000, and the Sumner High School, which will use about 350,000, have not yet been made, although the bids have been opened. All these contracts will probably go to Mr. Hiram Lloyd, as he was the lowest bidder.

The strike of the clayworkers at Belleville, Glen Carbon and Carlinville, Ill., has not yet been settled. There seems to be some trouble in getting a third party to act as arbitrator between the manufacturers and the men.

The Fernholtz Brick Machinery Co. has moved into its new plant at Boyle and the old Manchester road, but all of the machinery has not yet been put in place. The company is very busy on orders. Everything will be in shape before a great while, and when it is, the plant will be one of the most complete in the country.

The Williams Patent Crusher and Pulverizer Co. still continues to do a large business. A great many orders have been booked and orders are still coming in. All are being got out as fast as possible.

The Lawton Press Brick and Tile Co., of Lawton, Okla., was incorporated for twenty years, with a capital of $50,000, a few days ago. The incorporators are: Sam Strauss, G. F. Silvers, S. A. Strauss, O. P. M. Butler and W. C. Stevens.

The St. Louis Pulverizer Co. report a very busy season. They handle engines, boilers and other machinery, as well as clay pulverizers and disintegrators. Their extensive shops, at 416 North Main street, are crowded with work. It is a good place for visitors to call. Those looking for brick presses or any heavy machinery will find what is wanted there as a rule.

A. SAINT.

For bargains in machinery, desirable situations, experienced help, etc., etc., see our "Wanted, For Sale, Etc.," ads., on pages 670, 677, 679 and 680.

Written for The Clay-Worker.

POTTERY NEWS.

THE DETAILS of the consolidation of leading plants engaged in the manufacture of fire and silica brick have been announced. The new company is to be known as the American Refractories Company, and will be capitalized at $22,500,000. Headquarters will be established at Pittsburg. The stock of the company will be represented in $8,000,000 of 6 per cent. cumulative preferred and $14,500,000 of common. A bond issue of $3,500,000 5 per cent. gold bonds will be used in part in refunding outstanding issues.

The court of chancery at Trenton has appointed William Bradley as receiver for the International Kaolin Company in the proceedings instituted by James R. Hame, of Newark. The company was organized in December 1900, with an authorized capital stock of $1,000,000 to manufacture kaolin in Florida. All the capital stock was issued and outstanding. The bill of complaint places the assets of the company at $54,295 and its liabilities $33,794. This company has sold much of its product in this city since it commenced business.

There are over 1,000 pieces of ware in the Alice Maddock collection of pottery which was presented to the Trenton art school recently. Much of the ware is of foreign make, while about 600 pieces are from this and other countries. It has been said, and by pottery experts, that the gift will form the nucleus for a ceramic museum that will rank with the best in the nation.

The newly elected directors of the Trenton Potteries Company met Thursday and organized by re-electing the following officers: President, Daniel K. Bayne; Vice-president, William S. Hancock; Secretary and treasurer, C. E. Lawton. The annual meeting of the stockholders was held last Tuesday, when the old board of directors was re-elected. The board is made up as follows: William S. Hancock, Ferdinand W. Roebling, and John A. Campbell, of Trenton; William Wood and Lewis H. Taylor, Jr., of Philadelphia; Edwin Packard, of Brooklyn; Horace J. Morse, Daniel K. Bayne and Charles K. Marvin, of New York.

The capital stock of the Akron Sewer Pipe Company has been decreased from $300,000 to $10,000. The reason for doing this was that the concern went into the American Sewer Pipe Company some time ago, and it was not necessary to have such large capital.

The Atlantic Kaolin Company has been chartered in New Jersey with a capital stock of $100,000. The company is organized for the purpose of developing an extensive deposit in Florida.

The site of the old Jefferson sewer pipe plant, one of the old land marks of Toronto, Ohio, has changed ownership, passing into the hands of Banker Dohrman J. Sinclair, of Steubenville, the consideration named in the deed being $15,000.

It may be of historical interest to note that the first sewer pipe and terra cotta ware ever made in the United States was turned out here more than half a century ago. The first factory established by Carlyle & McFadden was a very primitive one, the clay being ground by horse power.

An attempt is soon to be made to establish a pottery at Sheffield, Ala. Overtures are said to have been made to a number of men in this city to subscribe not less than $10,000 worth of stock for the new concern. Considerable ball clay is reported found in the vicinity of the proposed location of this plant. If the desired money can be raised in this city, $15,000 will be raised by the Alabama parties promoting it. It is not likely that any ast Liverpool money will be invested in the project.

At the plant of the American Sewer Pipe Company at Barberton, a few days ago, Milton Biller and Robert Pittender were badly burned by the premature explosion of a blast in the clay beds of the company. Three cans of powder exploded in the vicinity of the men, causing them to be burned. The injuries of both are thought to be such that they can not recover.

Now that a monument to the late John Hart Brewer is to be erected at Trenton, the location has been settled. The last tribute to this most prominent pottery manufacturer is to be erected in the center of Trenton. It is proposed to put on it the words Mr. Brewer uttered in Congress, when he held up a vase and said: "Gentlemen, 2 per cent. of this vase is raw material and 98 per cent. is American labor, and that should be protected."

The two kilns for the pottery being erected by Joseph Mayer, Trenton, are about completed and work has now been commenced on the kiln sheds. The kilns are of a new pattern from those generally in use and are an experiment of the owner of the plant, and he claims that when their work is shown it will mean a revolution in the manner of building kilns.

The old pottery formerly operated by Mr. Mayer has been turned over to other parties who are manufacturing small ware, similar to that at the Union Pottery in this city. It is being sold for premiums to department stores and baking powder companies.

The American Clay Company, of Augusta, Me., has been chartered with $300,000 capital.

Very slow progress is made on the erection of the new pottery at Salineville. W. H. Deidrick, a member of the company erecting this plant, stated that the brick work was to have been started last week, but has been deferred until next week. From present indications the plant will not be able to start before September.

The Anderson Manufacturing Company, organized by Trenton business men to carry on a decorating and pottery manufacturing business, has been incorporated. Water Commissioner Charles A. May, Harry E. Bicknell and Edward D. Anderson are the incorporators, and the authorized capital stock is $100,000.

Work has been commenced clearing the property on the east side of the Wallace & Chetwynd pottery for the new addition that is to be built to that plant by the East Liverpool Potteries Company. A local foundry company has several men there taking away the old castings that were once used by a gas company which had a small plant near the pottery. As soon as these are removed work on the new addition is expected to commence.

The new works of the East Liverpool Seggar Co., is progressing rapidly and will soon be completed and ready for occupancy.

The Knowles, Taylor & Knowles Co., are making extensive repairs at their Buckeye Pottery.

The Sherwood Bros. Co., at New Brighton, Pa., are installing an entirely new clay-washing outfit.

The Ohio Stoneware Co., of Akron, Ohio, are also putting in a new clay-washing outfit.

The contracts for the buildings, kilns and machinery of the Dresden China Co., at Salineville, Ohio, have been let and the plant will be completed as soon as possible.

The kilns at the new works of the Crooksville Art Pottery Co., at Crooksville, Ohio, are almost completed, and the buildings will be finished as soon as possible. The plant will be a five-kiln one and will be devoted to the manufacture of white ware.

TOM POTTER.

THE CLAYS AND CLAY PRODUCTS OF MARYLAND.

DURING A RECENT visit to the office of the United States Geological Survey I came across an interesting book, lately published, a "Report on the Clays of Maryland," by Heinrich Reis. In this it is stated that Maryland—the clay strata of which continue into the District of Columbia—ranks eleventh in the list of clay-producing States and seventh as a producer of pottery. The total value of her clay products for the year 1900 is put down at $1,711,856.

In this State there are manufactured common and pressed brick, vitrified and fancy brick, besides fire brick, stove linings, drain and other tile, ornamental terra cotta, earthen and stoneware, yellow and Rockingham ware, C. C. and white granite ware and porcelain. There is one sewer pipe factory.

Maryland leads a number of States in clay products. Among these States are Alabama, Georgia, Delaware, Maine, New Hampshire, North and South Carolina, Vermont and Virginia.

Good clay for making common brick is found in all parts of Maryland, and that used for the industries above mentioned is found in various sections of the State. Terra cotta is not manufactured extensively there, but the raw material for this can be found. Kaolin for making white earthenware and porcelain is found principally in Cecil county, and has been obtained at a number of points in that county. Mr. Reis informs us that the manufacture of pottery forms an important industry in the State of Maryland, and he gives some interesting historical business facts in this connection. We are told that at Baltimore there are two important works making white ware. One of these is the Chesapeake Pottery Works, begun in 1881 by D. F. Haynes & Co. Its first product was called "Clifton" ware, and belonged to the majolica family. Avalon ware followed this, and then "Calverton" ware. In 1885 Parian wares were produced, with modeled flowers, panels with beads in relief medalions of Thornaldsen's "Seasons" and similar works.

"The so-called 'Roman' set, which had an embossed surface, with an ornamentation of grape leaves, was one of the first produced.

"In 1886 the manufacture of fine semi-porcelain was commenced and the Arundel dinner service put upon the market, the first work of the kind designed by Mr. Haynes, which has since been extensively copied by American, English and German potters.

* * * "The latest line of the Chesapeake pottery embraces parlor and banquet lamps, clocks and large decorative vases.

"The Edwin Bennett pottery, which began on a small scale, was the first to be established south of what was known as Mason and Dixon's line for making the finer grades of ware."

This pottery has made quite a variety of wares in its long business experience, and has received medals for the excellence of its output. In the matter of making teapots it surely has a long and shining record, for we are told by the report mentioned that "Mr. Bennett originated and first made the 'Rebekah' teapot, in 1851, in Rockingham ware, and continued its manufacture to this day, the demand for it being regular and constant."

Another pottery in Baltimore is that of M. Perrine & Son. This was established in 1827. NICODEMUS.

ALL BUSY AT FT. DODGE, IOWA.

ALL THE BUSINESS we can take care of, is the answer received to the inquiry, "How's business?" Last year's anticipations of what would come this season in the way of business are now being realized, if anything, in a greater degree than was expected. Every brick and tile plant in northwestern Iowa is running full time and full capacity to fill the orders on hand, with no prospect of a cessation. Prosperity is evidenced in the form of substantial brick blocks and other ways requiring brick and building blocks.

The Lehigh Clay Works has increased its plant from a six-kiln to an eight-kiln, and is now turning out 40,000 daily. It has also added a hot air dyring system and other improvements. The manager reports that they are sold up to October on pavers and tile.

The Lehigh Brick and Tile Co. are enjoying full time and full capacity on common brick and common sizes of tile.

Messrs. Straight & Campbell, the latest acquisition to the brick and tile industry at Lehigh, have their sixth kiln practically completed, and are doing more than was anticipated the first year in the way of business.

The Corey Pressed Brick Co. have experienced difficulty in filling orders sent to them and are running at full capacity.

Johnson Bros., who now have an office in this city, report being sold ahead for the next sixty days on common brick and building blocks.

The Kalo Brick and Tile Co. are having a heavy run on the common sizes of tile.

"Men wanted at the Fort Dodge Clay Works," is a sign which has been up nearly all of the time, and indicates the business of the plant.

The Fort Dodge Brick and Tile Co. have devoted their attention to filling orders for common brick, and are turning out about 30,000 daily. They have had no opportunity to make any tile.

Messrs. Straight & Campbell, of Lehigh, have opened up an office in this city as a means of further facilitating their business.

Messrs. Bradshaw & Co., of this city, have made arrangements for a new plant, which will manufacture the common sizes of tile and sewer tile up to 20 inches. The new plant will be erected this summer and operated separate from their present plant in this city.

The Perry Brick and Tile Co., of Perry, Ia., has been reorganized, with Mr. Zartman as president and general manager.

F. W. Heidenreich, of Iowa Falls, Ia., has opened a new brick and tile plant at the edge of the town, and later on in the season will equip it for the manufacture of sewer pipe.

The brick and tile plant at Dysart, Ia., has been destroyed by fire. Loss, about $15,000; insurance, $2,000. It is thought the plant will be rebuilt this season.

W. O. Roberts and James Heki, of Eddyville, Ia., have formed a company for the manufacture of brick and tile at that place. The plant will have a capacity of 20,000 daily.

J. E. D.

COAL STRIKE AFFECTS POTTERS.

There is some doubt among the pottery manufacturers of Trenton of their ability to continue work under the present conditions, brought on by the coal miners' strike. Practically all the kilns in the Trenton and other Eastern potteries are fired with hard coal, and it seems that if the strike is continued much longer the manufacturers will have to fall back on soft coal. Such conditions are not at all pleasing to the Eastern manufacturer.

SEWER PIPE FOR THE PHILIPPINES.

The Government has placed an order with the American Sewer Pipe Company, of East Liverpool, O., for a large amount of sewer pipe which is to be sent to Cavite, Philippine Islands. It is the first order of the kind to be placed by the Government to be sent to that far-away country, and it is estimated that seven months will be consumed in making the shipment.

LONDON'S AMERICAN EXPOSITION.

An exclusively American Exposition is to be held in the Crystal Palace, London, May-September, 1902. This will be the most important exhibit of American products yet made in the United Kingdom. The machinery and mechanical industry will be well represented and, as classified on the programme of exhibits, will include mining and agricultural machinery and implements, locomotives, automobiles, typewriters, sewing machines, electrical supplies and tools and cutlery of all kinds. The time chosen for this exhibit is singularly opportune, as the coronation festivities will be in full swing and pilgrims thereto from every civilized nation will crowd the streets of the greatest city in the world. The American manufacturer will have his golden opportunity among the landscape glories of Sydenham, and what will probably be the greatest polyglot crowd ever seen on the banks of the Thames. The commissioner for the United States is Alfred H. Post, Produce Exchange, New York, who will cheerfully furnish all information needed.

The best mediums are those papers which are read the closest.—**Ex.**

THE CLAY-WORKER

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

NINETEENTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

Foreign subscriptions 65 cents additional.

☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

27 Monument Place.] T. A. RANDALL & CO., Indianapolis.

XXXVII. JUNE, 1902. No. 6.

CURRENT COMMENT.

It is a trite saying that he who expects to accomplish results must "keep cool." But how to keep cool and do things these midsummer days is a difficult matter. It will be less difficult in the future if the claims for a recent invention are made good.

* * *

The new "Yankee contraption" is an iron cylinder with chemical insides. It sucks in 95 degree atmosphere at one end and blows out of the other 20 degree, 10 degree or zero zephyrs, as may be desired. It is a cooling stove, the inventor says, and is automatic or self-regulating. By it warm air is not only cooled, but purified. It is not an expensive luxury, he says, the cost of fuel (chemicals) being about the same as the cost of an ordinary heating stove.

* * *

The cooling stove is not only a long-felt want for homes, stores and offices, but may prove a boon for clayworkers, especially those who, though pressed with hurry orders, are compelled to wait days at a time for their wares to cool by the old fogy process. For instance, think what a relief it will be for Gates, who, instead of opening a kiln and pulling out the red-hot ware with tongs, can attach a cooling stove to the top of the kiln after breakfast and by dinnertime can have his men taking out the ware so cold as to require mitts. The cooling stove is destined to revolutionize the clay business—maybe.

* * *

"The frame house is peculiarly an American institution, and while it may have certain advantages, economy and stability in the long run point to stone and clay products as better wall materials. Failing forest supplies will, naturally, force the adoption of other materials than wood; indeed, are already doing so. Fifty years hence the consumption of wood per capita will be much less than at present." Thus saith The Wood-Worker, an authority in its line. It is gratifying to note that woodworkers and lumbermen themselves appreciate the superiority of clay products for structural work.

* * *

The World's Fair authorities at St. Louis offer a prize of $2,000 for an acceptable design for an official emblem. This emblem, design or device is to be applicable for use as the official seal of the exposition, or for a medal, or as a letterhead for stationery, or for a poster, or any other purpose in connection with the dignified exploitation of the exposition. All designs submitted will be examined by a jury of seven disinterested parties, and the accepted design will become the property of the exposition. Walter B. Stevens, secretary of the Louisiana Purchase Exposition, St. Louis, will furnish on application a brochure giving all the requirements and conditions of the competition. We hope some clayworker artist may secure the prize.

PROSPERITY LONG DRAWN OUT.

We have been taught to believe that commercial prosperity goes in short cycles—a few years of prosperity and more years of depression. It now appears to be the policy of our government to do what may be done in the way of reform of the currency system, in the way of the development of the department of commerce and practical education, and in the regulation of our great corporations which, will result, not in spasmodic prosperity, but in continued prosperity. We have an impetus of prosperity at this time which will carry over long enough and far enough, even on the basis of the present volume of business, to give us a chance to seriously study this question, and have such means, governmental and otherwise, as will place us on a relatively fixed standard of prosperity.

THE ARCHITECT AND THE BRICKMAKER.

The demand for good brick is easily made by the architect. If the brickmaker could make a poor and very cheap grade of brick and sell it for a high price, he naturally would do it. The architect sets a higher standard. He wants very hard brick, brick that are square, brick that are good, though of varying colors, and he and his client are willing to pay for them. He wishes beautiful forms and moldings, elegant decorative effects, and, by showing a willingness to pay for them, induces the brickmaker to furnish them. There is an acknowledged greater profit in a good brick than in a common brick. Not as many are sold, but the demand is constantly increasing and good prices are offered. The spirit of the artist makes the cost of brick.

A GENERAL UNDERSTANDING.

It is much easier to combine on the question of prices when business is good than when it is bad. In many cities of this country there is at present a general understanding among competing brickmakers as to the price of brick. As a rule, the price agreed on is high enough to afford a fair profit, and not too high to deter building operations. The question of fifty cents or a dollar a thousand for brick does not cut much figure in the cost of a building, but it does cut a large figure in the profits of a brickmaker. This general understanding, if we may so call it, does not always mean combination. There are very few combinations—we wish there were more. This understanding has been influential within recent months in getting the brickmakers together, getting them to consider the matter seriously, agree on a price and stick to it. Now, while they do not always stick, in the main the result has been beneficial. Certainly it has been so in this section, and many others of which we have knowledge. When competitors meet, take one another by the hand and talk matters over, they find they are not such bad fellows after all. All are striving for the same end—to make money. A general understanding makes this much easier and more certain of accomplishment.

THE STRIKE A BLESSING IN DISGUISE—MAYBE.

It is proverbial that there is no great evil without some compensating benefit. The coal miners' strike may prove a case in point by encouraging the use of and, perhaps, resulting in the adoption of other fuels. Our esteemed cotemporary, the Age of Steel, remarks that "It is not unlikely that should the coal miners' strike be in effect for any length of time and the output of both hard and soft coal be seriously curtailed, that the use of mineral oil for fuel will be strongly stimulated. It is in just such emergencies that the spur is put to the slow-moving horse. With mineral oil as a possible escape from a deliberately planned coal famine and its losses and inconveniences, the large coal consumer is not likely to pass it by. This is a possible outcome that it would be well for all concerned in the present trouble to seriously consider. Perhaps a prompt settlement of present differences might postpone what otherwise would be inevitable. There is generally more ways than one in getting out of the woods. Sometimes one industry profits by the mistakes of another, and it may be so in this case."

TRADE LITERATURE.

THE AMERICAN BLOWER CO., Detroit, Mich., have issued their catalogue, No. 139, which is devoted to their well-known A. B. C. dry kilns. Like all A. B. C. publications, it is beautifully illustrated and contains a great deal of valuable information on various drying problems. A copy will be forwarded to any reader of The Clay-Worker who will write for it, referring to this notice.

THE HANOVER PRESS BRICK CO., Hanover, O., have issued in pamphlet form the write-up of their plant which appeared in the April Clay-Worker. It makes a very attractive twelve-page circular, which, placed in the hands of prospective buyers, will certainly have a favorable influence. It is a specie of advertising which brickmakers generally may adopt with much benefit.

THE ROOKWOOD POTTERY CO., Cincinnati, O., are distributing a pretty booklet giving a brief history of that notable establishment and the Rookwood marks, by which the year in which any piece of real Rookwood was made may be determined by the possessor, and also a fac-simile of the decorator's marks, by which owners of Rookwood may determine by what particular artist the piece was decorated. These are matters of special interest to collectors of fine pottery. Every owner of a piece of Rookwood ought to have one of these little booklets. It may be obtained by addressing the company.

ARTHUR KOPPEL, 68 Broad street, New York City, is sending out an attractive little booklet, the title page of which is so attractive as to insure more than a passing glance. An immense and very dilapidated old shoe is the central figure, to and up which by means of ladders brownies are carrying miners' shoes and dies. Those familiar with miners' implements and supplies will appreciate the aptness of the illustration, and those who are not so well informed may readily learn by looking within. They will also discover that Mr. Koppel deals in all manner of railroad supplies, such as portable tracks, turn-tables, switches, frogs, rails of various weights, dump cars, etc., etc. If interested, write for a copy of the booklet, mentioning The Clay-Worker.

THE FROST MANUFACTURING CO., Galesburg, Ill., have out a dimunitive poster, printed in green, red and black, and which tells briefly and forcibly that the Frost boilers are the best boilers, and gives good and sufficient reasons therefor. As our readers will see if they turn to page 711 of this issue, the Frost Manufacturing Co. also make dry pans of the same high quality. Circulars telling all about them can be had for the asking.

THE JEFFREY MANUFACTURING CO., Columbus, O., are mailing a new catalogue, devoted to Jeffrey screens. It is a handsome book of fifty pages, profusely illustrated with engravings of their vibrating screens, which are specially adapted to ores, clays, earths, minerals of all sorts and grades. Anything that needs to be screened can be handled successfully by the Jeffrey system. Sectional views, showing methods of placing and operating the screens for different purposes, are shown, and a large number of testimonial letters from users of these screens and other Jeffrey supplies are given. If you want a screen for any purpose, don't fail to write for a copy of this catalogue, No. 69.

"A MOVING TALE" is the title of a most unique folder received from the Fernholtz Brick Machinery Co., St. Louis, Mo. On the title page a monkey is boldly depicted, being embossed in gold bronze. By an ingenious arrangement, his tail, while a part of the design and hanging in the place where a tail ought to hang, is made of a separate piece of cardboard, and is movable. On discovering this, the recipient will, with that inherent tendency to investigate things so characteristic of both man and monk, open the folder to see how the caudal appendage is adjusted, when the announcement meets his eye that the moving tale which the Fernholtz Company refer to is the tale of the removal of their factory to their new shops at Boyle avenue and Old Manchester road, where brickmakers will always be most cordially welcomed.

THE CHISHOLM, BOYD & WHITE CO., Chicago, Ill., have issued one of the handsomest catalogues that has ever reached The Clay-Worker sanctum. The cover is unique in that the design and lettering both are embossed, no ink or color being used at all. A very heavy brown paper, much resembling leather, is used, and the embossing is done so perfectly that every detail of the design is brought out distinctly, producing a remarkably rich effect. Within the covers, and fastened to them with a silken cord, is a series of beautiful half-tone engravings of their factory and machinery. The cuts of the Boyd presses as printed in the catalogue are equal to steel engravings. The descriptive matter is terse and interesting. All in all, the catalogue is a model trade publication, and, too, a very expensive one. Nevertheless, our readers may obtain a copy gratis on application.

THE SLEEPY HOLLOW CLAY CO. have favored us with a prospectus of their clay property, located at Tarrytown, N. Y., twenty-six miles north from New York City. "The property," the prospectus states, "has long been known to possess clays of special excellence. For generations past families for miles around have been in the habit of repairing their stoves and furnaces with this clay, which they obtain by the bucketful and put on as if it were putty, having noted the fact that it readily burned into stone and proved durable." The mission of the booklet is to give this and other information in regard to the property, which may interest prospective investors in the capital stock of the company, 7,500 shares of which are offered to the public. For a copy of the booklet address Milton S. Sherwood, M. D., 721 St. Nicholas avenue, Borough of Manhattan, New York City.

S'POSE THE FISH DON'T BITE AT FUST.

S'pose the fish don't bite at fust;
  What be you goin' to dew?
Chuck down your pole, throw out your bait,
  An' say your fishin's threw?
Uv course you hain't; you're goin' to fish,
  An' fish, an' fish, an' wait
Until you've ketched your basket full,
  An' used up all your bait.

S'pose success don't come at fust;
  What be you goin' to dew?
Throw up the sponge an' kick yourself,
  An' go to feeling blue?
Uv course you hain't; you're goin' to fish,
  An' bait, an' bait agin;
Bimeby success will bite your hook,
  An' you will pull him in.—Exchange.

LEGAL DECISIONS OF INTEREST TO BUSINESS MEN.

RATIFICATION OF UNAUTHORIZED ACTS OF AGENTS.

Ratification of the act of another performed in the assumed capacity of an agent, though wholly without any precedent authority, the Supreme Court of Minnesota holds (Hunter vs. Cobe, 87 Northwestern Reporter 612), creates the relation of principal and agent, and the former becomes bound by the act to the same extent as if it had been done by a previous authorization. A principal, it says, is not at liberty to disaffirm if he has assented to the act of an agent after being informed of all of the material facts of a transaction in which the agent has exceeded his authority. And the same court holds (Payne vs. Hackney, 87 Northwestern Reporter 608), that payment to an agent not authorized to receive the same, becomes effectual as a payment to the principal upon the appropriation by the latter, with full knowledge of all the facts, of the money paid to the agent.

MUTUAL BOOK ACCOUNT NOT OUTLAWED UNTIL LAST ITEMS ARE.

It appearing on the face of a book account that there were mutual accounts between the creditor on the one side and the debtor on the other, and that there were some items in the account which were within the time allowed before an account outlaws, the Supreme Court of Illinois holds (Carpenter vs. Plagge, 61 Northeastern Reporter 530) that the whole amount due upon the account was taken out of the statute of limitations, or saved from being outlawed, although some of the items standing alone would have been rendered uncollectible by lapse of time.

BURDEN OF PROOF OF PAYMENT.

When payment is pleaded, which is disputed, the Supreme Court of Nebraska holds (Mullaly vs. Dingman, 87 Northwestern Reporter 543), the burden is on the party pleading payment to prove the same by a preponderance of the evidence; and if he fails to do so, or if the evidence on that issue is evenly balanced, proof of payment is insufficient.

SUBSEQUENT CREDITORS AND TRANSFERS OF PROPERTY.

A subsequent creditor, the Supreme Court of Nebraska holds (Racek vs. First National Bank, 87 Northwestern Reporter 542), cannot successfully assail a fraudulent transfer of property without showing that he has been actually defrauded thereby. All transfers of property made in trust for the use of the person making the same are void as against existing and subsequent creditors of the transferror.

MOTIVE FOR GOING INTO BANKRUPTCY IMMATERIAL.

As a matter of course, says Mr. Justice Russell, at a special term of the Supreme Court of New York, in a case (Finnegan vs. Hall, 72 New York Supplement 347) where he holds that it made no difference that a party went into bankruptcy only for the purpose of evading the payment of a certain judgment—one for damages for breach of promise of marriage—every bankrupt applying for a discharge from his obligations does so for the purpose of evading their payment. Whether the motive be good or bad, Congress has within its legitimate power given to the bankrupt the right to pursue that motive into execution, and obtain his discharge.

J. L. ROSENBERGER.

TABLE OF CONTENTS.

Brick and Terra Cotta in Philadelphia 629
Molded Brick 630
Way Up In Maine...... 632
Brick Pavements in Alabama 633
Road Construction — Burnt Clay for Roads...... 634
Talks on Burning...... 636
A Busy Tennessee Plant...... 637
Cuba, New and Old...... 638
Brick Tell the Story of Ancient History 640
Buttonhole Talks 641
Pottery Leads 641
The Coronation Cup...... 641
Brick Industry in Buenos Ayres 643
A New Form of Brick...... 643
Ancient and Modern Persian Tiles 644
Syracuse Brickmakers Rushed with Orders...... 644
Transport in Clayworking... 645
By the Light of the Kiln Fire 648
Light and Heat 649
The Potteries of Zanesville, Ohio 650
With Milwaukee Builders.... 651
Modern Brick Machinery in Use in New Zealand...... 664
Clayworking Industries of Rouen, France 664
Legal Decisions of Interest to Business Men...... 670

CORRESPONDENCE:

The New York Brick Market 642
A Pioneer Tilemaker Lives to See the Fruits of His Good Work 653
Who Supplied the Roofing Tile? 653
A Device for Cutting Arch Brick 653
A New Texas Plant...... 662
Buffalo Brick and Building News—Busy Towns Nearby 662
Brickyard Tribulations — Questions for Burners...... 662
Detroit Doings in the Brick and Building Line...... 663
St. Louis Brick and Building News 665
Pottery News 666
The Clays and Clay Products of Maryland...... 666
All Busy at Fort Dodge, Ia.. 667
Pacific Coast News...... 676
Pittsburg and Western Pennsylvania Clay Industries 678

EDITORIAL:

Current Comment 668
Prosperity Long Drawn Out. 668
The Architect and the Brickmaker 668
A General Understanding.... 668
The Strike a Blessing in Disguise—Maybe 669
Trade Literature 669
Editorial Notes and Clippings 672

MISCELLANY:

An Unfailing Sign of Prosperity 631
Clay for Door Knobs...... 648
Well Pleased with the Investment 649
National Brotherhood of Potters Meets 652
A Successful Hoosier Enterprise 662
Coal Strike Affects Potters.. 667
Sewer Pipe for the Philippines 667
London American Exposition 667

Index to Advertisements on Front Inside Cover Page.

FOR SALE CHEAP—One Eureka Chandler & Taylor tile mill, dies from 4 to 12 inch; 10-horse power boiler and 8-horse power engine, in first-class running order. Address B. C. WICKERS,
6 1 cm Lebanon, Ind.

FOR SALE.

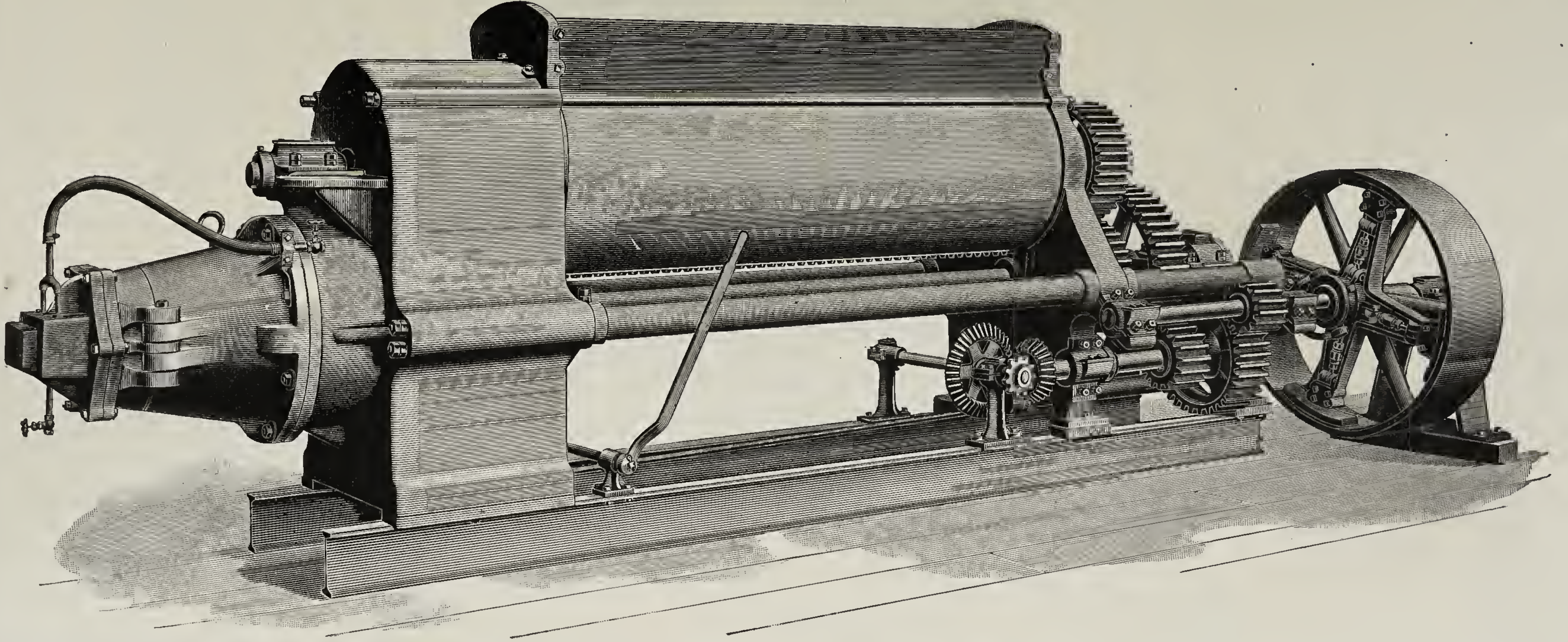
One No. 1 size E. M. Freese Union brick machine, with rotating automatic cutter, in excellent condition; only used part of six months. Having changed to soft mud process, reason for selling. Address
H. P. BRANSTETTER,
6 1 c P. O. Box 1153, Galion, O.

WANTED—Situation by an up-to-date German ceramic engineer and chemist. Has had first-class experience, especially in manufacture of fire and face brick, soft mud and dry process. Is perfect constructor of kilns of every shape, making a specialty of continuous and gas kilns and entire plants. Address GEORGE,
6 1 75p Care Clay-Worker.

WANTED—Situation as foreman or superintendent by thoroughly practical brickmaker. Familiar with the latest machinery and dryers and can handle kiln to perfection. Could build plant if necessary and operate same. Can handle green or experienced labor to advantage. Pressed brick or stiff mud plant preferred. Wages to be not less than $125 per month or $75 per month and percentage on quality of product. Address H.,
6 1 c Care Clay-Worker.

THE HEAVY
BRICK MACHINERY

Is made by Raymond. ✠ It is not as Cheap as some others, but it lasts. ✠ It has Staying Qualities. ✠ You Avoid Expensive Break Downs, and Incidentally Break ups by using it. ✠ ✠ ✠ ✠ ✠



WE DON'T MAKE all the Brick Machinery sold in the U. S., but those who use it say it is the best. We have every reason to believe this is true because that is just what we try to make. We can attribute the unprecedented demand for our machinery to no other reason than the fact that it is strong and heavy and satisfies the trade. Users of our machinery are our friends because they get good value for their money.

The C. W. Raymond Co.
DAYTON, OHIO, U. S. A.

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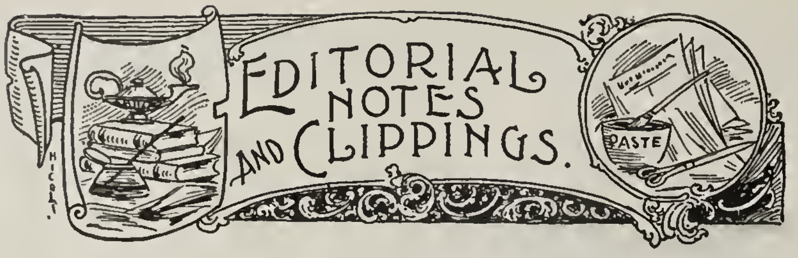


EDITORIAL NOTES AND CLIPPINGS.

Pell City, Ala., wants a brick plant.

Mr. Seward will start a new brickyard at Mason City, Ia.

Knepper & Son have established a brickyard at Smithland, Iowa.

Joyce Bros. & Phillips are erecting a new brick plant at Fetterman, Va.

A new brickyard will be started at Hiffing, Minn., by Herman Antonello.

Hanson & Barzen will start a summer brickyard at Thief River Falls, Minn.

Daniel Williams and C. Botts contemplate establishing a brick plant at Brenham, Tex.

Robinson Bros., Akron, O., have purchased the plant of the Malvern (Ohio) Brick Company.

Budlong & Gates, of Toledo, Ia., will establish a brick factor at Traer, that State, in a short time.

Fitzgerald, Speer & Co., of Pen Argyl., Pa., have leased a tract of land on which they will open a brickyard.

C. Driscoll has sold his brick plant at New Windsor, Col., to R. and J. S. Ray, who will begin operations at once.

John McCowen has discovered a fine deposit of clay on his farm at Concordia, Kan., which he expects to develop.

The Kiesel Brick Works, at Rochester, N. H., have been sold to a company of which Wm. E. Turner will be manager.

A. F. Graham Brick Company has been organized at Lumberton, Miss., by A. F. Graham, A. H. Hinton and others.

J. D. Fowler Jacob Schlarp and others have incorporated a company at Salem, O., to be known as the Salem Fire Clay Co.

The Mascoutah (Ill.) Brick Co. has been incorporated by George Facht and others to manufacture brick and other clay products.

The Athens (Tex.) Fire Brick Co. has been incorporated by D. A. Raynor, F. B. Jones and V. W. Jones. The capital stock is $50,000.

The McHenry Brick Company's plant, at McHenry, Miss., was badly damaged by fire June 3. The burned portion will be rebuilt at once.

J. L. Morton has purchased the old brickyard at Gunnison, Col., and will equip same with modern machinery, preparatory to operating it.

William Staley and J. C. Cronister have overhauled the latter's old brick plant at Athens, Ill., and will operate the same this summer.

M. M. Sherwood, North East, Pa., advises us that his company is in the market for a dry press brick machine and a dry pan or pulverizer.

The Oakland (Neb.) Brick Company has been incorporated, with $25,000 capital stock, by Andrew Anderson, John Moseman and A. C. Holmquest.

The Clearfield Clay-Working Company will build a new plant, to be known as Works No. 2, in Weaverhurst, a new addition to Clearfield, Pa.

The Laurel (Miss.) Brick and Tile Company report that they now have their new National dryer in operation and are very much pleased with the results.

The William A. Trader Red Brick Co. have purchased the brick plant near Salisbury, Md., owned and operated by Mr. Stephen A. Murrell. The plant has a capacity of 40,000 bricks per day, and is thoroughly equipped to turn out a superior quality of bricks. There are 16½ acres of clay land surrounding the plant.

The Wheeland Brick Co. are putting in a lot of new machinery at their plant at Mountain View, Cal., in order to meet the increased demand for their brick.

The Lawton Press Brick and Tile Company has been incorporated, at Lawton, O. T., by S. Strauss, G. F. Silvers, S. A. Strauss, O. P. Butler and W. C. Stevens.

The Montello Brick Co., at Reading, Pa., has booked an order from the government for 109,000 paving brick to be used in paving the navy yard at League Island, Pa.

A charter has been issued to the Manchester (Pa.) Shale Brick Company. W. E. Brady, D. W. and R. G. Cox and others are interested. The capital stock is $20,000.

The plant of the Mitchell Clay Manufacturing Company, at Cheltenham, near St. Louis, Mo., was burned to the ground May 23. The loss was estimated at $45,000.

James R. Gass has purchased S. W. Sparlin's interest in the brickyard at Barron, Wis. Mr. Gass has also bought a half interest in J. P. Kohl's yard at Weyerhauser, Wis.

A new incorporation at Denver, Col., is the Summit Pressed Brick and Tile Co., which is capitalized at $25,000. Those interested are John Galber, Ben V. Ritter and N. Potter.

Lock Haven, Pa., is to have a new dry press and paving brick plant of 20,000 daily capacity. It will be operated under the firm name of the Lock Haven Paving and Building Brick Company.

The Hedges Brick Co. has been incorporated to manufacture brick at Cornwall-on-Hudson, N. Y., by Aaron P. and Charles A. Hedges, of Cornwall-on-Hudson, and George B. Hedges, of Manhattan.

Articles of incorporation have been filed by the Sachs Brick and Tile Co., of Jonesboro, Ark. L. Sachs is president, and L. Sachs, W. H. H. Morelock, F. J. Schmuck, B. L. Harrison and J. F. Gautney, directors.

N. Belanger, the well-known brick manufacturer of Salisbury Point, Md., died suddenly at his home, May 25. Mr. Belanger was sixty-two years old and had been engaged in the brick business many years.

David Swank is at the head of a company which has been formed at Anadarko, Okla. Ter., for the manufacture of brick. Twenty acres of land have been leased and a plant will be erected thereon in a very short time.

A. C. Griffing, of Providence, R. I., has purchased the plant of the Sag Harbor (N. Y.) Brick Company. He is a practical brickmaker and will equip the plant with modern machinery and at once begin the manufacture of brick.

The Woonsocket Brick Mfg. Co. is the name of a new firm organized to manufacture brick at Woonsockket, R. I. They have started in a small way, but if the venture proves successful, the capacity of the plant will be increased.

John Sell has discovered a rich deposit of clay on his farm at Roxbury, Pa., and is putting in a brick plant to develop same. The plant will be equipped with machinery from the shops of the Henry Martin Brick Machine Manufacturing Company.

The Elma Brick Company, of Elma, Wash., has added a department for the manufacture of tile. Although in operation less than a year, this company has built up a splendid trade and now has orders ahead for all the brick it can make for six months.

The New Jersey Terra Cotta Company, with office at 106 Fulton street, New York, and works at Perth Amboy and Matawan, N. J., write that they have recently made some additions to their plant at Perth Amboy, having erected a two-story brick building, which will be occupied as office, drawing-room, model-

[CONTINUED ON PAGE 574.]

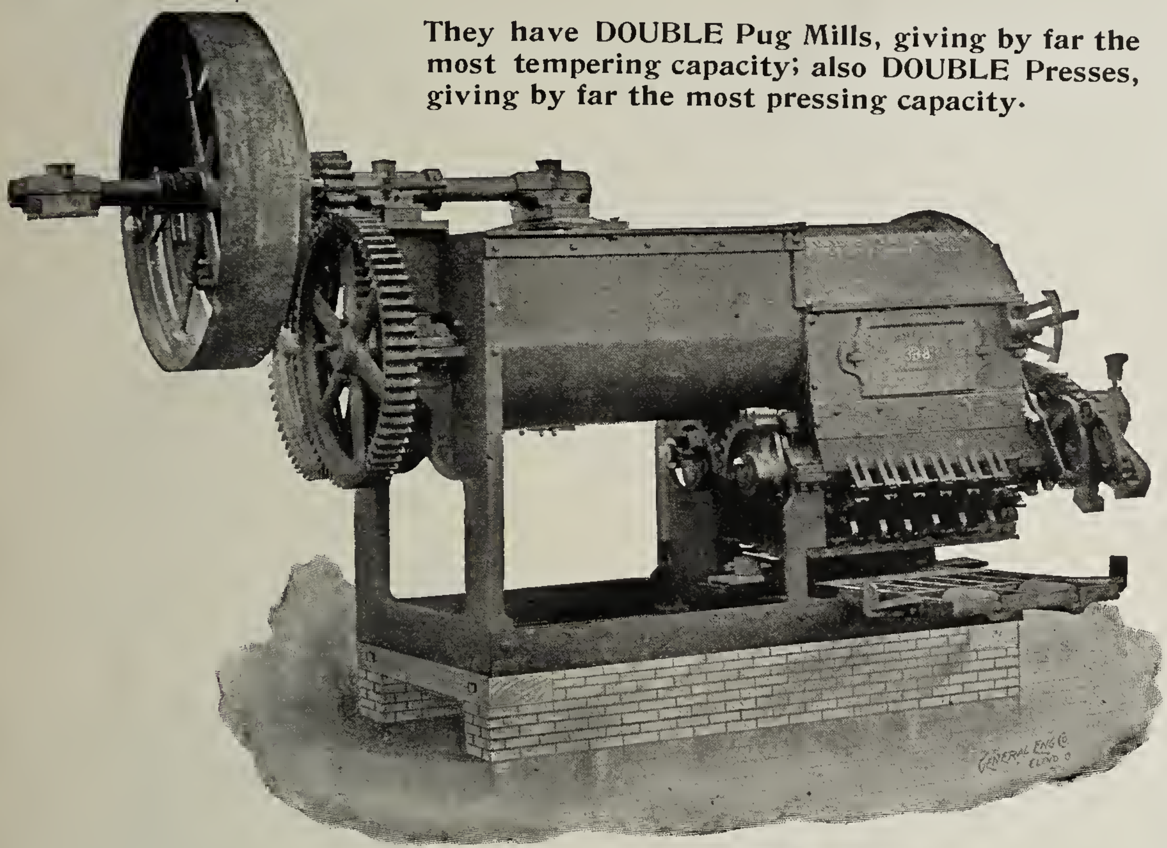
LIGHT HOUSES

Do not have to hire bands or fire cannon to call attention to their shining—**THEY JUST SHINE.**

Thus it is with the two "soft-mud" machines we manufacture (one horizontal and one upright). **Each** is at the head of its respective class, and the number of each in use, (note the figures) **tells the whole story.**

Over 125 "MONARCH" BRICK MACHINES in use.

They have DOUBLE Pug Mills, giving by far the most tempering capacity; also DOUBLE Presses, giving by far the most pressing capacity.



READ THIS.

A Fresh one Every Month.

◆ ◆ ◆

ASHTABULA, O., Oct. 5, 1901.
The Wellington Machine Co.,
Wellington, Ohio.

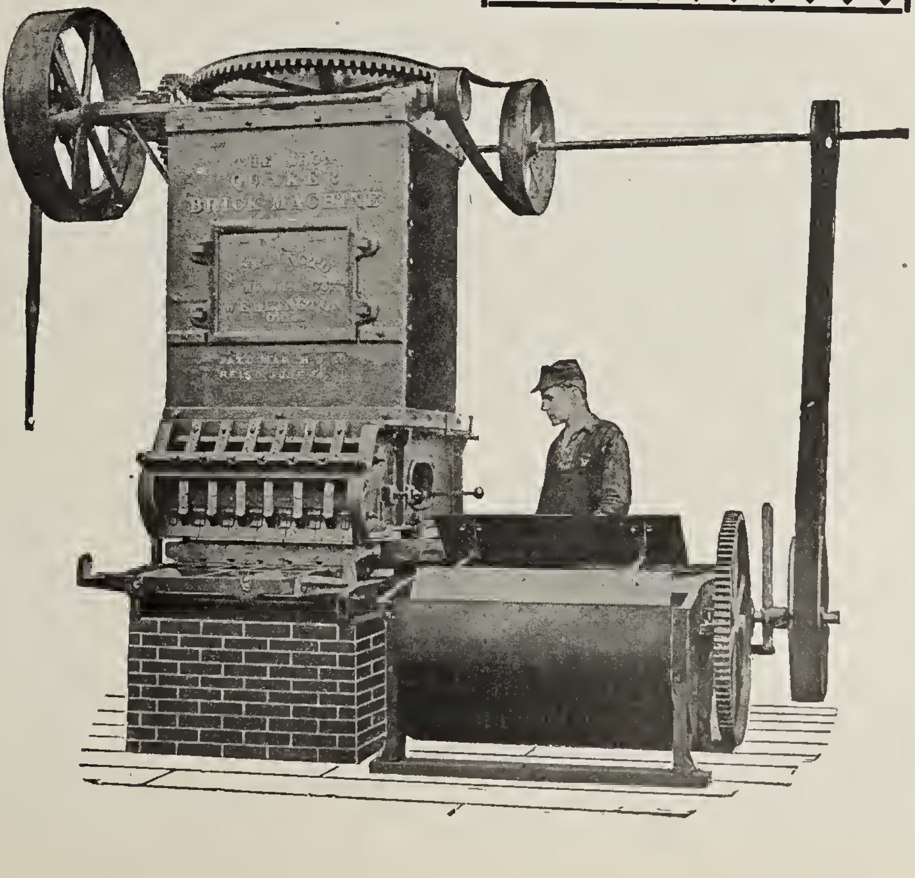
Gentlemen — This is the fourth year that I have used the ten-year old "Monarch" Machine, and it has made about 1,500,000 each year since I came into possession of it. The past year it has worked better than any of the four previous years, and has given very good service.

Yours very respectfully,
C. W. SIMONDS.

OVER 500 "QUAKERS" in use, both Horse and Steam Power, now made entirely of Iron and Steel.

OUR MOULD-SANDER is the BEST, SIMPLEST AND CHEAPEST.

WITH our ROLLER-BEARING BRICK BARROWS you can wheel 20 per cent. more load and do it as easily. Order one subject to approval.



ALL OTHER SUPPLIES. **Send for Catalogue.**

The Wellington Machine Co.,
WELLINGTON, OHIO.

EDITORIAL NOTES AND CLIPPINGS—Continued.

ing and plaster shop. They have also erected a brick power house, which has been equipped with new boiler and machinery. They are working full time, with plenty of orders on hand and prospects for a good season.

The new paving brick plant of the Peeble Paving Brick Company, of Portsmouth, O., was badly damaged by a storm which swept over that part of the State recently. The loss is quite heavy and will cause nearly a month's delay in the work of the company.

Orders have recently been booked by the American Blower Co. for waste heat dryers for the Darlington (Pa.) Brick and Mining Co.; Royal Sewer Pipe and Fire Brick Co., Akron, O.; Standard Brick and Tile Co., Clearfield, Pa., and Chambers Bros., Philadelphia.

J. C. Steele & Sons, manufacturers of the "New South" brickmaking machinery, Statesville, N. C., are shipping outfits of brick machinery to Charlotte, N. C.; Jacksonville, N. C.; Taylorsville, Miss.; Mooresville, N. C.; Athens, Ga., and Harrisville, W. Va.

The Weir pottery, Monmouth, Ill., employing 200 persons, was destroyed by fire last month, only a few sheds being saved. The factory had been in operation only two years and shipped its product all over the United States. Loss, $75,000; insurance, about $50,000.

J. F. McLanahan has purchased the Standard Brick and Tile Works, at Lacon, Ala., formerly owned by the late G. P. Orendorff. The plant has been idle since Mr. Orendorff's death, a year ago. Mr. McLanahan will put the plant in first-class order and begin operations in a short time.

The Southern California Brick Co. has been incorporated at Los Angeles, Cal., by M. Marks, Sarah Marks, Arthur H. Braly, Claudine Payne, O. V. Paye and Victor Paye, all of Los Angeles. The capital stock is $75,000, fully subscribed, the two women holding all but $310 worth of the shares.

The Benson (Texas) Press Brick Company's plant was completely destroyed by fire recently, entailing a loss of $25,000, on which there was $10,000 insurance. The office of the company is located at Bisbee, Tex. It is probable the plant will be rebuilt, as it was the only pressed brick plant in that immediate territory.

The Pressed Brick & Tile Co. is a new concern organized at La Riviere, Manitoba, by E. F. Hutchings and William Byrdon. As the name implies, they will make pressed brick, tiles of all sorts and later on sewer brick. The clay has been tested with very satisfactory results, and work on the plant will be commenced at once.

William Ammann and Martin Gahring have formed a partnership, under the firm name of Ammann & Co., and will establish a brick plant of 30,000 daily capacity at Decatur, Ill. Both gentlemen are practical brickmakers. The demand for brick in Decatur is good and there is no doubt as to the success of the venture.

The American Blower Company, of Detroit, has recently booked orders for "Waste Heat" dryer outfits for the Terre Haute (Ind.) Brick and Pipe Company, Peebles Paving Brick Company, Portsmouth, O., and the Model Brick Company, Mineral City, O. Also a large steam dryer for the Denver (Col.) Sewer Pipe and Clay Company.

Edward D. Keplinger, manager of the Metropolitan Brick Company and a prominent citizen of Canton, O., committed suicide May 16 by cutting his throat from ear to ear with a bread knife. He was sixty years of age, and had been ill for several months with locomotor ataxia. He had threatened to take his life, and his wife carefully hid his razor and revolver. In the morning he asked to shave, and his wife sat by him, ready to grasp the razor if he attempted to use it as a weapon. Immediately afterwards he went into the bathroom and, procuring the knife which he had secreted there, gashed his throat so terribly that the head was almost severed.

The plant of the Slidell (La.) Brick Company was entirely destroyed by fire early in the morning of June 1. The loss is placed at $25,000, almost wholly covered by insurance. The plant will at once be rebuilt. The brickyard of the Salmen Brick and Lumber Company, of Slidell, which was destroyed by fire five weeks ago, is being rebuilt as rapidly as possible.

C. & A. Potts & Co. report trade unusually good this season. The call for their all-iron horizontal stock brick machine, disintegrators and mold A orders has taxed their new plant to its limit. They have furnished a number of machines to brick manufacturers who have used their machines for years, in some instances making four or five machines these customers are using.

In common with nearly every one in that section, the brickyards in and about Bloomington, Ill., were all of them more or less damaged by the severe wind and rain storm that swept over Central Illinois recently. At the Rankins-Evans yard all the sheds were blown down and a yard full of green brick demolished. The brick and tile yard of Edgar M. Heafer also suffered heavy damages.

Charles Waldron, of Haverstraw, N. Y., has purchased of A. H. and Addie Newton, of Haverstraw, the patents for their brick molding machine and also the business of manufacturing and selling such machines, heretofore conducted and carried on by them, including the good-will thereof, together with all trade-marks, patterns, rights and property of every kind employed and used by them in connection with the business.

The Clinton Paving Brick Co., Clinton, Ind.. are sending out letters announcing a change of name for their company from the Clinton Paving and Building Brick Co., and explaining it is a change in name only, the capital and assets of the company remaining unchanged, the officers the same, that the business policy will not be changed, and that they are still turning out the same high-grade material with which the name "Clinton" has formerly been associated.

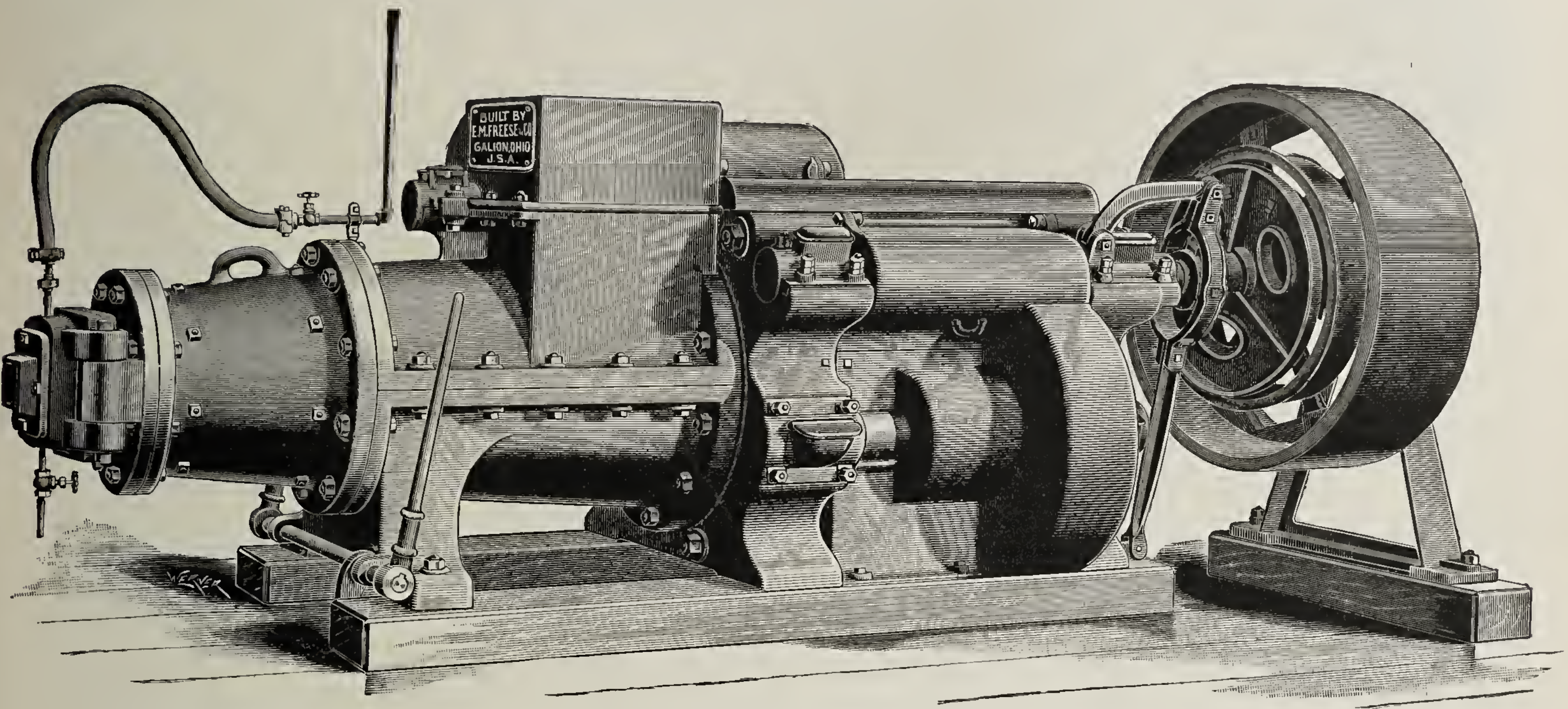
E. C. Zemp, secretary and treasurer of the Camden (S. C.) Press Brick Company, advises us that they have been making a number of improvements at their plant. He says: "We have installed a 70-horse power engine that will increase the capacity of the plant to 35,000 per day, and erected a 500,000-capacity kiln. We have one of the best yards in North or South Carolina and are making a brick that cannot be eclipsed for building purposes.

J. Schnehle, of Coatzacoalcos, Vera Cruz, Mexico, writes that he desires information relative to the manufacture of sand and cement brick. He wants quite a large quantity of brick, and there is no clay in that vicinity with which to make them. If the sand and cement brick are a success he will equip a plant to manufacture them. The brick for walling up boilers, etc., were shipped in and cost him $30 per thousand delivered. He used 24,000, but does not want to buy any more at that price if he can avoid it.

The Frost Manufacturing Company, Chicago, and Galesburg, Ill., report an immense trade as the summer season advances. Among recent sales are the following. Two 9-foot iron frame Frost dry pans, to the Palmer (Tex.) Press Brick Company; one 9-foot dry pan to the Ajax Brick and Tile Company, Colorado Springs, Col.; one 9-foot dry pan, to the McCormick Dry Press Company, Bossier City, La.; one 9-foot dry pan, to J. C. Carbaugh, Ft. Smith, Ark., and one 9-foot iron frame wet pan, to the Pioneer Fire Proof Covering Company, Ottawa, Ill.

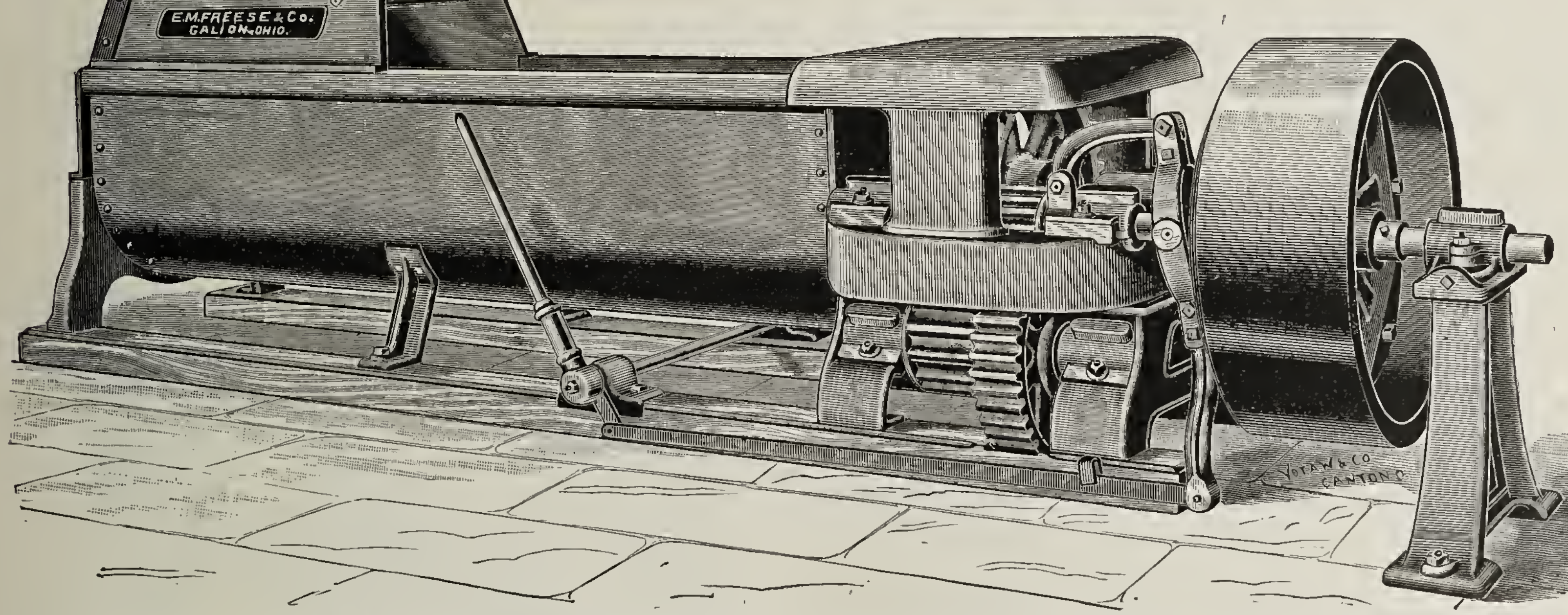
Advertising bears about the same relation to a business that steam does to an engine.

Our Mammoth Brick Machine



THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug=Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.
VOTAW & CO
CANTON O

THESE PUG=MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitted for making a fine quality of brick.

E. M. FREESE & CO., = = Galion, Ohio.

Written for The Clay-Worker.

PACIFIC COAST NEWS.

THE REACTION WHICH has been expected in the building trade situation here seems to be at hand. There are numerous reports afloat that contemplated buildings, both large and small, have been postponed indefinitely on account of the high prices and scarcity of building materials and labor. At the present time the brick and clay trades are still rushed to the utmost, and it seems certain that the larger plants will continue to be busy for many weeks to come on contracts already given out. It is claimed, however, that new contracts are by no means so plentiful as in the earlier months of the year. A somewhat similar situation prevails in most of the Coast and Rocky Mountain States. In Salt Lake City the scarcity of brick and other building materials has become so great that architects and contractors are inclined to withdraw from the struggle for new business. Between the combination of manufacturers on one hand and combination of labor on the other, there is, as one architect expressed it, little chance for the contractor in Utah. In Portland, Ore., the building situation is even worse. In that city building has been practically stopped for several weeks on account of various strikes effecting the building trades.

The heavy rains of the middle of May did much injury to the brick trade in the Pacific Northwest. The brick manufacturers of Portland are now about a month behind last season. The seven large yards of Portland have on their books orders aggregating four million brick. These yards have a total capacity of 175,000 brick per day under favorable weather conditions. So far this season they have been working only to about half their capacity. It is estimated that the demand on these yards during the present year will be between 15,000,000 and 20,000,000 brick.

The Quartermaster's Department in San Francisco has received orders to prepare specifications for a new brick prison building on Alcatraz Island, in San Francisco Bay. New buildings are also to be constructed at the Presidio reservation, in San Francisco. Beside this the government is building a fine brick hospital at Fort Mason, in this city.

What, it is believed, will prove to be a valuable discovery of red ochre has been located on the Herman ranch, Sonoma county, Cal. Arrangements are being made for developing the mine.

A new industry is to be started in Alameda, Cal., to manufacture brick from concrete after a patent which has been secured by Charles Powell, the moving spirit in the new enterprise. Mr. Powell has been manufacturing the brick for some time past and they have been highly spoken of by builders. The bricks are finished with a glazed surface on one side, and can be made of any color desired. It is claimed that the expense of manufacturing is about one-half that of ordinary brick. Articles of incorporation have been filed, the name of the concern being the Powell Patent Artificial Stone Brick Co. The capital stock is $300,000. The directors are C. G. Powell, C. F. Fischer, R. B. Mott, A. P. Holland S. H. Williams. As soon as the necessary arrangements can be made the present factory will be enlarged.

A brickyard is one of the possibilities of the near future for Washtucna, Wash. H. Garrity, an experienced brickmaker, is of the opinion that the material in that vicinity will make fine brick. The matter is still in embryo, but if the local demand continues promising an effort will be made to organize a company and carry the enterprise through.

George H. Burrows and A. F. Bickford, of Burton, have started a brickyard at Chealis, Wash. They have secured the contract to furnish brick for the new Geissler building, and anticipate a good local demand for brick. Of this they expect to get their share. The plant will have a capacity of 5,000 daily.

W. H. McElroy has commenced operations on a new kiln of brick at Merced, Cal., which will contain 500,000. The building now going on aud in prospect there makes a good demand for brick.

The Improved Brick Co., at Salt Lake City, Utah, has so far this season burned 2,000,000 brick, and is now burning at the rate of 60,000 per day, with the intention of soon burning 75,000 brick daily. A good supply of brick is now reported in the market. This company is making a specialty of speckled brick for fronts.

The pressed brick kilns at Benson, Ariz., owned by the Arizona Clay Manufacturing Co., were entirely destroyed by fire on the morning of May 15. The estimated loss is $25,000, with an insurance of $10,000. This was the only pressed brick plant in the entire Territory, and was operated by the company above named, which was formed in May of last year. The company had entered an undeveloped field and intended to supply Arizona with all of the pressed brick needed for building purposes. It is not known as yet whether the company will rebuild or not. The origin of the fire is not known.

Another brickmaking plant will probably be put in operation this season at Brennan Station, Whatcomb county, Wash. A fine body of superior clay, conveniently located, offers good opportunities for the manufacture of brick of excellent quality at that plant. John La Pointe, of Nelson, B. C., will put in the plant. He has been in Fairhaven for several days perfecting arrangements to that end. Whatcom county has several extensive clay beds, all suitable for the manufacture of the finer products of that material.

The Tesla Brick Co., at Tesla, which is owned and operated by the Tesla coal capitalists, on May 25 shipped its first carload of 12,000 brick from the kiln to Stockton, Cal., to be used in the new glass works which that company is erecting just south of Stockton. The brick were from a kiln of 40,000, all of which will be shipped to that city at once. They were pronounced to be of excellent quality. Machinery is now on the way to the brickyard from the Raymond Brick Co., of Dayton, O., which will give the company a capacity of 1,000,000 brick per day.

The first kiln of brick of the season at Boise, Idaho, was opened at the Foster yard a few weeks ago. The lot consists of 100,000. From now on the market there will be well supplied, as the burning of other kilns is about completed.

San Francisco, Cal., June 5. SUNSET.

HIS INQUIRY.

Teller—"We would like to have you identified, sir."
McGinnis—"Be this a 'morgue'?" —Judge.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than $1.00.

MACHINERY WANTED.

Small or medium size sewer pipe press wanted for the far West. BOX 100,
6 1 cm Care Clay-Worker.

RAILS FOR SALE.

New 8, 12, 16 and 40-pound tee rails; immediate shipment.
J. B. JONES & CO., Iron Dealers,
6 1 cm Allegheny, Pa.

FOR SALE—A Chicago typewriter, a $50 machine, just as good as new, for $20. A good machine and a big bargain.
Address KEYBOARD,
Care Clay-Worker.

FOR SALE—One hundred tons 12, 16 and 20-pound new rail, for immediate delivery, at a low price.
ATLAS CAR & MFG. CO.,
6 1 d Cleveland, O.

LEASE OR FOR SALE.

Good location for making fire, common or paving brick. Water power near by can operate electric lighting plant for city of 15,000 at same time. Railroad runs over property. Big demand for all kinds of brick. For particulars, address
ALBERT IANKES,
6 1 dm Aguascatientes, Mexico.

WANTED—A superintendent who can run and manage soft mud brickyard, making 35,000 brick a day. The yard is equipped with the Mock system of rack drying and burn with coal in common clamps. A competent, reliable man can secure a permanent situation. When writing state where last employed and give references.
WINCHESTER BRICK CO.,
6 1 d Winchester, Ind.

The STARKEY DOWN DRAFT DRYER.

[Pat. January 30, 1894. Other patents pending.]

The many users of this system claim there is no other steam dryer. It has no rival for economy, and **does dry brick in the center** as rapidly as on the surface. If you want a Dryer, write for circular and convince yourself that you have been misled on these points. Address

JOHN STARKEY, Minerva, Ohio.

Also Make a Special
CLAY PLOW.

Write us Now for
full particulars.

Do you want to save MONEY?
If so, use the

"Quincy" Improved Dry Clay Gatherer,

The best and most economical method of gathering Clay for Brick and Tile Manufacturers.

Will save at least 50 per cent. over any other method.

Manufactured by

Central Iron Works,
QUINCY, ILL.

The Best Brick Drier

Is the Drier which dries the Brick safely, quickly and thoroughly in the shortest time and with the least cost and labor. This the **Phillip's Fan Dryer** will do. The first cost of construction is moderate and cost of operation is much less than old style dryers. Soft Mud, Stiff Clay or Dry Press Brick dried speedily and economically. The **PHILIP'S DRYER** is no experiment but is now in successful operation in a number of plants in the U. S. and Canada. **Phillip's Inside Fan Heater and Dryer,** proves to also be a "Condenser."

Relief from back pressure guaranteed.

Exhaust steam alone ample for heat supply.

If you are interested in the drying problem don't fail to write for circulars.

S. G. PHILLIPS, Agent and Patentee, **126 Church St. Rahway, N. J.**

WANTED—A good second-hand dry press brick machine; a three-mold Andrus preferred, but any good press will answer if in good condition. Address M. X. R.,
6 1 ? Care Clay-Worker.

FOR SALE—At a bargain, one Brewer No. 7 brick machine, in thoroughly good condition. Prompt shipment.
FLETCHER & DYAS BRICK CO.,
6 1 d Nashville, Tenn.

FOR SALE—One second-hand 4-mold brick press of standard make in first-class condition.
SIMPSON ENGINEERING CO.,
6 1 d 1763 Monadnock Bldg., Chicago, Ill.

WANTED—Experienced sewer pipe man, with $5,000 or $10,000 capital, to take interest in and charge of a sewer pipe plant.
Address C. A. B.,
6 1 cm Care Clay-Worker.

WANTED—Man with capital to invest in clay and coal land and to engage in clay manufacturing business, such as they may choose. Location, eastern Ohio. Address
6 1 d E. B. B., care Clay-Worker.

WANTED—A first-class man to install dry process brick machinery. Must understand the working of shale and clay.
ROSS-KELLER BRICK MACHINE CO.,
6 1 d Fullerton Bldg., St. Louis, Mo.

WANTED—By practical superintendent, a permanent position. Thoroughly understands the brick business. Will accept position only with A1 company. Location must be in South. Address
6 1 c PRACTICAL, care Clay-Worker.

WANTED—An up-to-date superintendent or foreman for a machine shop making a specialty of dry press brick machinery. A man who can keep things moving and who knows how to run a shop economically. Address BRICK MACHINERY,
6 1 d Care Clay-Worker.

FOR SALE—Tile factory, consisting of main building, 36 by 125 feet, 18 feet high; two down-draft kilns, No. 6 Brewer machine, 36-horse power engine, 42-horse power boiler, bottom dump cars and a lot of other machinery. The above must be sold regardless of cost. Address
6 1 d F. A. COOK, Clarinda, Ia.

WANTED—Position as superintendent to take charge of and manage brick plant. Can handle any kind of labor and machinery; dry press, stiff mud or otherwise. Can burn in up or down-draft kilns; face brick, ornamental brick or paving brick. Give the best of references and will give trial of thirty, sixty or ninety days to satisfy all parties. Good handler of men and strictly sober and reliable. Address
6 1 c "BOX 687," care Clay-Worker.

ARE YOU LOOKING FOR A BARGAIN?

One "Monarch" Brick Machine (horizontal).
One Iron Horse Power Brick Machine.
One "Martin" Steam Power Machine with Pug Mill.
One "Anderson" Soft Mud Brick Machine.
One Brewer Crusher.
One Iron Pug Mill.
Two 80-Horse Power Boilers (good condition).
One 40-Horse Power Boiler (good condition).
One "Anderson" Disintegrator.
One U. S. Dry Press (good as new).
THE HORTON MFG. CO.,
6 1 d Painesville, O.

FOR SALE.

Paving and building brick site at Bucyrus, O., consisting of twelve acres of land, with buildings and good railroad facilities.
One 100-h.-p. Mansfield Rocker Valve Engine.
One 80-h.-p. Boiler, full-flush front.
One Steam Pump.
One 9-foot Dry Pan.
One Elevator.
Eighty Single-deck Brick Cars.
Five tons 12-ft. "T" Rails.
Eleven Down-draft Kilns, with good bands.
Floor Brick, Fire Brick, etc.
Will be sold as a whole or in part.
Inquire of L. P. BATTEFIELD,
Room No. 7 Fair Building,
5 2 d Indianapolis, Ind.

WRITTEN FOR THE CLAY-WORKER.

PITTSBURG AND WESTERN PENNSYLVANIA CLAY INDUSTRIES.

A CEMENT AND TILE PLANT is seeking a location at Appollo, Pa., in the Allegheny Valley. The company propose to expend $200,000 on the new plant, which will give employment to 300 men.

The new plant of the Phoenix Clay Pot Company at Parnassus, Pa., has just been completed, and the plant has been put into operation. C. A. Simms & Company, of Johnstown, Pa., are preparing to install three large double kilns for the Harbison-Walker Company at the Mt. Union, Pa. plant. A number of additions have already been made to this and the other plants of the Harbison-Walker Company.

The Bunkie Brick Works, of Bunkie, Pa., has been incorporated with a capital of $12,000, and will engage in the manufacture of building and paving brick. The directors of the company are W. D. Hass, J. T. Johnston, E. H. Taliaferro and U. F. Neck.

The Pennsylvania Silica Brick Manufacturing Co., of Pittsburg, has broken ground for a new plant at Gaynor Station on the Ligonier Valley road. The plant will be put into operation within a few months, and will be devoted to the manufacture of silica brick.

The Beaver Valley Pot Company, of Beaver Falls, Pa., has been incorporated with a capital of $25,000, by H. C. Fry, Samuel Young and William Ruth, all of Rochester, Pa. The concern is an adjunct of the Rochester Glass Company.

The Pennsylvania Clay Manufacturing Company, whose plant is located at Logan's Ferry, Pa., near New Kensington, has just closed a contract for its entire product for nearly a year. For six months it is to deliver to Pittsburg parties 400,000 brick monthly, and for six months following 200,000 per month. This company is managed by D. B. Kahle, of New Kensington, Pa.

Messrs. F. B. & J. H. McFeeley, of Pittsburg, who have recently placed in operation their new silica brick plant near Latrobe, Pa., have just placed contracts for the enlargement of the plant. Another eight-foot grinding pan is to be installed, the contract for this work having been awarded to Phillips & McLaren, of Pittsburg. A number of new kilns will also be added to the plant. These additions are expected to be completed by July 1, and will give the company a daily output of about 15,000 silica brick and shapes.

The Pittsburg Concrete Company has been incorporated with a capital of $10,000. The directors are J. W. Hallam of Washington, Pa., Samuel Garrison of Pittsburg, C. S. Knaur, A. S. Patterson and J. B. Pitcairn of Allegheny, Pa.

The Huchinson-Barbes Brick Company, of Fairmount, W. Va. has commenced the manufacture of brick at their new plant, and will have a daily capacity of 25,000.

The town of Derry, Pa., on the Pennsylvania road forty miles east of Pittsburg, is to secure a modern pottery plant, the negotiations now being in progress, and the articles for the locating of the plant have been signed.

The Delaware Clay Manufacturing Company, of Delaware, Ohio, has broken ground for a new five story addition to its plant. Additional power equipment is to be added, and new machinery will be installed for the manufacture of drain tile and fireproofing blocks.

The borough of Verona, Pa., has just awarded contracts for paving valued at $50,000. Lee & Riley of Pittsburg, were the successful bidders.

The Clinton China Company, of Newell, W. Va., has just been formed by Pittsburg parties. The principal promoters are Cavanaugh & Company, the well-known Pittsburg brokers. Thomas Clinton of East Liverpool, Ohio, is also interested in the new company.

The Douglass-Whisler Fire Brick Company, which recently broke ground at Beaver Falls, Pa., for a new fire brick plant, is making rapid progress, and will have a fifteen kiln plant in operation within two months with a daily capacity of 50,000 fire brick. Beaver Falls is becoming an important clay manufacturing center in western Pennsylvania, there already being a number of brickmaking and pottery concerns in operation at that place. The Mould Brick Company and Wilcox & Bolton Brick Company are also installing plants at Beaver Falls.

The brick manufacturers and railroad agents of Pittsburg have figured that the roads centering in Pittsburg will be required to carry not less than 10,000,000 fire brick during the summer. The demand for all kinds of brick and tile is unusually heavy in Pittsburg and at the same time the Pittsburg manufacturers are shipping large consignments to other sections.

The city of Pittsburg has awarded contracts for repaving twelve streets with asphalt to the Empire Asphalt Company of Pittsburg. Other big contracts are to be awarded soon.

At a meeting of the directors of the American Porcelain Company held last month at the offices of the company at New Brighton, Pa., it was decided to increase the capital of the company from $50,000 to $100,000. The plant will be enlarged and a large amount of machinery installed.

The Entress Brick Company of Pittsburg, has been chartered under the laws of New Jersey with a nominal capital of $15,000, which will be increased shortly. The promoters of the company are A. N. Entress, Joseph Entress and Francis Entress, of Pittsburg.

Among the new Pittsburg clay manufacturing concerns formed during the past month was the Speer Clay Manufacturing Company, which has been chartered with a capital of $100,000, and will erect a plant near Pittsburg. The directors of the company are J. R. Speer, J. M. Speer, two well-known business men and Clyde Brooks, of Ingram, Pa.

The Pennsylvania Fire Proofing Company, of St. Marys, Pa., has been incorporated under the laws of Pennsylvania, with a capital of $150,000.

Butler, Pa., has a sensation over allegations of bribery in connection with the awarding of brick paving contracts.

The Harbison & Walker Company, of Pittsburg, has started work on its new plant, No. 2, at Olive Hill, Ky. The plant will employ 400 men.

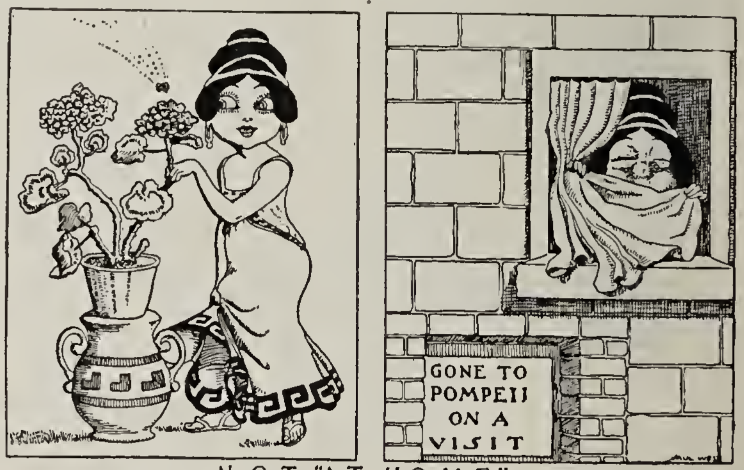
The Nelsonville Brick Company is erecting a new plant for the manufacture of high grade fire brick. The plant is located at Nelsonville, Ohio, and will be ready for operation early in August.

The Pittsburg Dryer Company has been incorporated with a capital of $25,000, and will manufacture clayworking machinery and other articles.

The Columbus, Ohio, Clay Manufacturing Company has been incorporated under the laws of Delaware, with a capital of $50,000. Several Pittsburg parties are interested in the new company.

The American Clay Company has purchased 200 acres of clay land at Northeast, Md., and will erect a large brick plant. The company will manufacture fire brick and building brick.

GILBERT.


GONE TO POMPEII ON A VISIT

NOT "AT HOME"

A SWEET MAID OF OLD HERCULANEUM
PICKED A BEE THAT WAS ON A GERANIUM
AND FOR MORE THAN A WEEK
'TWERE VAIN HER TO SEEK
IN THE SMART SET OF OLD HERCULANEUM!

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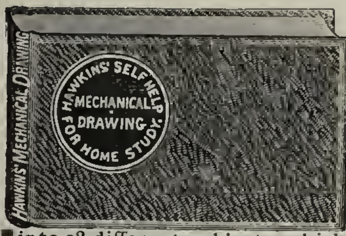

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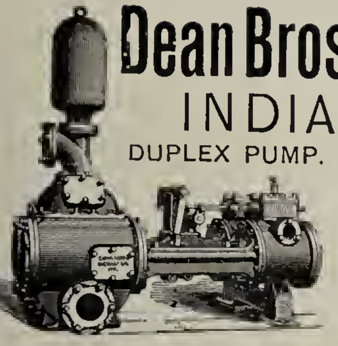

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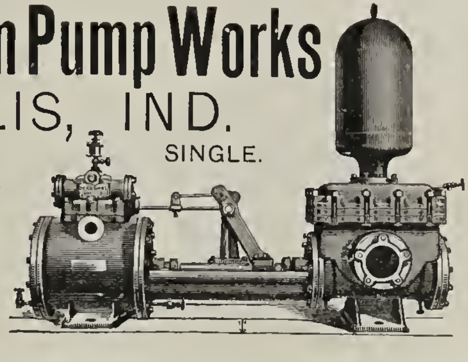

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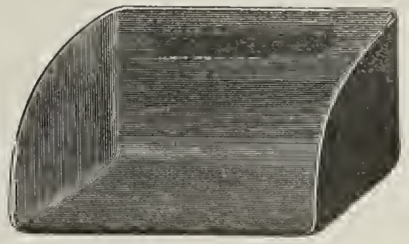

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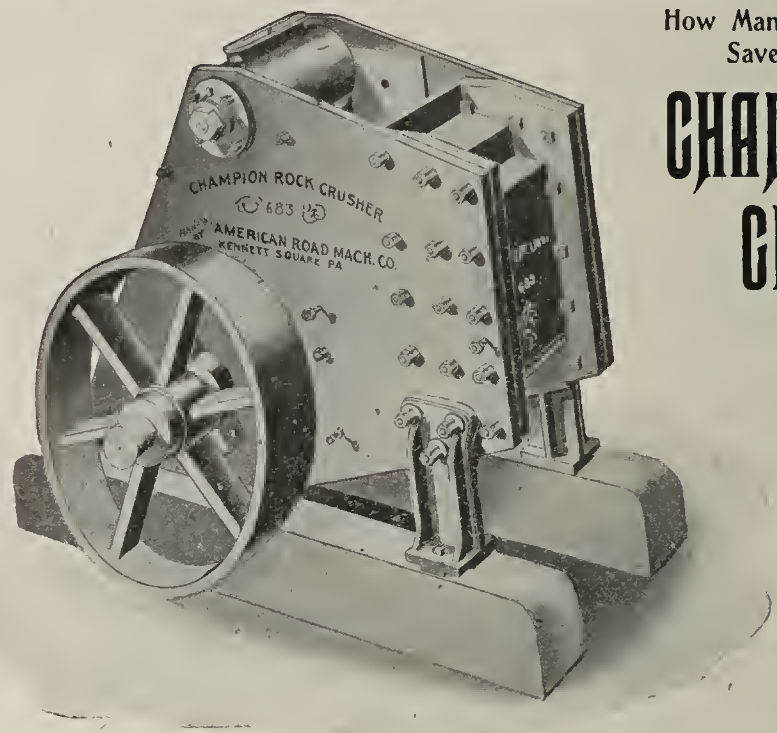

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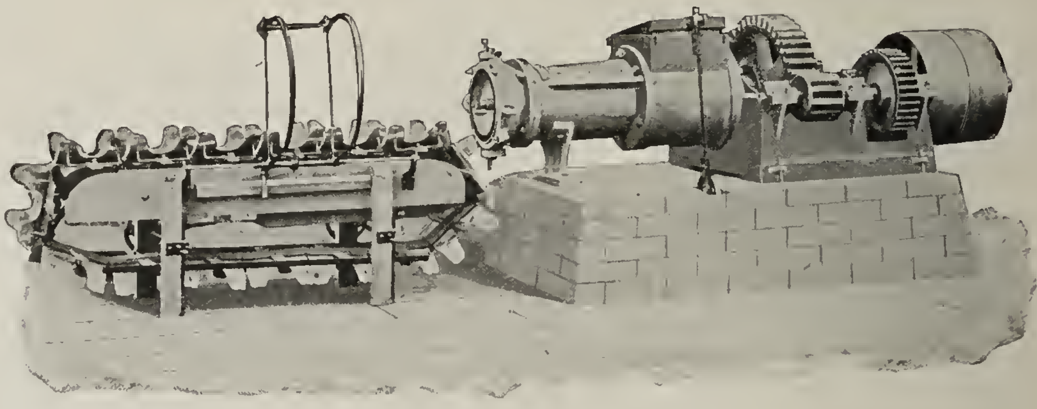

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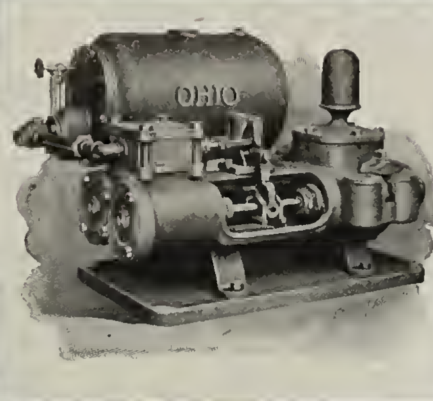

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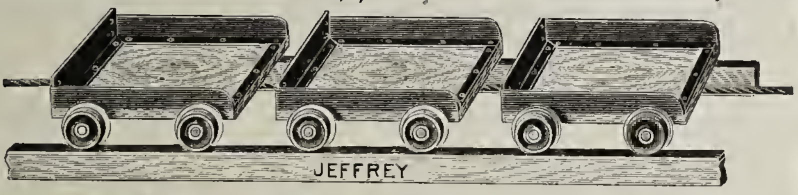

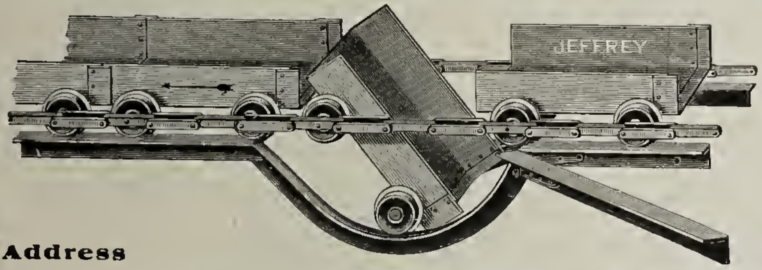

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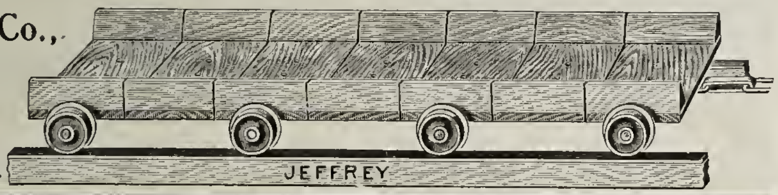

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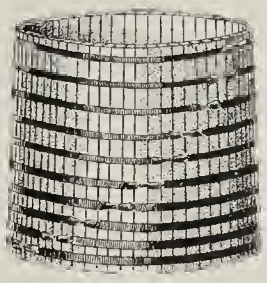

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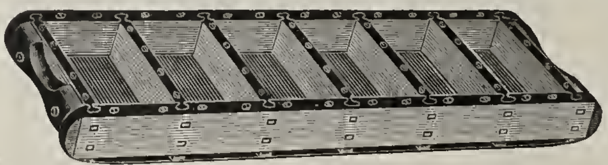

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Haigh's New System of Continuous Kiln.

Arranged to suit all locations. These kilns can be seen burning Roofing Tile, Dry Pressed, Facing, Paving and Common Building Brick.

Points of Superiority—Cheapness in Construction. Easy to Understand and Operate. Perfectly free from any Nuisance. Will save more than one-half of the fuel used on others Kilns. Specially adapted for Utilizing Waste Heat for Drying Purposes, and which is being done most successfully.

A more Successful Kiln for Burning Paving Brick will be hard to find than the one at the Works of the Eastern Paving Brick Company, Catskill, N. Y. For Further Particulars Address,

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MORRISON'S LATEST IMPROVED KILN
For Burning Building Brick.

It has no rival. Some of the largest brick plants in the country use it exclusively. Cost of construction within reach of every brickmaker. Price for license to use so reasonable that no one can object. Write us for descriptive pamphlet, prices, etc., address

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Clayworkers:—

Do not experiment, but take the old reliable, that has long since established itself as doing honest work. It will burn anything from vitrified pavers, to the finest pottery ware, uniformly, and economically. More than 1,200 in use, in three countries.

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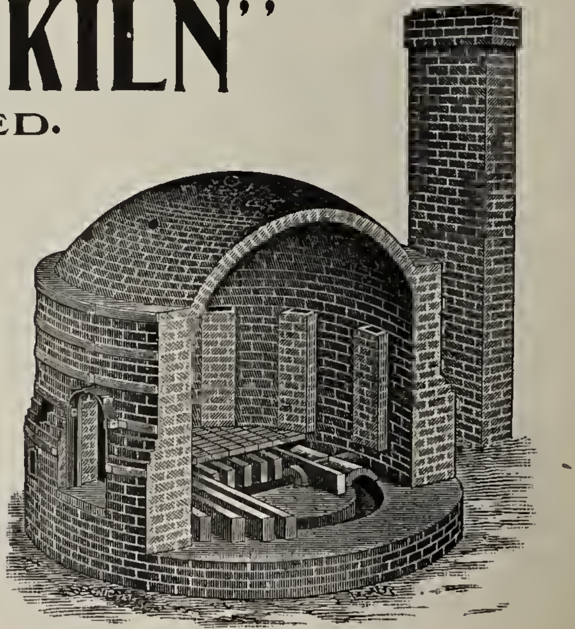

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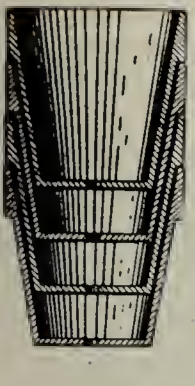

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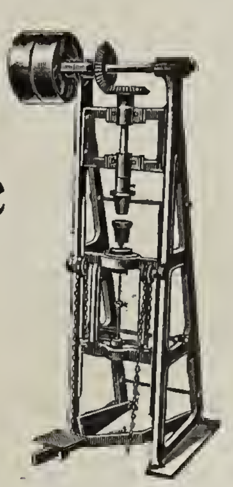

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STANDARD DRY and WET PANS.

For Brick, Terra Cotta, Sand, Cement, Etc.

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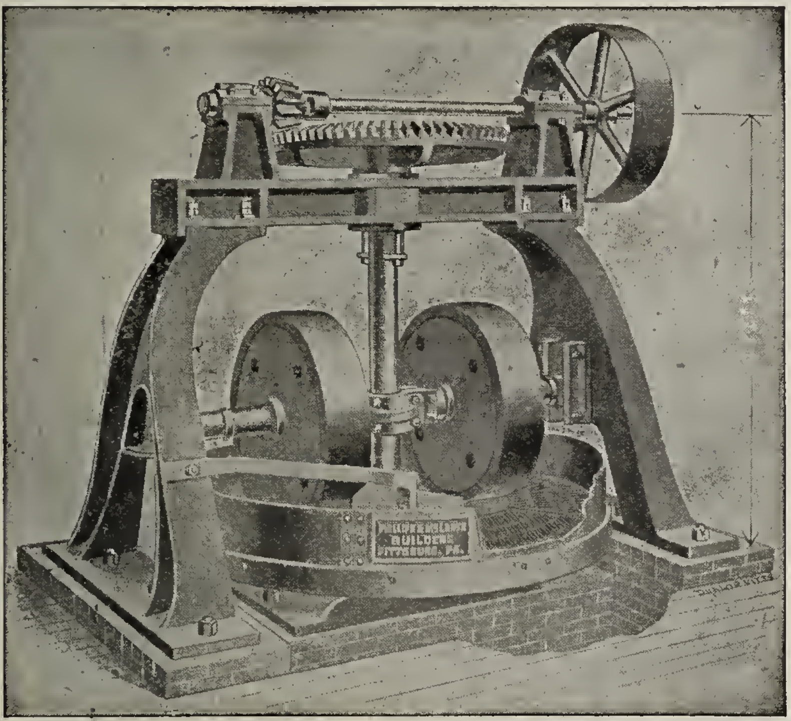

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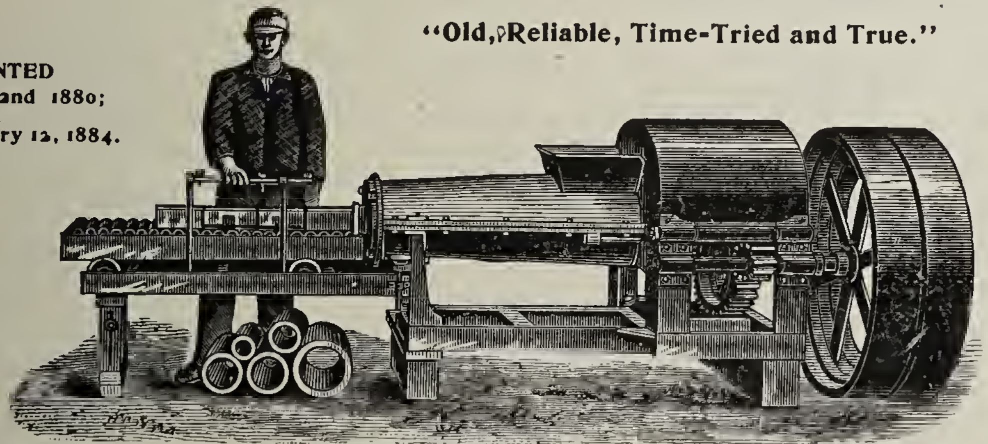

P. H. Kells, the Original Inventor of the Auger Machine

THIS MACHINE works clay direct from the bank for both brick and tile. Bricks are taken direct from the machine to the hacks and need no repressing for the finest fronts. It has but one set of gears and makes all kinds of brick and different sizes of tile by changing dies. For strength and durability we except none. We challenge the world to produce a combined machine that will do the same amount of work with the same amount of power. We manufacture Crushers, Trucks and Barrows. End-cut, side-cut paving brick and Board Delivery—make perfect edges and corners.

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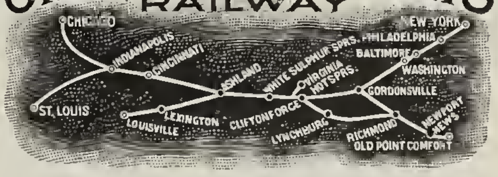

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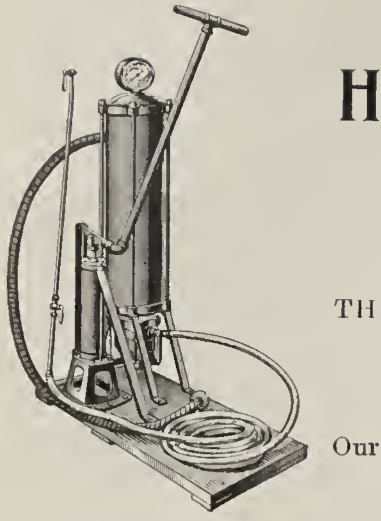

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Hook's "Best" Pneumatic Coating Machine.

SAVES TIME AND MONEY.	80 per cent of the labor saved. Whitens durably and quickly. Closes every crevice. Fills a long-felt want.

THE PURINGTON PAVING BRICK CO. SAY:

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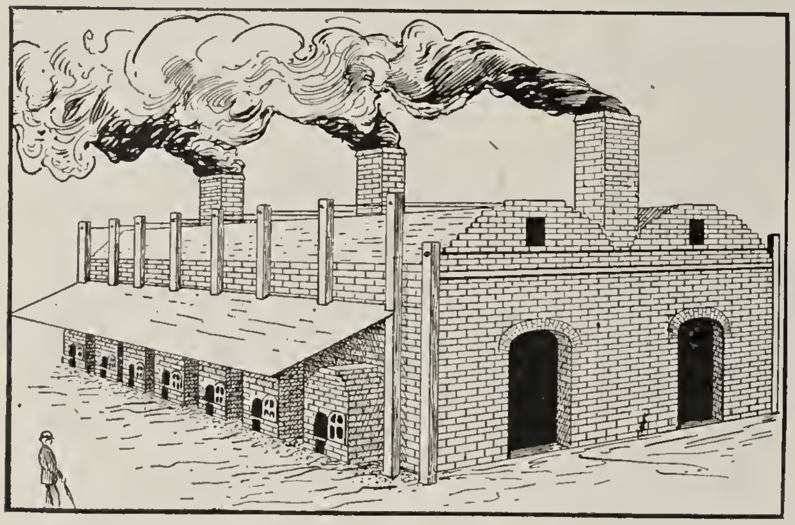

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The cost to construct these kilns is so low that they are in the reach of every brickmaker. They can be built either single or double, and are nothing more than good walls with arches. They have no bag walls, but have solid bottoms; have no flues below the ground, or any other work that is complicated or expensive. Are built to dry off with the updraft and burn with the down-draft, which is a saving of both fuel and labor, also time. Will burn all hard brick, and is under perfect control of the burner. Some of the largest manufacturers in the south have these kilns in use. They can be constructed any size.

I have had many years' experience in building kilns and burning them. For full information and testimonials of parties who are using these kilns write to

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Changing open top kilns into down draft kilns a specialty.

The Bushong Down Draft Kiln.

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BURNS any kind of fuel.
USES less fuel than any other Kiln.
RESULTS are uniform.
NO damaged wares.
SAVES time and labor.

USED by some of the largest plants.
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IT'S success has been proven.
FULL control of drafts.
ONLY Kiln built that has Double Draft.
REDUCES burning time 24 to 48 hours.
MOST economical in construction.

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Dear Sir:—Answering yours of September the 27th, we have been using one of the Bushong Down Draft Kilns the past fifteen months and are well pleased with it. We get a larger percentage of No. 1 pavers with a little less fuel than any other kiln on the yard.

Yours truly,
THE BARR CLAY CO.,
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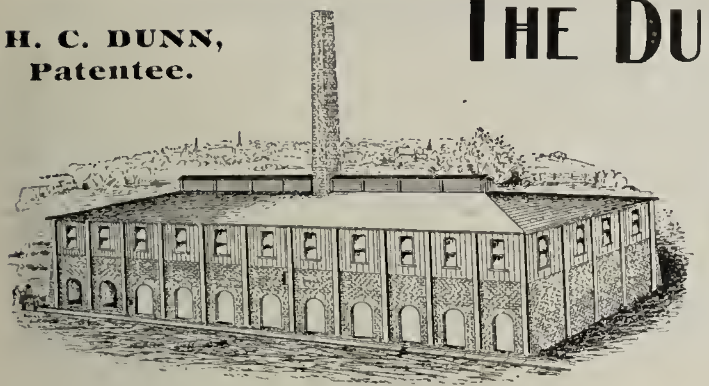

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Burns 8000 brick with one ton of coal.
Requires only two men to operate it.
Is in full operation daily.
Absolutely the most successful kiln of its class ever offered American Brickmakers.

Write for Description and full Information.

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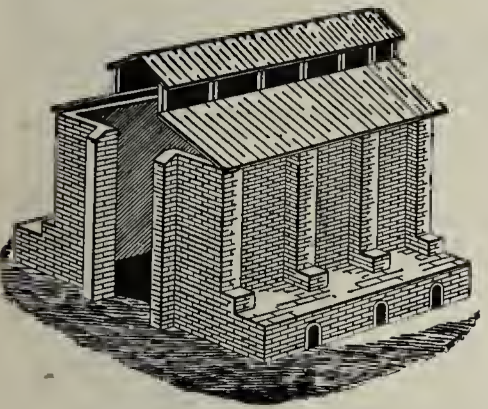

Up-Draft Kiln.

LOUIS H. REPPELL'S

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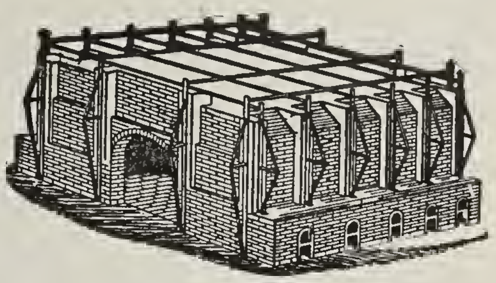
For Burning all Kinds of Wares.



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Having had years of practical experience in the management and actual burning of all kinds of kilns, claim it to be THE BEST Up-Draft KILN IN THE MARKET.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns.

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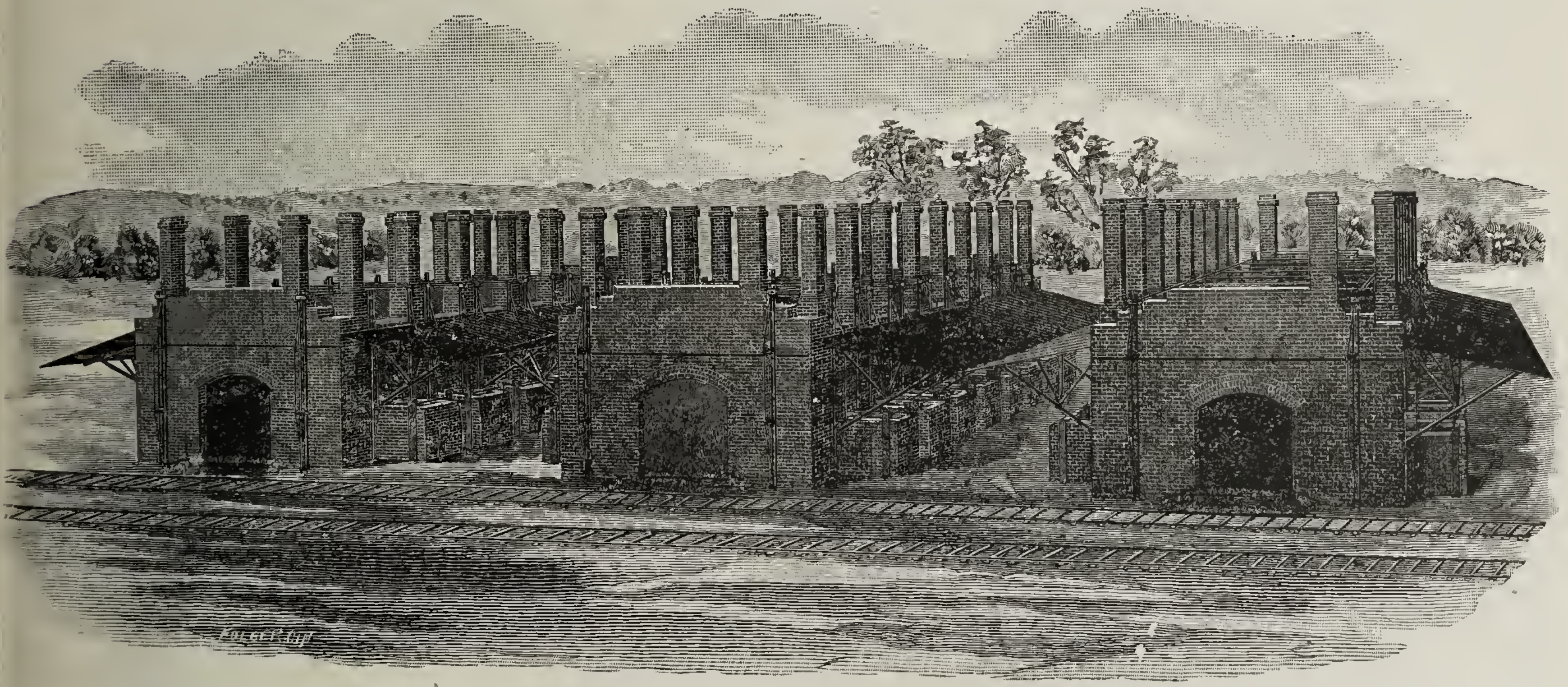
STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM.



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

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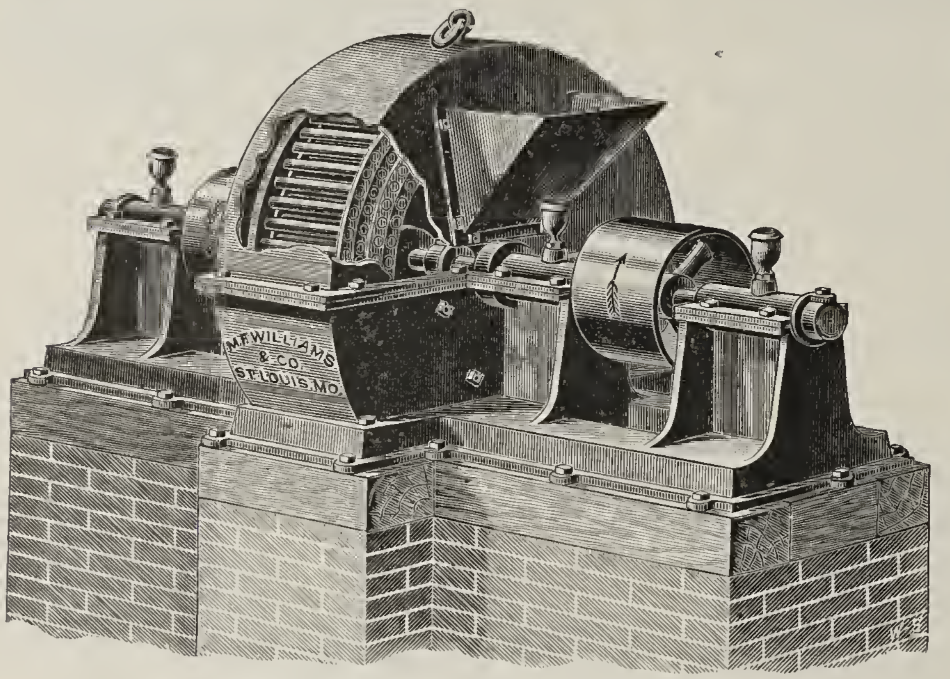
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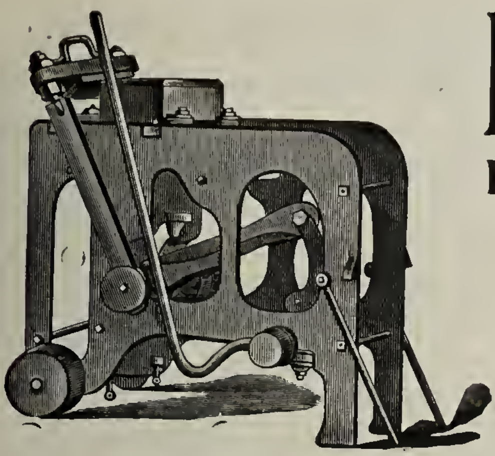

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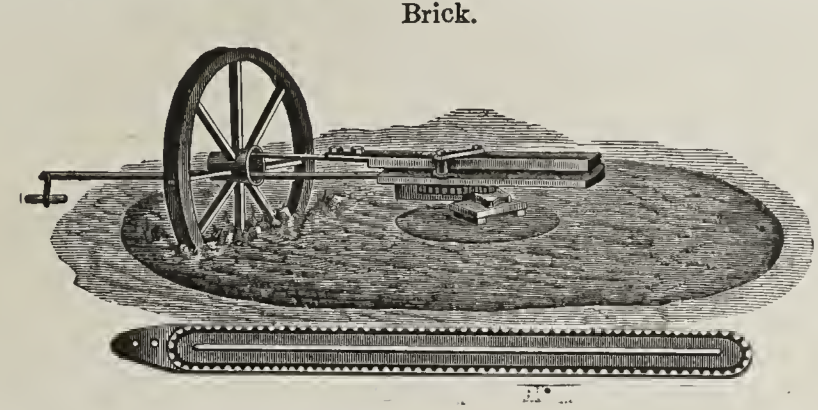

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We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

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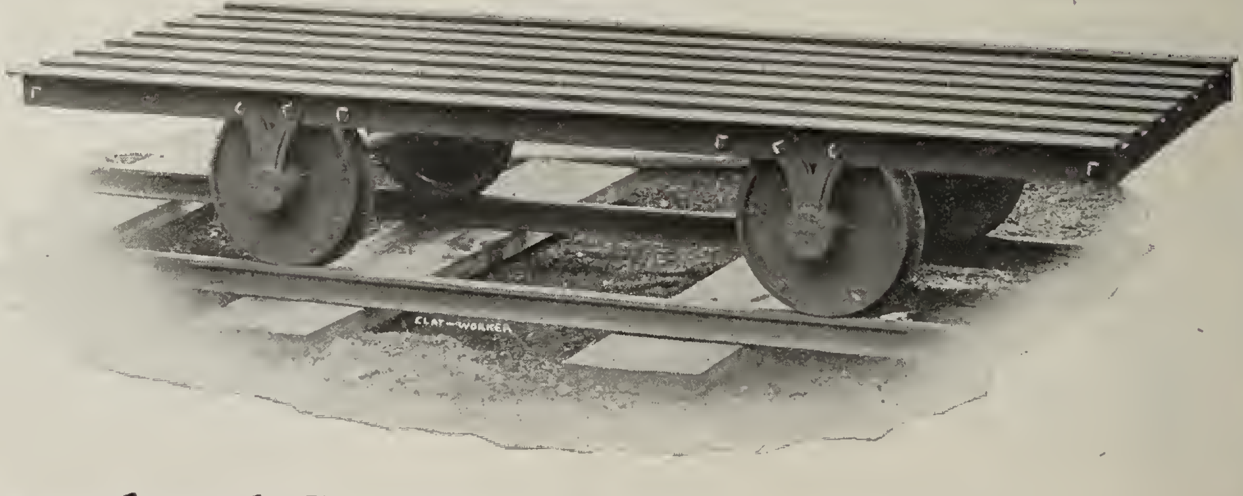

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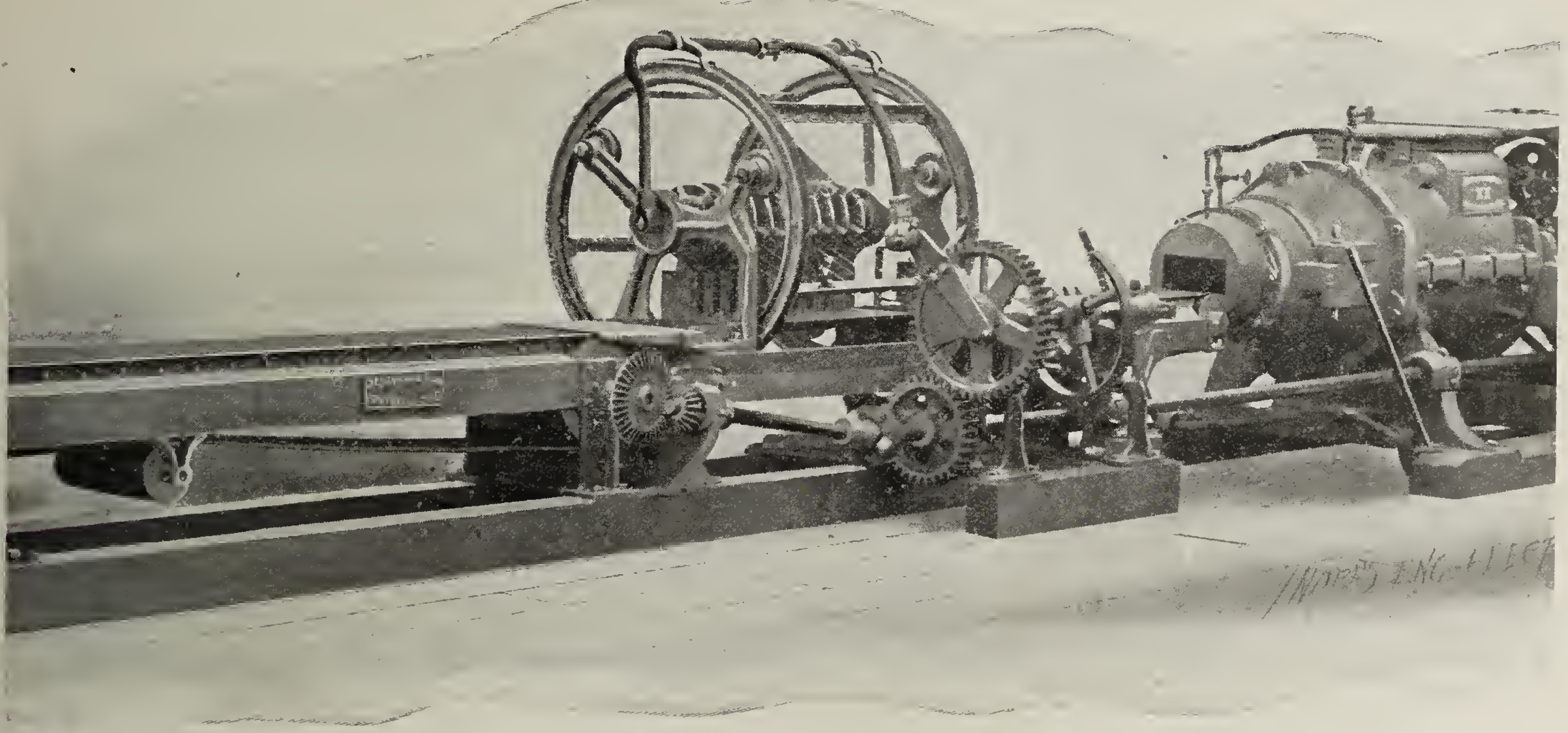

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BRICK MACHINES.—Three sizes, capacities ranging from 12,000 to 50,000 per day. Complete equipments for the most economical yards. All kinds of brickyard supplies. Write for Catalogue and Prices.

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NOT BETTER THAN THE BEST!

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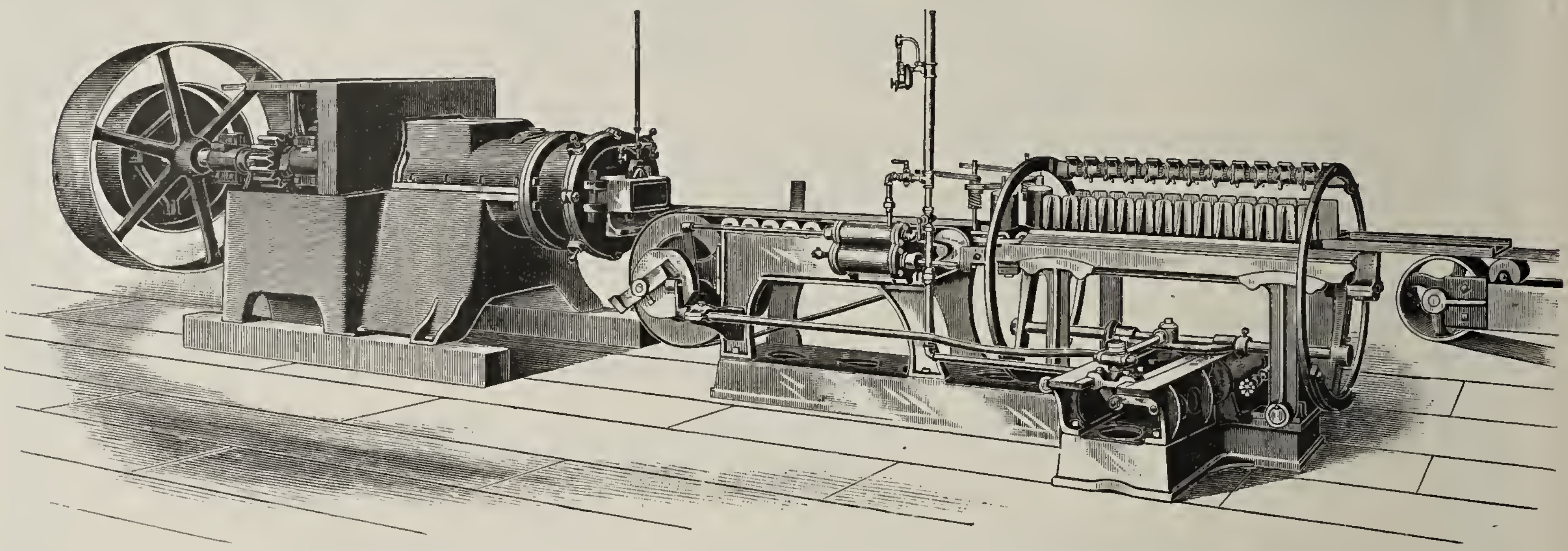

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Is the most economical appliance for excavating clay.

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Will work in all kinds of weather, insuring regular supply of material.

More thoroughly mixes the different stratas than is possible to do by hand.

Will prove a paying investment in any yard where the material is taken from a face.

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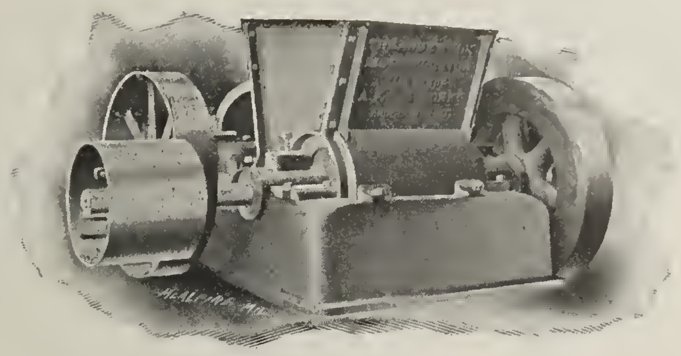

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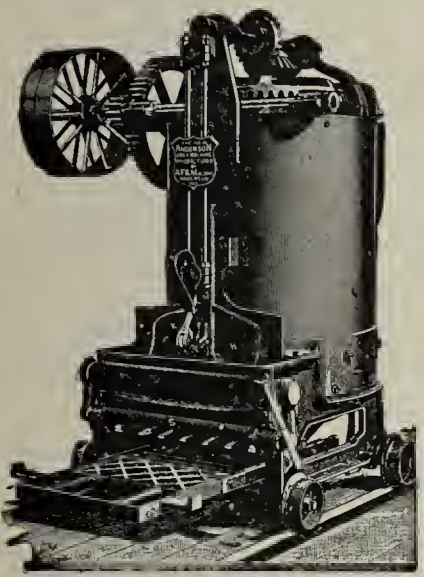

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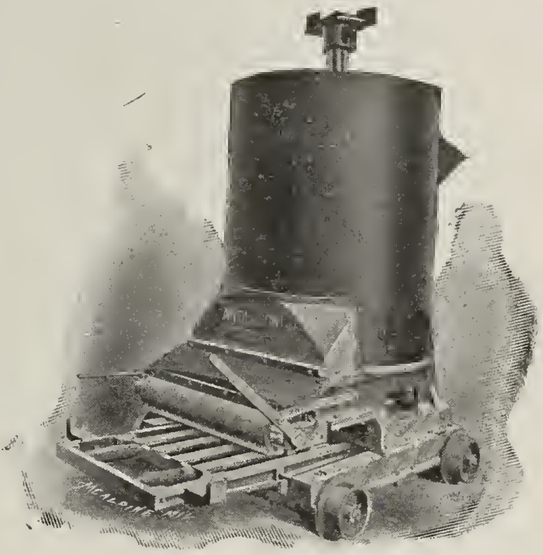

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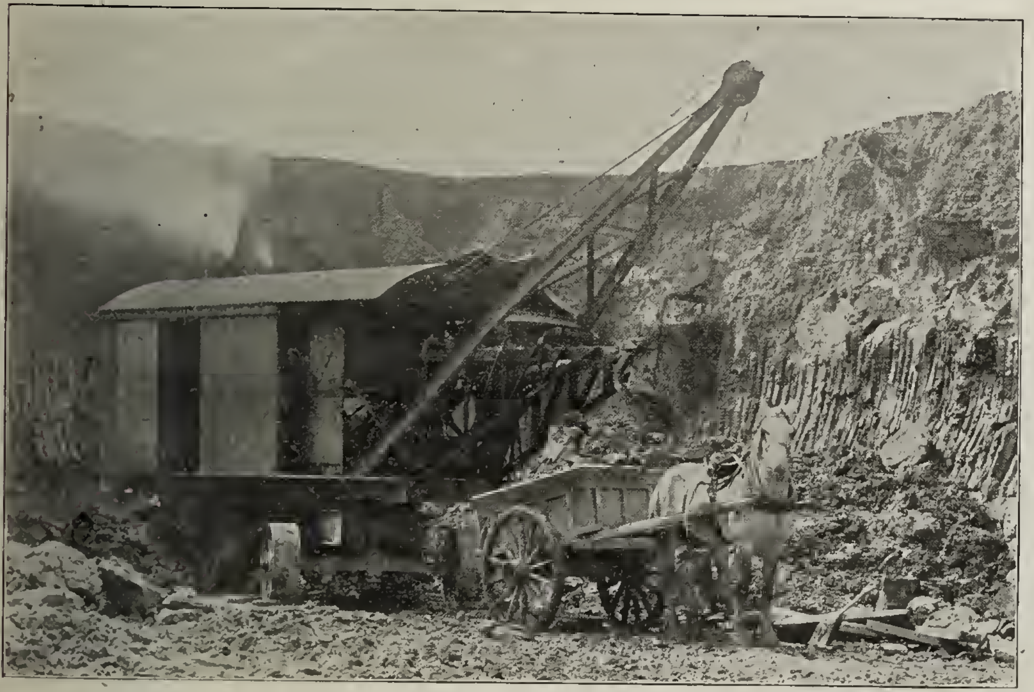

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Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

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Only One Operator Required.
Wire Cables used instead of Chains.
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Made in all sizes.
Mounted on Car Wheels
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Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 150,000 brick per day.

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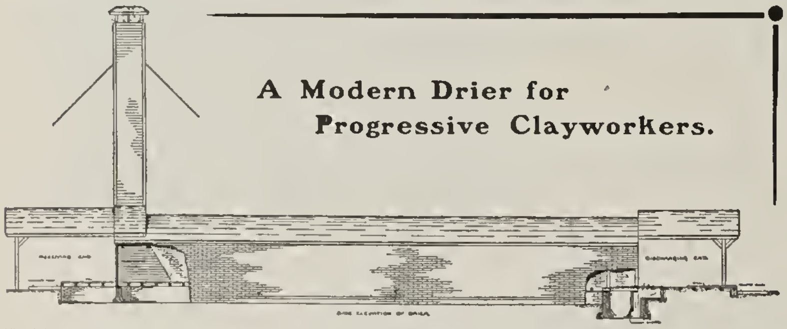

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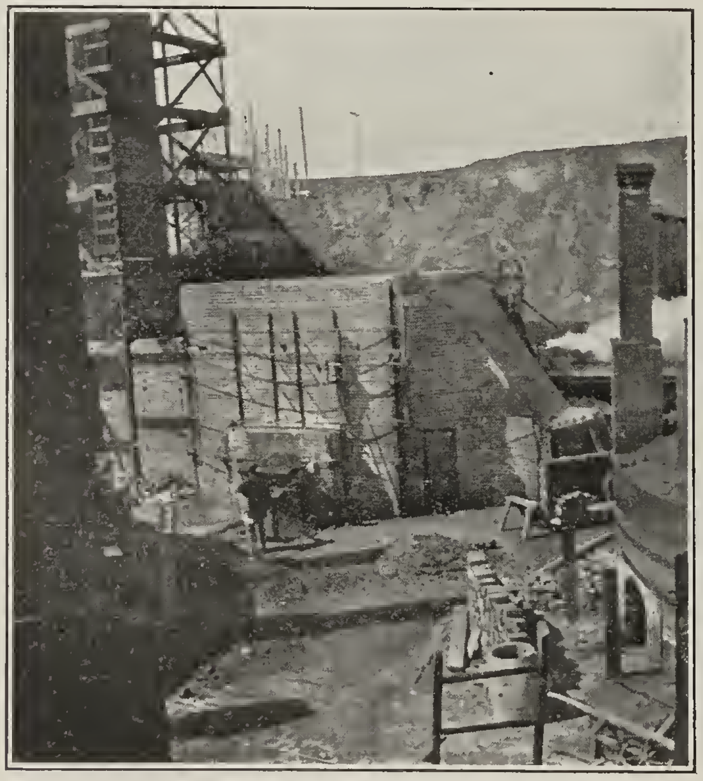
No. 33 West South St., INDIANAPOLIS, IND.

THIS IS **IT.**



If you wish to do good work
And in business win renown,
Have the thing to do it with;
Get a Dryer that's a "Crown."
Its the article.

In Economy a leader,
Product finest ever was;
Come along, be up-to-date,
Get the best the market has.
Its the cheapest.

Now's the time for Coronation,
Time for Standards, "Crowns" and
Kings;
Get across the pond of Way-back
Be a Head in little things.
Even bricks.

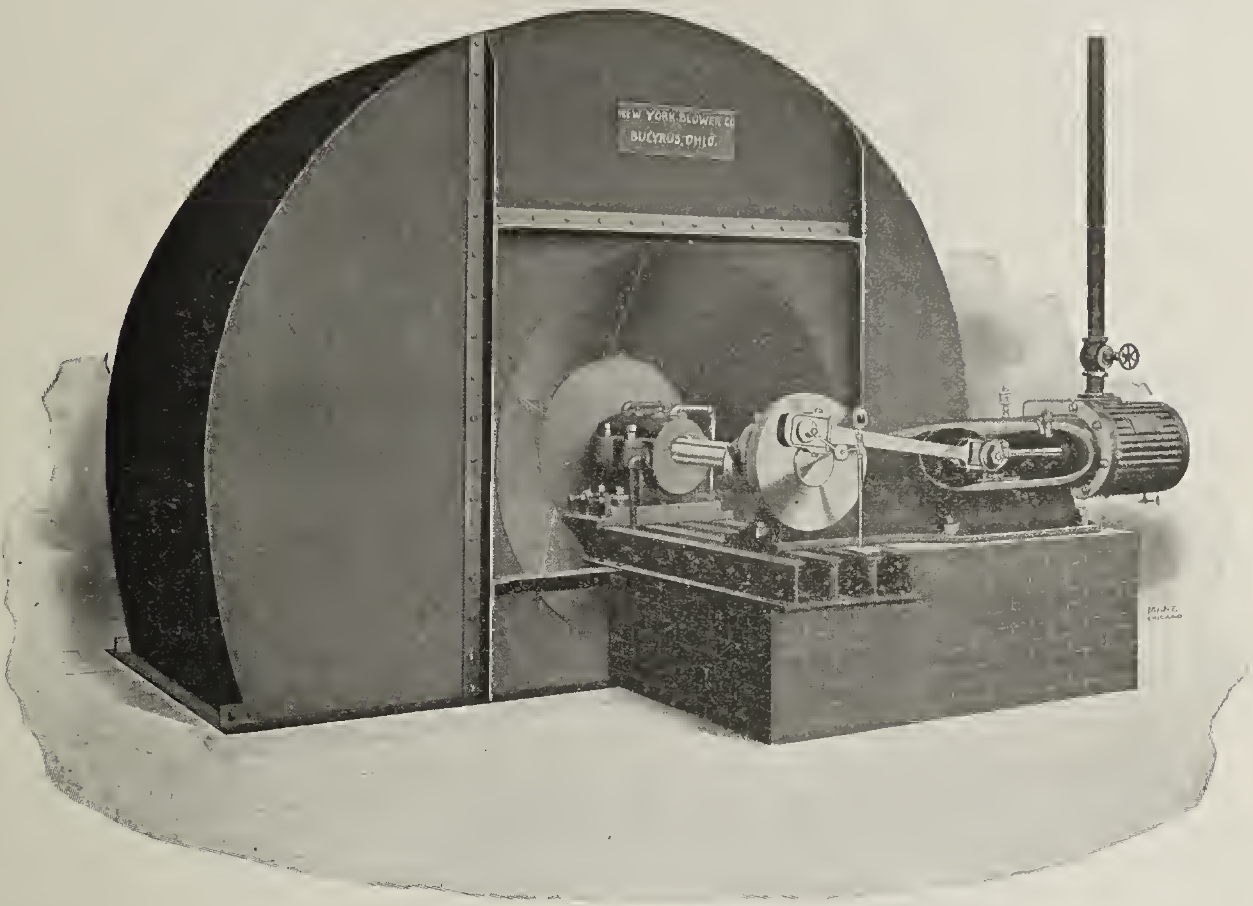
The Crown Dryer Co.,

New England Bldg. CLEVELAND, OHIO.

DRYING ECONOMY.

Our Dryer is superior to others by reason of improved methods, low cost of construction and economy of operation. If you're interested in dryers write for particulars. Ours will prove a good investment.

We also manufacture Conveyors, Exhausters, Heaters, Fans, Engines and Mechanical Draft Apparatus.

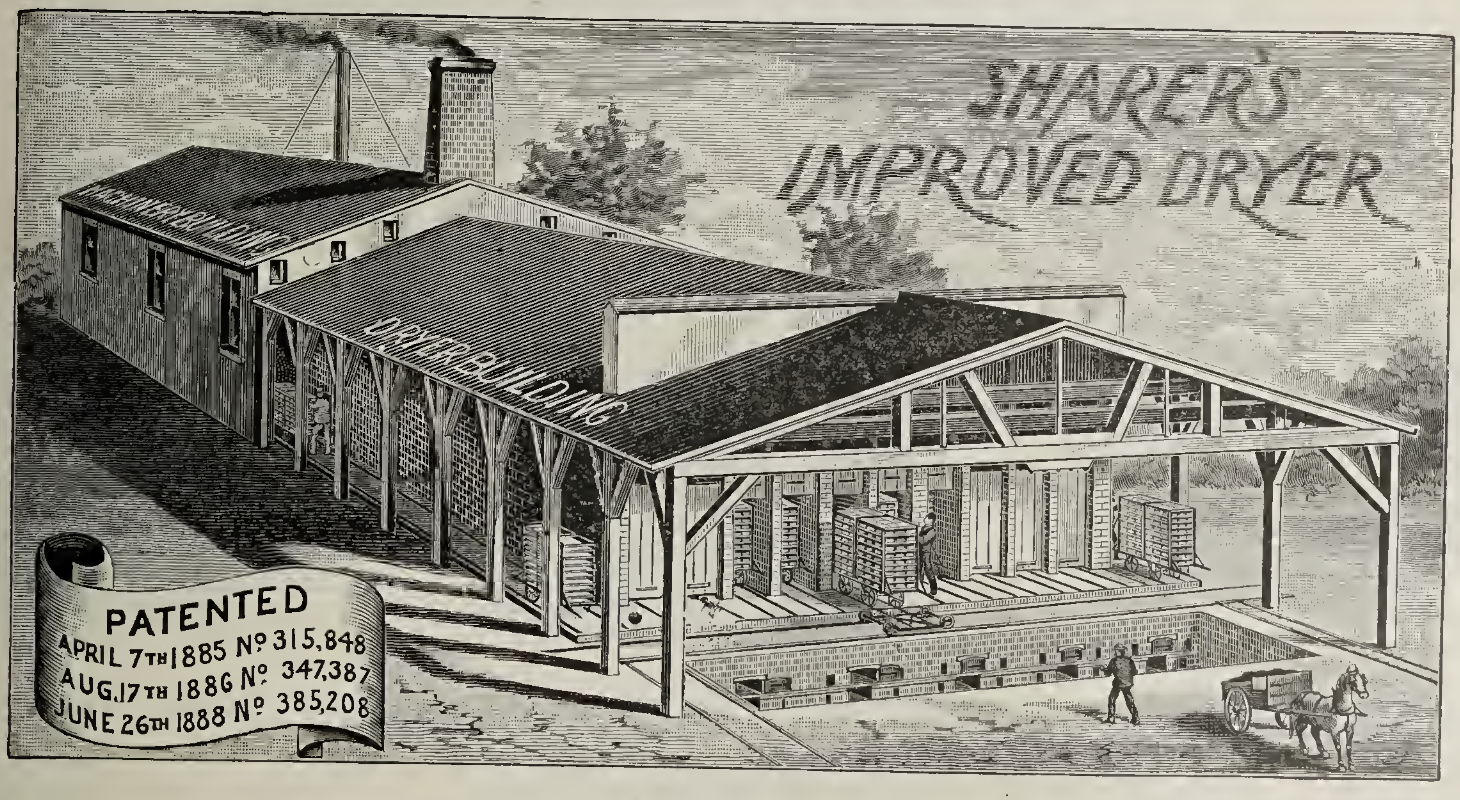


The New York Blower Co., Bucyrus, Ohio.

New York Office, 39-41 Cortlandt Street, New York.
Boston Office, 185 Sumner Street, Boston, Mass.
Chicago Office, Merchants' Loan and Trust Building.
European Office, Cathedral Corner, Fennel Street,
Manchester, England.

Geo. W. Sharer,

Brick Manufacturing Expert,
Constructing Engineer,
Contractor and Builder.

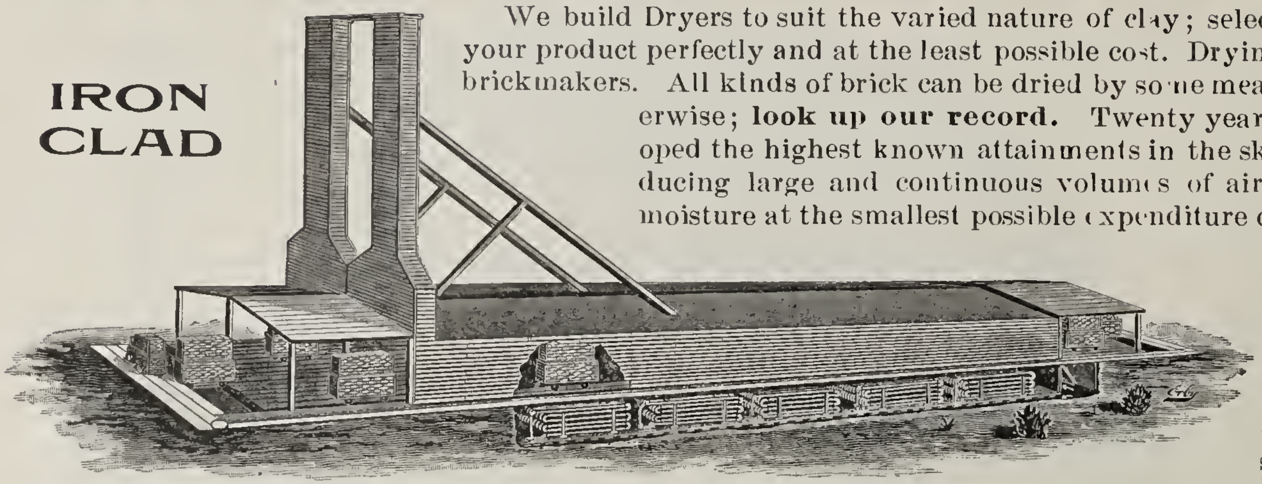


COMPLETE Dryer and Kiln outfits, and Complete Plants a specialty. Address **Geo. W. Sharer,** 2228 Tioga St., **Philadelphia, Pa.**

Mention The Clay-Worker.

CHICAGO IRON CLAD DRYER.

IRON CLAD



We build Dryers to suit the varied nature of clay; select the Dryer that will dry your product perfectly and at the least possible cost. Drying makes and breaks many brickmakers. All kinds of brick can be dried by some means, either profitable or otherwise; **look up our record.** Twenty years of experience has developed the highest known attainments in the skill of steam fitting for producing large and continuous volumes of air currents for carrying off moisture at the smallest possible expenditure of fuel. Ordinary stiff mud brick are now being dried in from 18 to 24 hours, at a temperature at the hot end not exceeding that of the hot room in a Turkish bath, leaving the brick as perfect in bond as when they left the machine. The only true system of producing perfect Paving Brick.

NOTICE—What we are doing in Chicago we can do elsewhere.

AMERICAN BRICK COMPANY,
Manufacturers of COMMON AND SEWER BRICK.
Office and Yard 45th and Robey Sts.
Telephone, Yards 128.

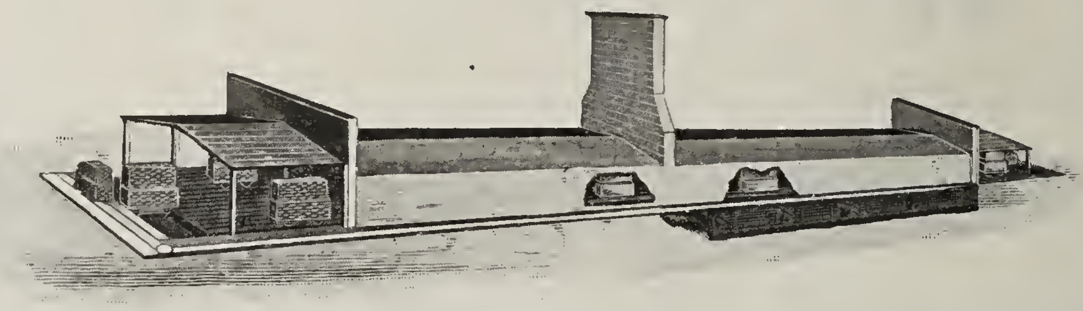
Barron Dryer Co.

Chicago, Ill., January 8, 1902.

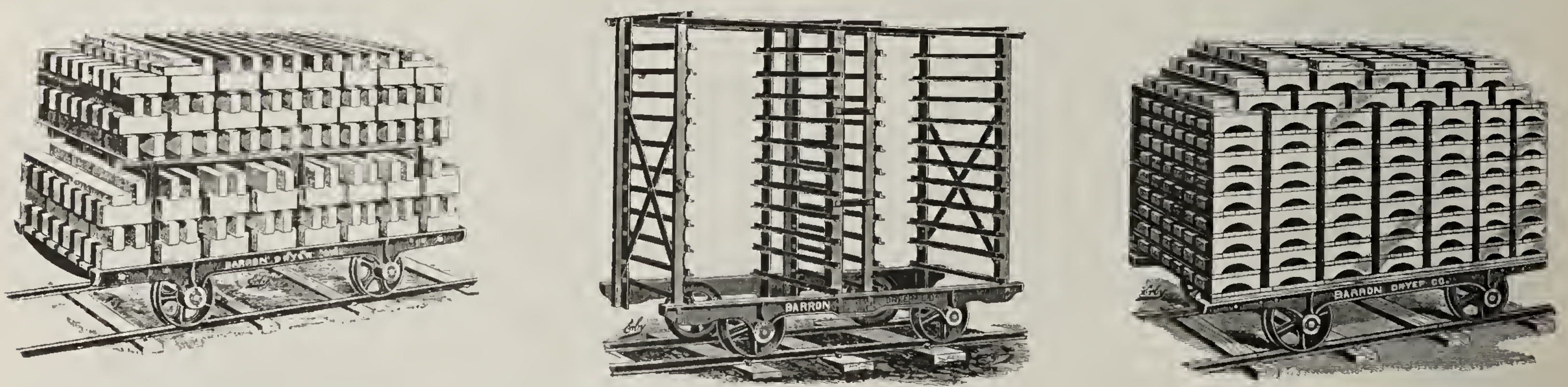
Gentlemen: The four-tunnel Brick Dry House which you installed at our plant last summer, guaranteed to dry one hundred and sixty-seven thousand (167,000) brick every twenty-four hours, is proving a most wonderful success. While Jack Frost has been making ice thirteen inches thick in the pond opposite, our Dry House has averaged one million of brick every six days with apparent ease, and is capable of doing much better providing our machinery was capable of turning out more brick each day. We have proven this by running two hundred thousand through the dryer in one day.

Last summer we dried our brick outside; a comparison of the two systems proves that the cost for labor in handling the brick outside is about the same as expense in fuel for running the dry house. Taking the loss of brick from rain and storms in outside drying, leaves a large margin in favor of drying by your system. In burning we also find a saving of 20 per cent. in fuel and produce a much better brick in every respect. Our brick now all burn hard from top to bottom. The saving of fuel in burning, loss in washed brick, and the improved quality of our brick—a great advantage to us. Your improved dry house is certainly a perfect and economical system of drying. Respectfullly yours,

AMERICAN BRICK COMPANY,
John D. Shelhamer, Vice-President.



The Barron Tender Clay Dryer for Tender Clays.


BARRON DRYER CO.
BARRON DRYER CO.
BARRON DRYER CO.

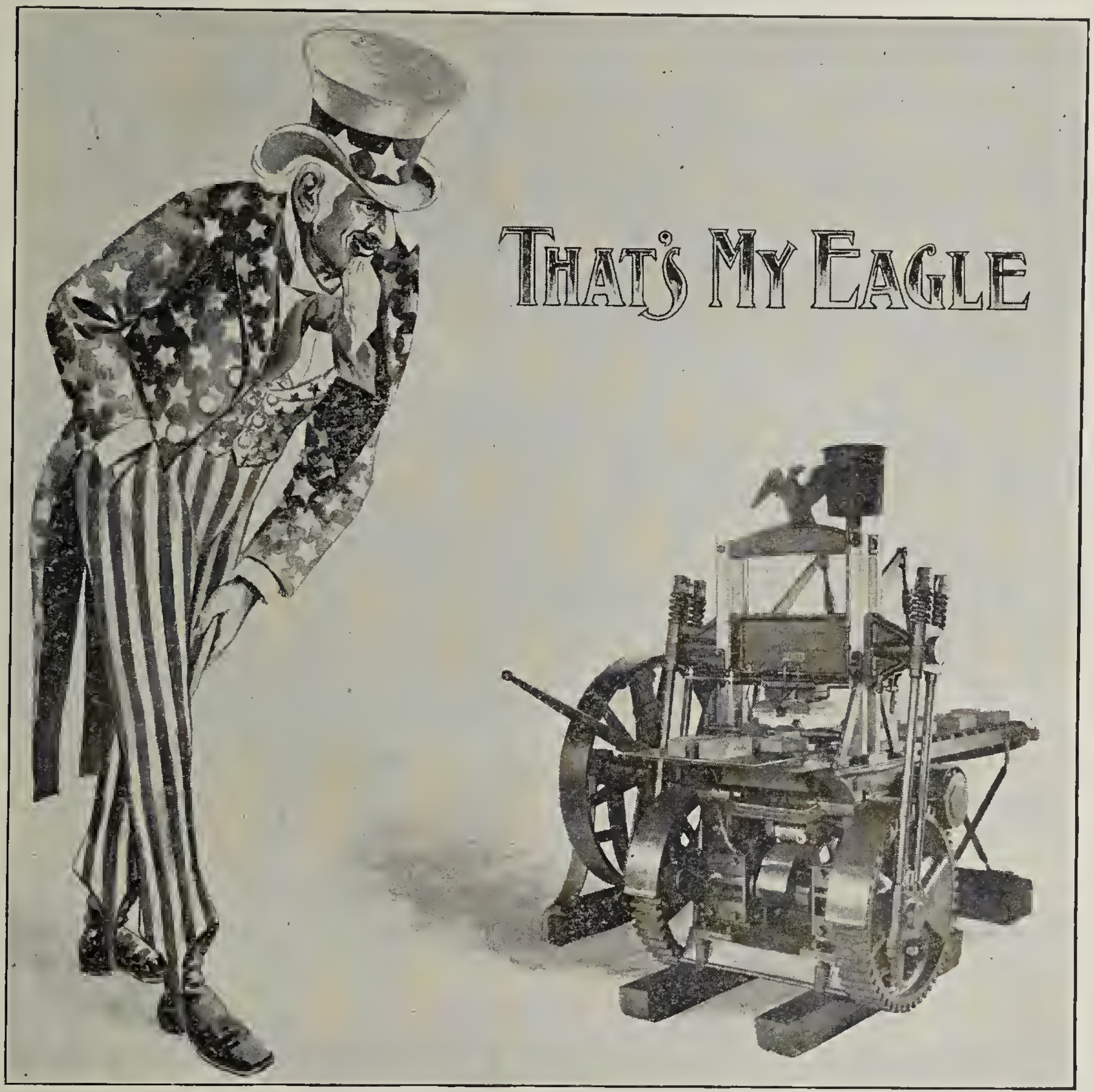
MODERN BRICK CARS—Made in both cast iron and steel. Are the strongest and smoothest running. Have been tested for years and ound the best. Send for prices.

Send for Information,
Estimates, etc., etc.

BARRON DRYER CO.,

Temple Court Bldg., 225 Dearborn St.,
CHICAGO, ILL., U. S. A.

UNCLE SAM is proud of the Eagle. So are we. So are all the clayworkers who have bought Eagles. Why is it? People are never proud of a poor thing or a disappointing investment. They all like the Eagle because it is a fulfiller of guarantees, because it stands for quality, because it's a willing worker, because it saves its cost in repair bills, because when the whistle blows it's ready and able to run, and is willing and able to run overtime, or all the time, without complaint. If you're going to buy a repress and are willing to buy on a business basis of economy, you'll be safe in investigating the record of the Eagle. We'll send you facts and figures for the asking, and a list of users. Wire or write.



BUILT RIGHT
RUN RIGHT
AMERICAN CLAY WORKING MACHINERY CO.
BUCYRUS, O.
U.S.A.

BUILT RIGHT
RUN RIGHT
AMERICAN CLAY WORKING MACHINERY CO.
BUCYRUS, O.
U.S.A.

We also build the only complete line of clayworking machinery in the various processes. Every machine a winner because it's **"Built Right and Runs Right."**

The American Clay=Working Machinery Company,

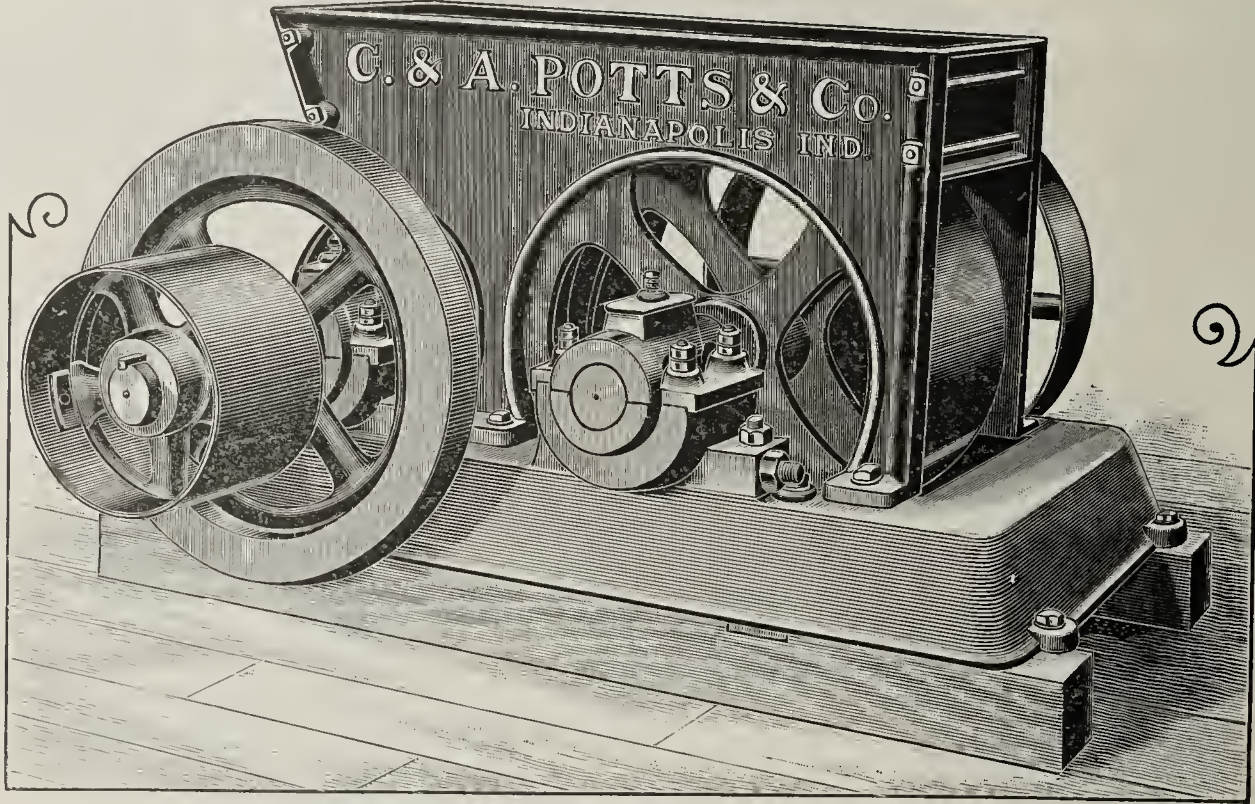
Bucyrus, Ohio, U. S. A.

New York Office,
39-41 Cortlandt St.
Chicago Office,
Merchants' Loan and Trust Bldg.
European Office,
3 Gore St., Picadilly, Manchester, Eng.

See Ad. on Page 706.

Potts Disintegrators

Are used in all parts of the United States and Europe. They are acknowledged by the trade in general to be the only Reliable Machine ever made for the work.


C. & A. POTTS & Co.
INDIANAPOLIS IND.

(Patented.) **Style "P"** Four Sizes, Capacity 20 to 150 M Brick per day.

It grinds any kind of clay. Does not Choke or Clog from wet, sticky or hard, dry clays. Grinds the clay, leaving it in a loose, open condition so it will take water readily, and can be thoroughly tempered.

These Disintegrators grind the small stone, and separate the large ones.

There is no piece of machinery made which will make a greater improvement in the quality of your Brick or Tile.

Remember that a good thing, and one in general demand, soon has competitors, so with the Potts Disintegrator, which is the only machine made having **ADJUSTABLE SECURED STEEL CUTTING BARS**, all other Disintegrators have the lugs, or bars cast to the cutting roll (an underhand way competitors have taken to avoid our patents) these cast bars wear off in a week or two, with no way to replace them, only by purchasing a new roll. When some agent is trying to sell you one of these inferior machines, his only recommendation is that it is cheaper than the Potts.

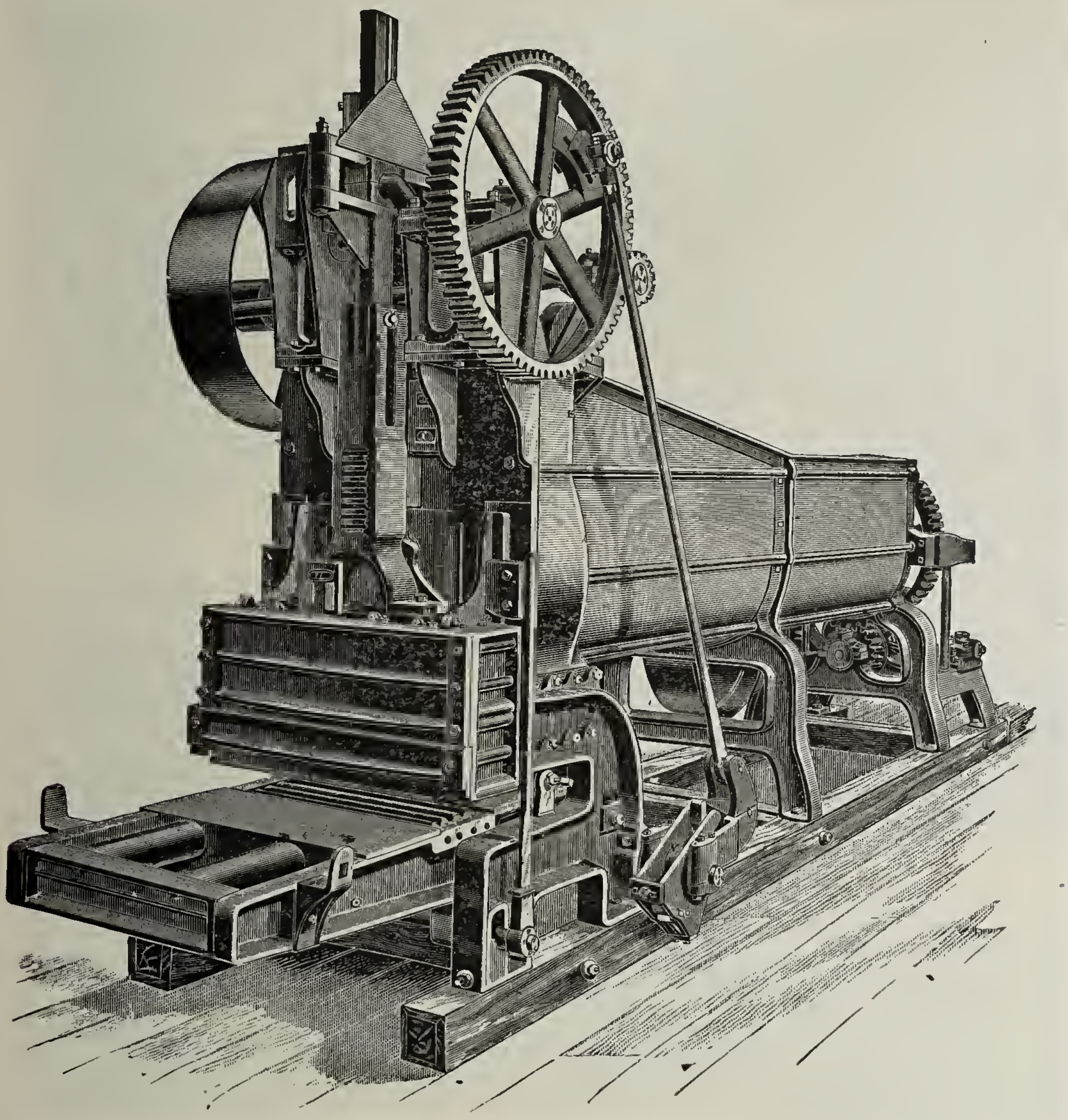
Stop, Then, and figure what three new rolls for one of these machines will cost per year. You will purchase a Potts Disintegrator we know. THEY ARE THE BEST.

C. & A. POTTS & CO.,
Indianapolis, Ind.

Mention the CLAY-WORKER

THE POTTS Horizontal Stock Brick Machine.

THE LEADING MACHINE OF AMERICA.



More Machines Sold This Past Season, Than In Any Two Former Years.

What We Claim: It is the Largest, Heaviest and Best Constructed. It has Double the Tempering Capacity of any Machine made, It will work the clays as stiff as it is possible to slip it from the moulds or strike the moulds, at the same time fill a six-brick mould perfectly with brick which will have CLEAN, SHARP CORNERS, SMOOTH SURFACES, and are STRAIGHT and SQUARE when burned.

All Shafts are made of the best grade of STEEL. STEEL GEAR—All surface joints planed, insuring good solid bearings.

There is no one to dispute, and prove his claim, that this is not the best Machine on the market today.

We guarantee all we claim with a guarantee which is good, no verbal promises.

Write for Prices and Terms.

C. & A. POTTS & CO., - Indianapolis, Ind.

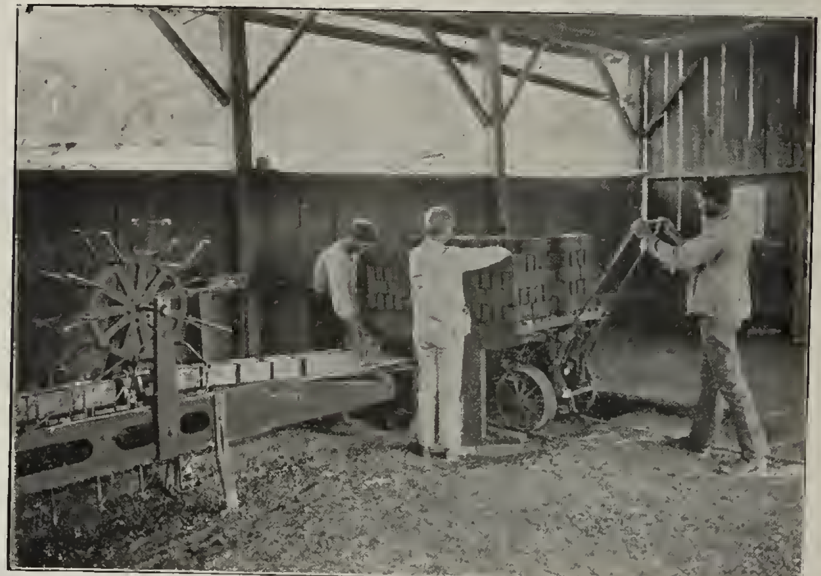
A PERFECT CAR SYSTEM

For Either Soft or Stiff Mud.

With only TWO CARS

One man will handle 40 M brick per day.

No Fan to Run. No Boiler to Steam.
No Pipes to Burst. No Fireman to Pay.
No Dryer. No Fuel.



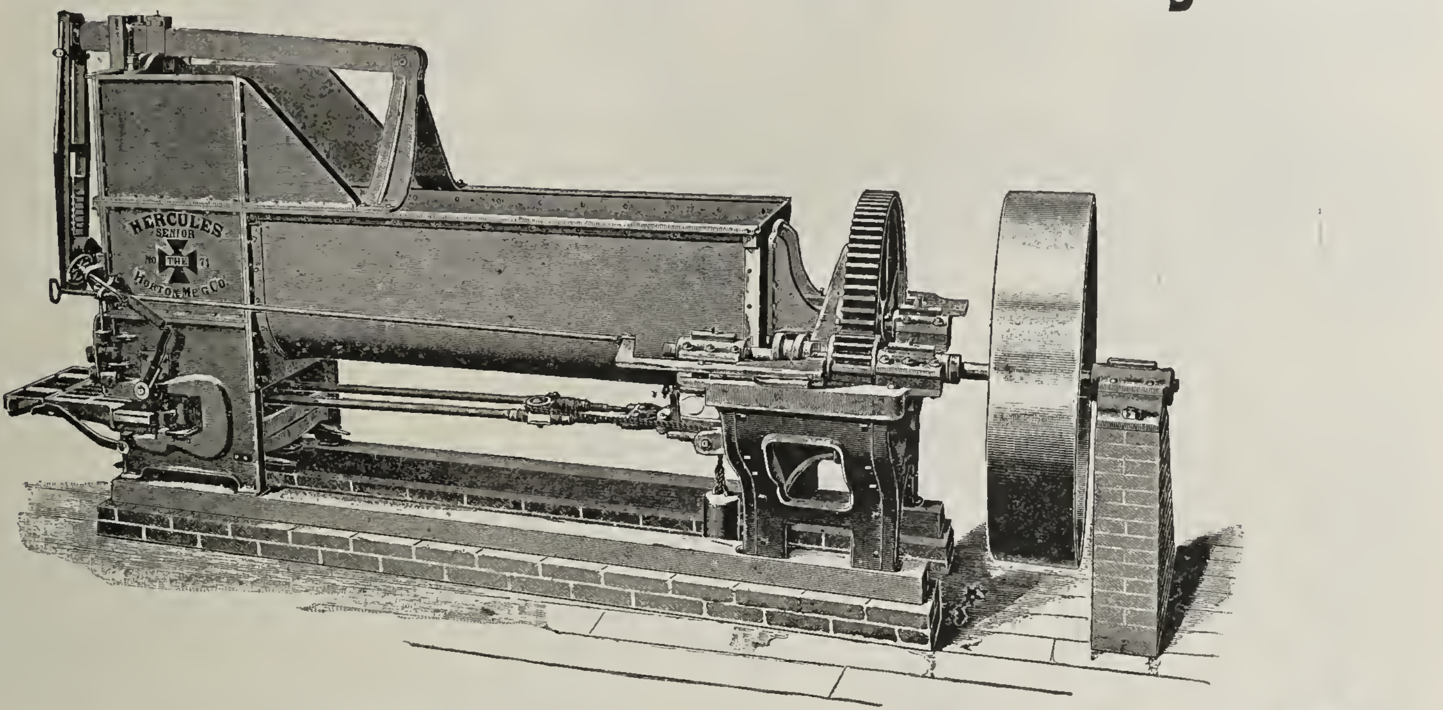
We Guarantee This to be the cheapest, best and only out-door car system ever offered the brick manufacturer. We guarantee to handle from the machine and put on the yard in good condition, from thirty to forty thousand green brick per day, with one man, and same amount to kiln. We guarantee our patent car and system to perform the work for which they are built, and all the workmanship and quality of material to be first class. Our Covers and Storm Curtains give absolute protection from rain and storms and also protects tender clays.

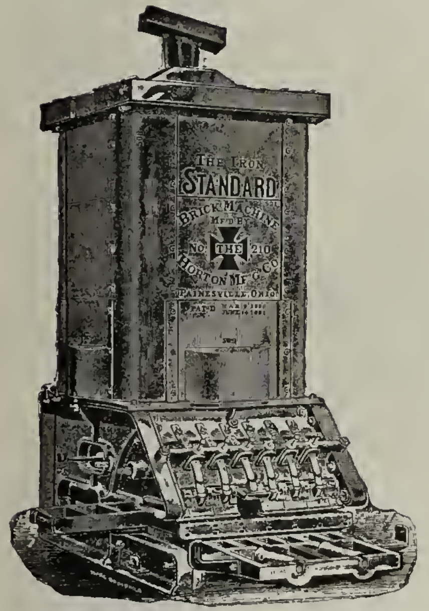
THIS SYSTEM consists of two elevating and lowering brick cars for a thirty to forty thousand capacity brick plant; these take the place of several hundred common cars. The car is made of channel steel, with movable deck, which is raised and lowered by a compound lever. From two to five hundred brick are taken from the machine and placed on a pallet, the lever lowered, raising pallet off the rests. The load is then on car, which is run on the yard to the rests along each track; the lever is again raised, thus lowering deck of car which places load on the rests.

Scotts Patent Brick Car Co.,

Write for Catalogue. **Knoxville, Tenn.**

The HERCULES Works the Clay Stiff.

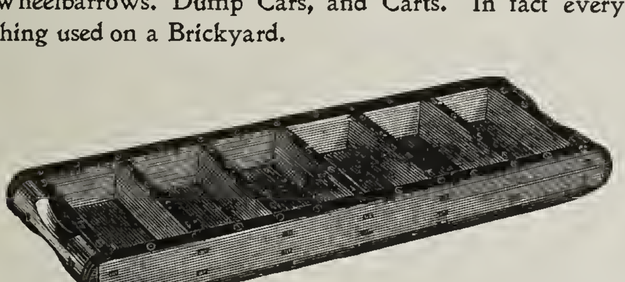


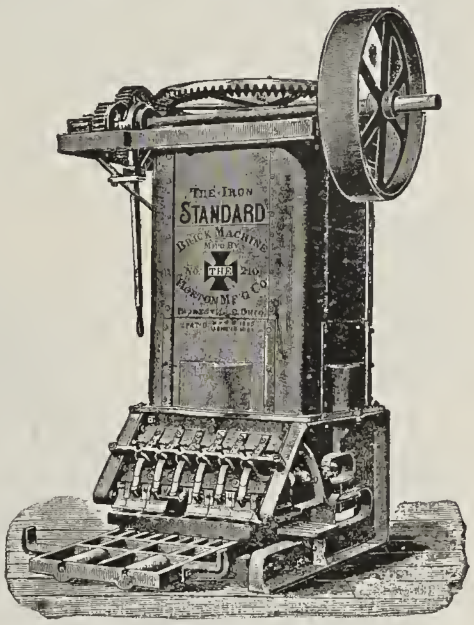


Iron Standard Horse Power Brick Machine—The Leader of all Horse Power.

MOLDS.

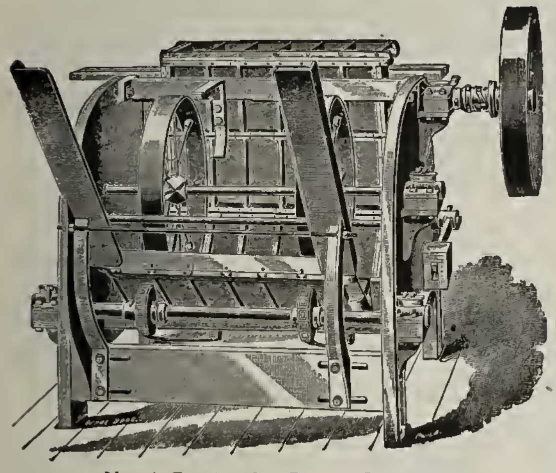
Is one of our Specialties. Either Hand, Machine or Shapes. We have a shop full of Special Machinery for the Manufacture of these as well as Trucks of all kinds, Wheelbarrows. Dump Cars, and Carts. In fact everything used on a Brickyard.





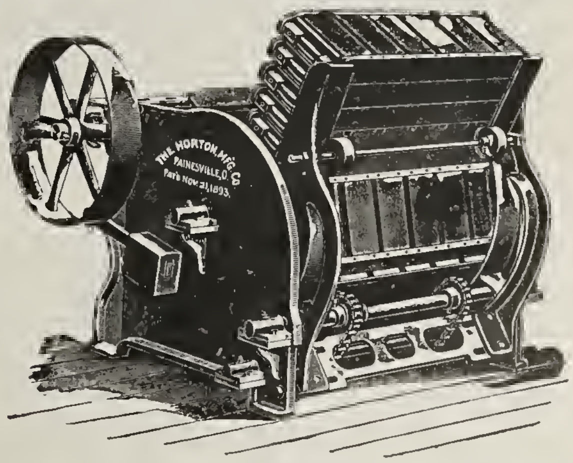
Standard Steam Power Brick Machine—Just the Machine for Medium Sized Yards.

The Mold Sanders That "Sand"



No. 1 Sander for Pallet System.

TWO STYLES.


THE HORTON MFG. CO.
PAINESVILLE, O.
PAT'D NOV. 21, 1893.

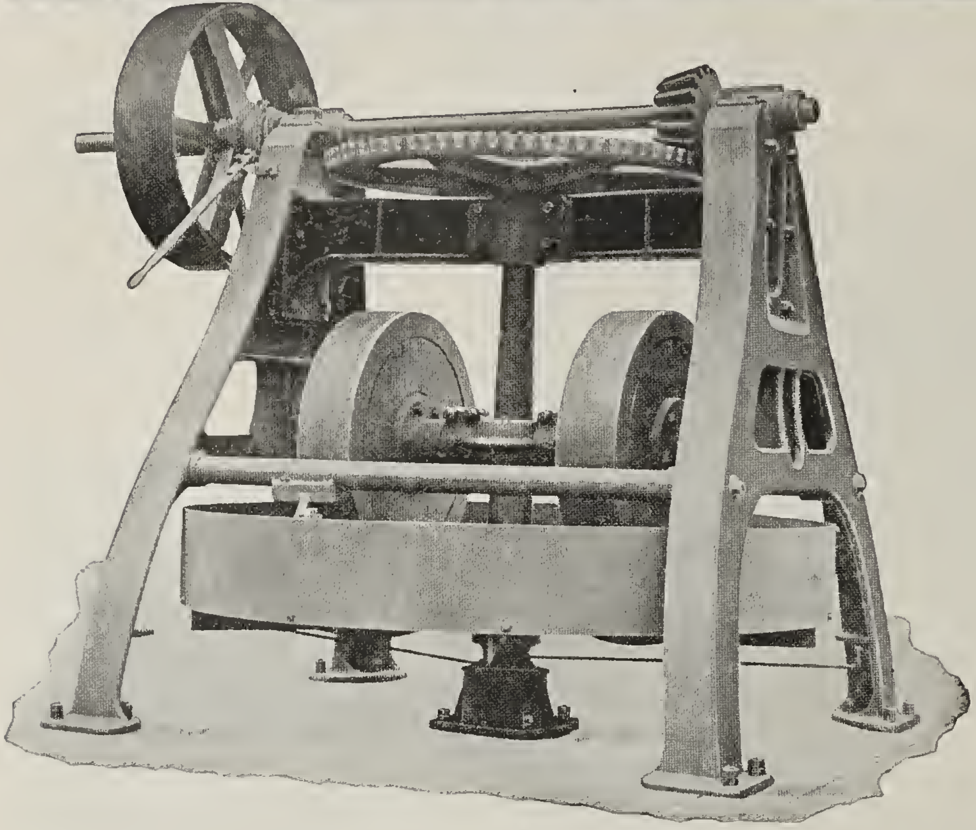
No. 2 For Open Yards.

THE HORTON MANUFACTURING CO.,

Mention The Clay-Worker.

Painesville, Ohio, U. S. A.

Modern Brick Machinery.



9-Foot Iron Frame Dry Pan.

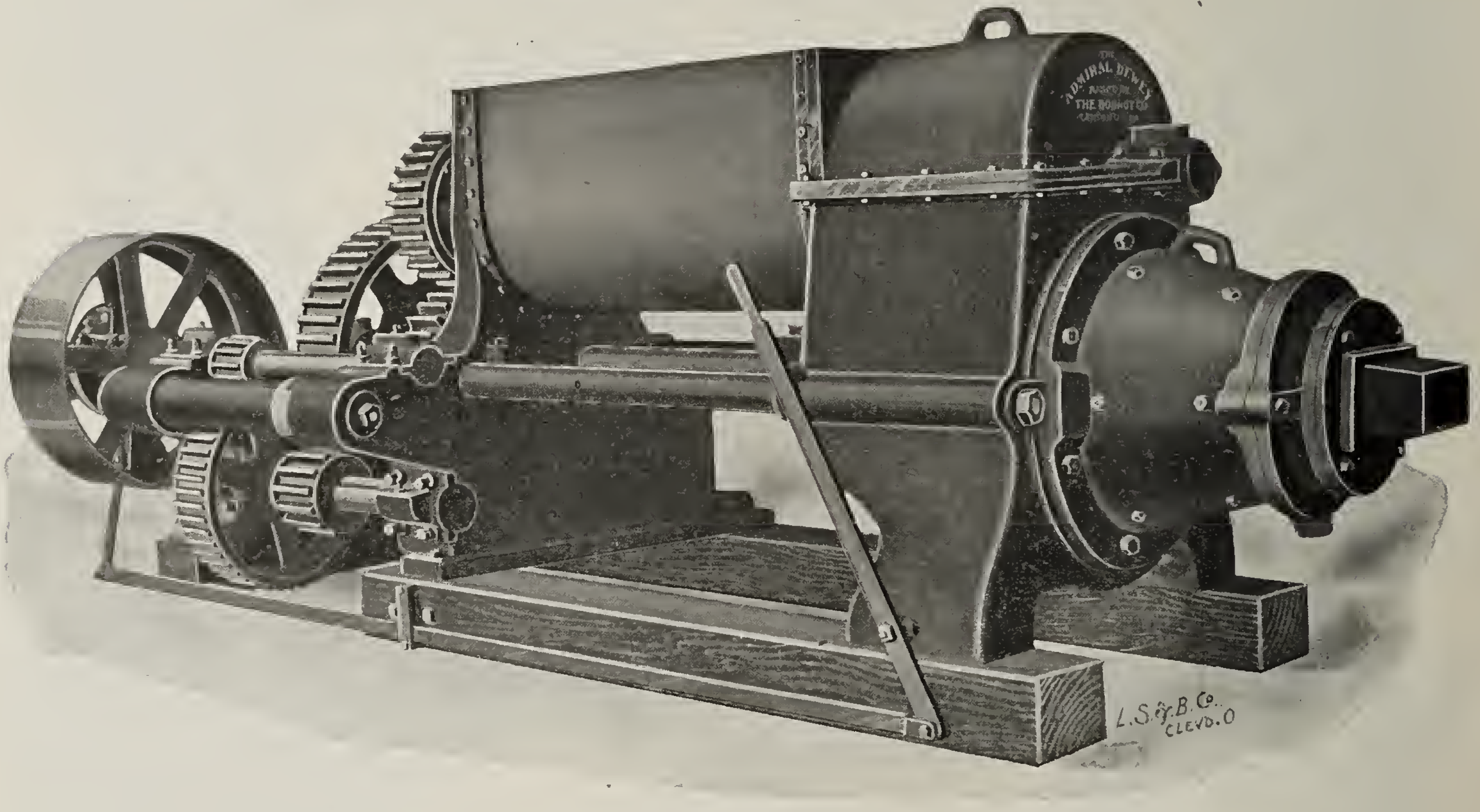
Office of
THE ROYAL BRICK COMPANY,
MANUFACTURERS OF
The Royal Block and Iron Rock Street Pavers,
Building, Fire, Sewer and Sidewalk Brick.

CANTON, OHIO, January 6, 1902.
THE BONNOT COMPANY, CANTON, OHIO.

Gentlemen—Our works are equipped throughout with Bonnot Machinery and we are pleased to say that it is satisfactory in every way. We have your No. 1 Brick Machine and Automatic Cutting Table and have made as many as 65 000 brick in ten hours, although you only guaranteed the machine for 50,000. The table does not give us the slightest trouble and requires very little attention.

Your represses and dry-pans are also very satisfactory and we are well pleased with the entire outfit. Very truly,

THE ROYAL BRICK COMPANY.
OTTO GEISSEN, Secretary.



ADMIRAL DEWEY SPECIAL COMBINED MACHINE. 100,000 DAILY CAPACITY.

Brick Machines of any capacity from 10,000 to 100,000 daily.
Automatic Side-Cut Table—Simple, Accurate and Durable.
Dry Pans, Represses, Screens, Pug Mills, Elevators, Cars, etc.

A COMPLETE LINE OF
BRICK, POTTERY and CEMENT
MACHINERY.

The BONNOT CO.,

Write for our New
Descriptive Catalogue.

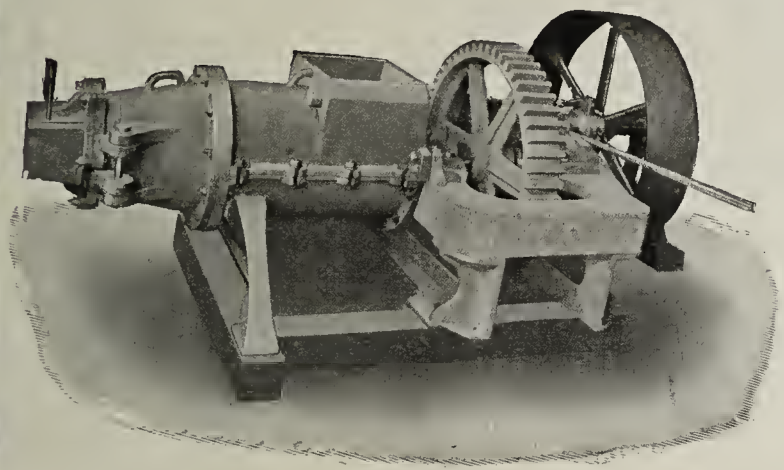
CANTON, OHIO, U. S. A.

Mention The Clay-Worker.

BRICKYARD SUPPLIES

We always have a large stock and guarantee prompt delivery.

The Henry Martin Brick Machine Mfg. Co.,
LANCASTER, PA.

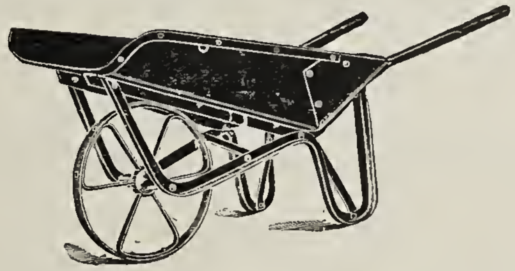


◆ ◆ ◆

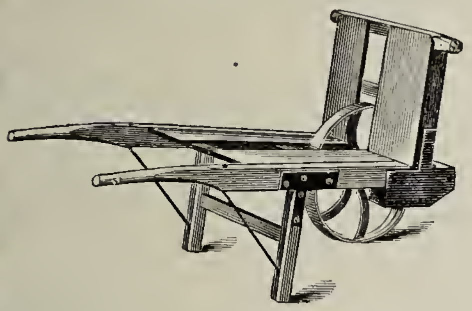
Our No. 2 Auger Machine is especially suited for drain tile, hollow brick, etc.

◆ ◆ ◆

Have you seen our new Steel Dump Barrows? They are just the thing for handling clay, sand, ashes, etc.



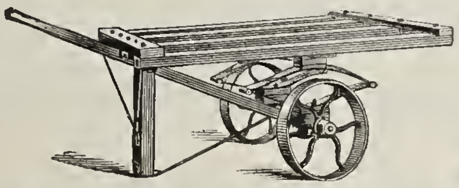
DO YOU HAVE A COPY OF OUR GENERAL CATALOGUE?



Brick plants equipped complete in every detail, including all the machinery, dryer and engine and boiler.

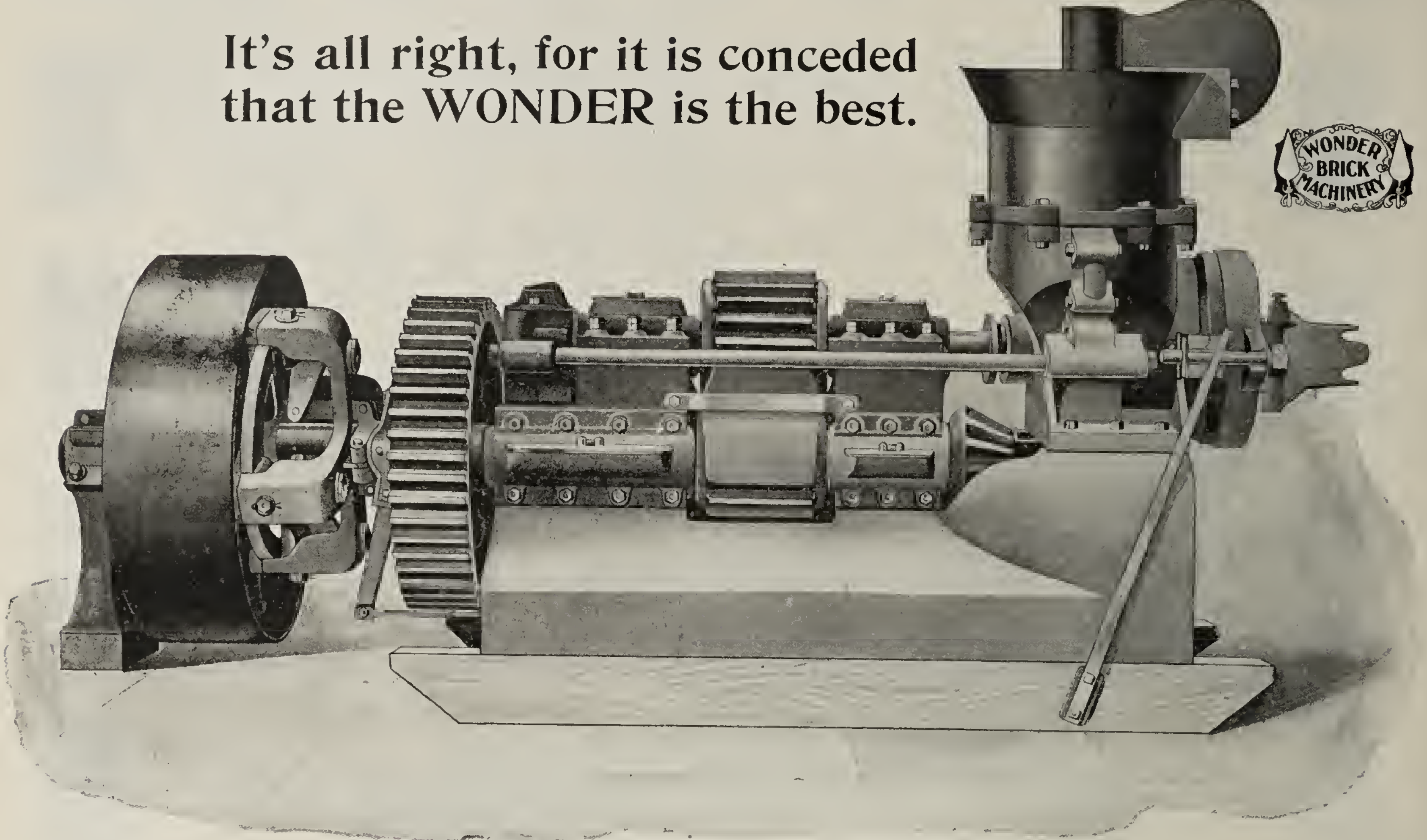
Send us a sample of your clay. We will examine it without charge.

We furnish everything
a brickmaker needs.



IF IT'S A WONDER,

It's all right, for it is conceded that the WONDER is the best.



We are not only in the front ranks, but in the lead. The WONDER stands today without an equal for STRENGTH, DURABILITY and GENERAL EXCELLENCE and with our new and strictly MODERN FACTORY and EQUIPMENTS we propose not only to maintain the high standard to which the WONDER brick machinery has been brought, but to bring it still higher.

It is not simply our desire to equal, but to excel. There are a great many features in the WONDER machine which are decidedly advantageous and which are not contained in other Stiff Mud machines.

With the WONDER, lamination is entirely destroyed and the brick are solid throughout.

We sold more machines last year than in any two previous years—more people are investigating, and where the WONDER machine is investigated it is always adopted.

Catalogue for the asking. Information cheerfully given.

The Wallace Mfg. Co.,

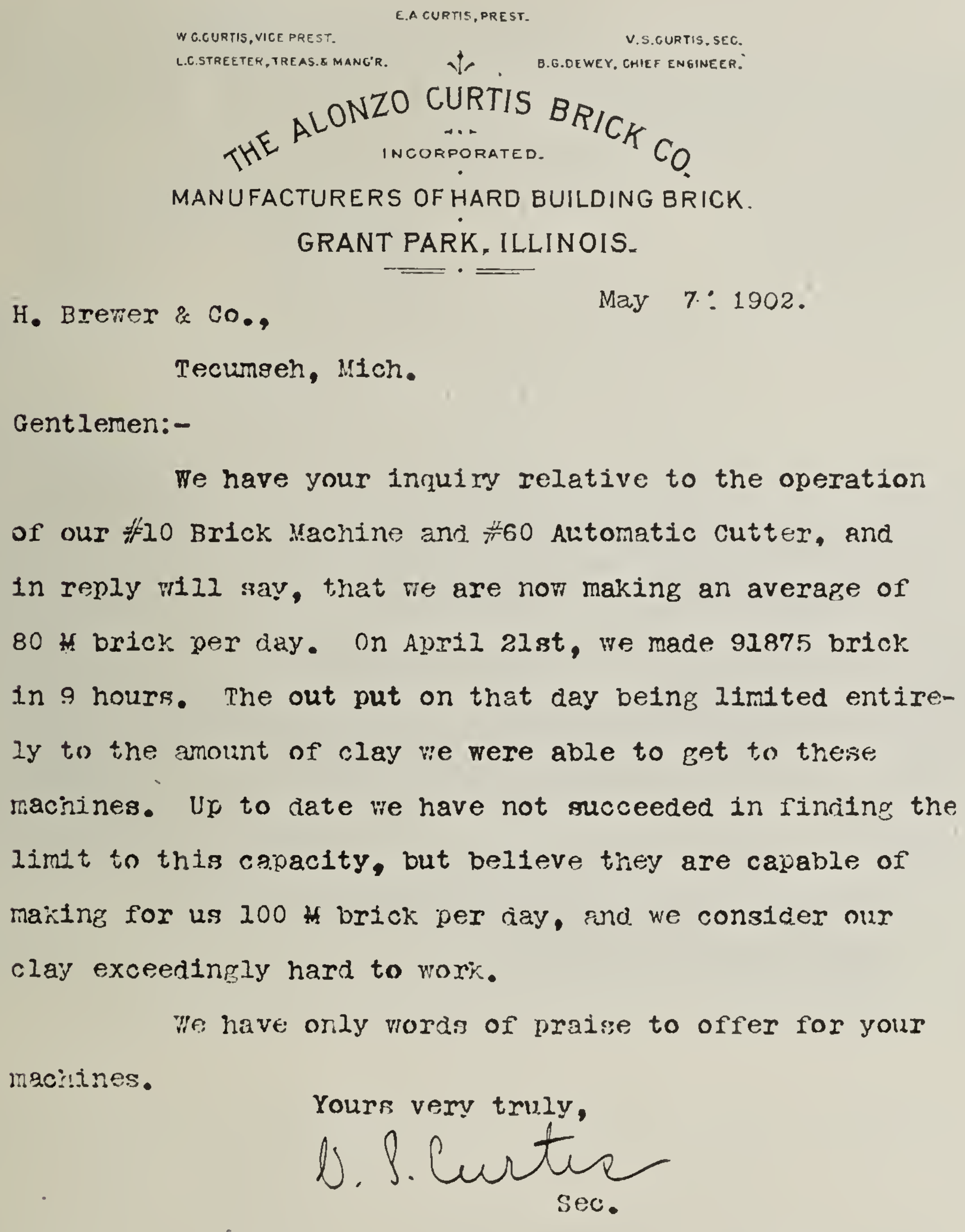
FRANKFORT, IND., U. S. A.

SOUTHERN AGENTS:
Atlanta Brick Machinery Co.,
403 Prudential Building, ATLANTA, GA.

WESTERN AGENTS:
Chicago Brick Machinery Co.,
225 Dearborn Street, CHICAGO, ILL.

Just Read That Once,

Will You?



E. A. CURTIS, PREST.
W. G. CURTIS, VICE PREST.
V. S. CURTIS, SEC.
L. C. STREETER, TREAS. & MANG'R.
B. G. DEWEY, CHIEF ENGINEER.

THE ALONZO CURTIS BRICK CO.
INCORPORATED.
MANUFACTURERS OF HARD BUILDING BRICK.
GRANT PARK, ILLINOIS.

May 7, 1902.

H. Brewer & Co.,
Tecumseh, Mich.

Gentlemen:-

We have your inquiry relative to the operation of our #10 Brick Machine and #60 Automatic Cutter, and in reply will say, that we are now making an average of 80 M brick per day. On April 21st, we made 91875 brick in 9 hours. The out put on that day being limited entirely to the amount of clay we were able to get to these machines. Up to date we have not succeeded in finding the limit to this capacity, but believe they are capable of making for us 100 M brick per day, and we consider our clay exceedingly hard to work.

We have only words of praise to offer for your machines.

Yours very truly,
V. S. Curtis
Sec.

Full particulars regarding these machines and others of our complete line of clayworking machinery furnished upon request.

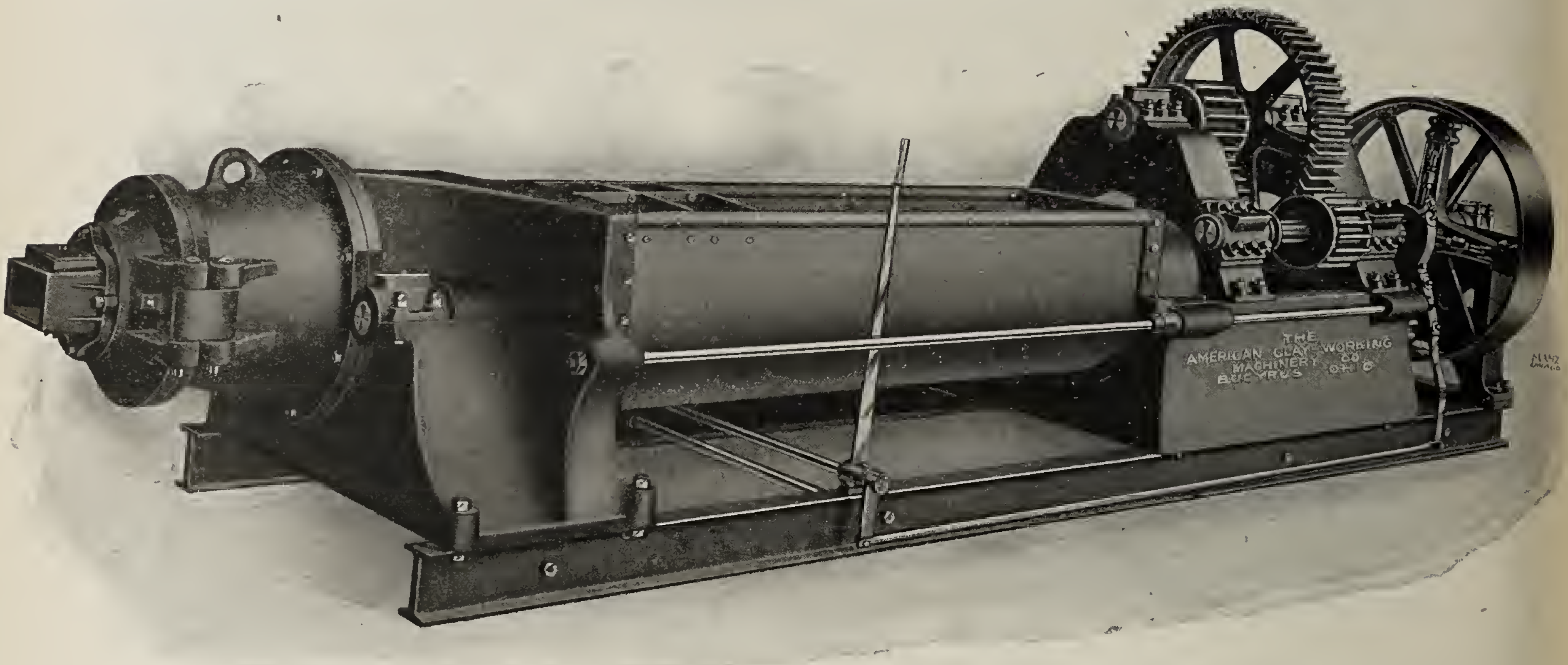
H. BREWER & COMPANY,

Tecumseh, Michigan.

Mention The Clay-Worker.

BIFURCATED MACHINE.

This new type of Combined Machine has many points of superiority. Its strength factors are away above the average. The placing of the pugging cylinder by the side of the expressing cylinder removes all objections to a combined machine. The clay is forced by pressure from the pugging cylinder into the expressing cylinder. On the old style combined machine the pugging was done above the expressing cylinder, and the clay fell by gravity through a throat to the brick machine. The clogging or barreling up of the clay caused no end of trouble. This new machine removes this serious objection. The side by side arrangement makes the machine much lower down, saving in height of the building, length of elevator, etc., and places the operator on the floor level instead of on a raised platform as formerly. This makes the machine more easy to operate and with a saving of labor. It makes better brick and insures steady operation. The machine is mounted on substantial steel I-beams, and as shown weighs 25,000 pounds. Built in three sizes. Capacity 35,000 to 100,000 brick in ten hours. It can be equipped with our automatic cutters and will work a greater variety of clays than any other combined machine on the market. The careful and honest construction of this machine insures its successful operation.



Write for complete particulars.

The American Clay=Working Machinery Company,

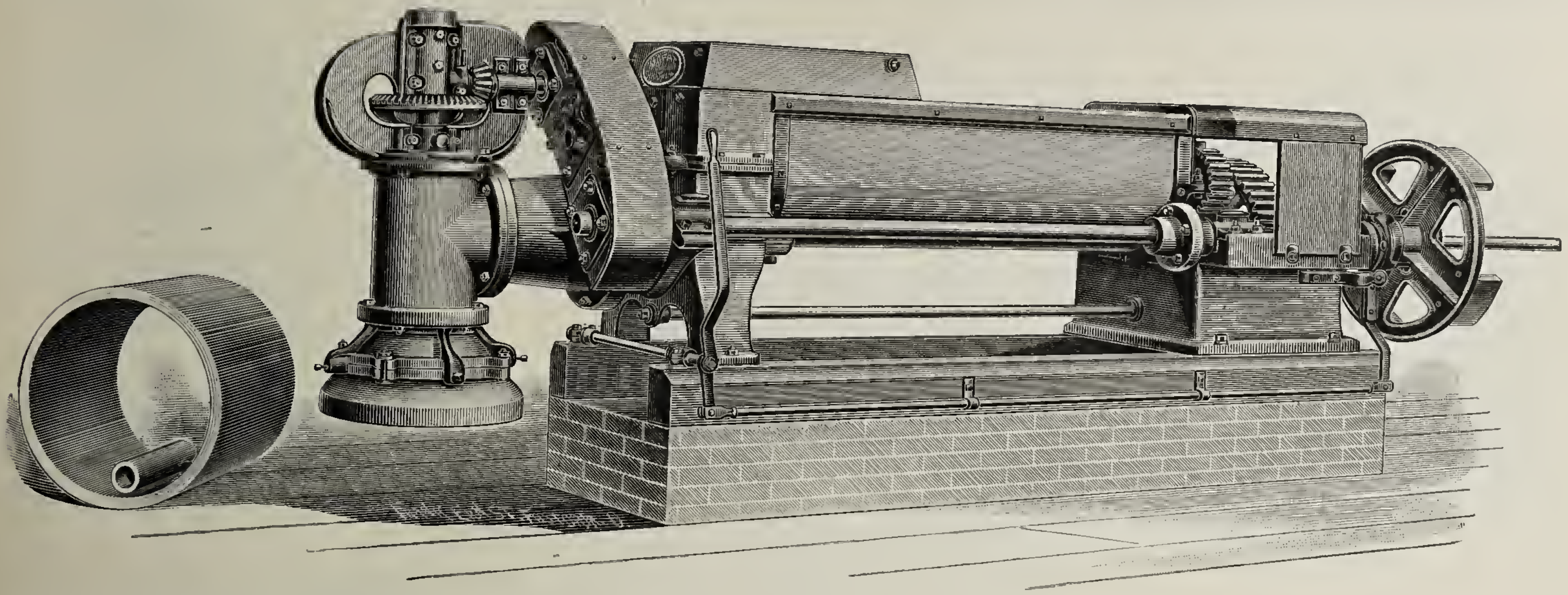
Bucyrus, Ohio, U. S. A.

New York Office,
39-41 Cortlandt St.
Chicago Office,
Merchants' Loan and Trust Bldg.
European Office,
3 Gore St., Picadilly, Manchester, Eng.

A NEW COMBINATION.

◆◆◆◆◆◆◆◆◆◆◆◆◆

INVESTIGATE IT THOROUGHLY.



Recognizing the fact that the average tilemaker does not sufficiently pug the clay he uses we have arranged our famous "Hummer Combined" Brick Machine so as to make all sizes of drain tile from 2 ½ inches to 24 inches.

Sizes 2 ½ inches to 8 inches, delivered horizontally and the larger sizes vertically. This machine, with a "Bensing" Automatic Tile Cutting Table, makes the most complete outfit for the manufacture of drain tile and hollow building blocks on the market.

We would like an opportunity to make you thoroughly acquainted with the good qualities of this Machine. A postal card from you will bring the information.

The J. D. FATE CO.,

B. E. LaDOW, Western Agent,
1210 Chamber of Commerce, Chicago, Ill.

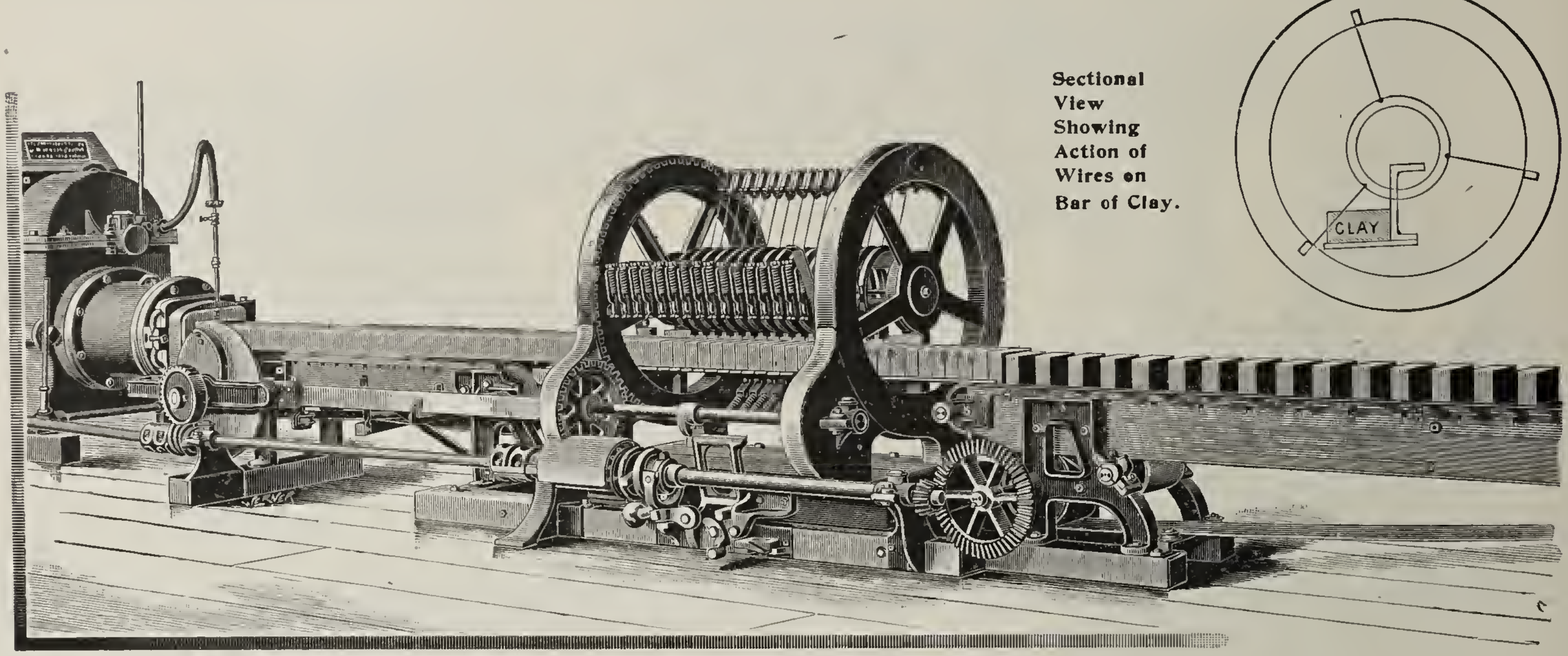
——Plymouth, Ohio.

Mention The Clay-Worker.

NO OTHER

AUTOMATIC CUTTER

Is "Just as Good" as This.


Sectional View Showing Action of Wires on Bar of Clay.
CLAY

ROTATING AUTOMATIC CUTTER. Patented.

Why waste time and money using Cutters which are frequently out of order and cannot be depended upon to do good work?

Why not produce brick of **finest quality** when it can be done with less expense?

A multitude of others have found it profitable to use this Apparatus.

Why should you not use it also?

You will be satisfied with it.

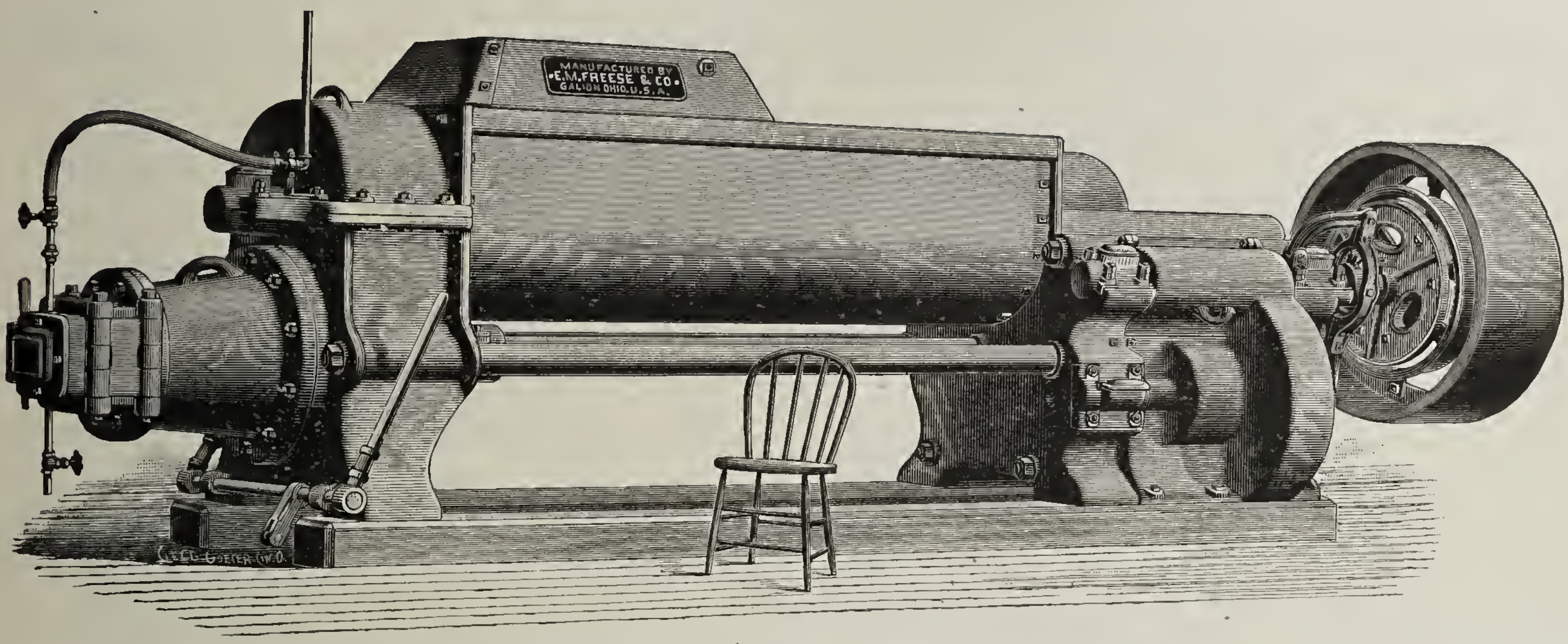
We will prove this statement if you will give us opportunity.

E. M. FREESE & CO.,
Galion, Ohio.

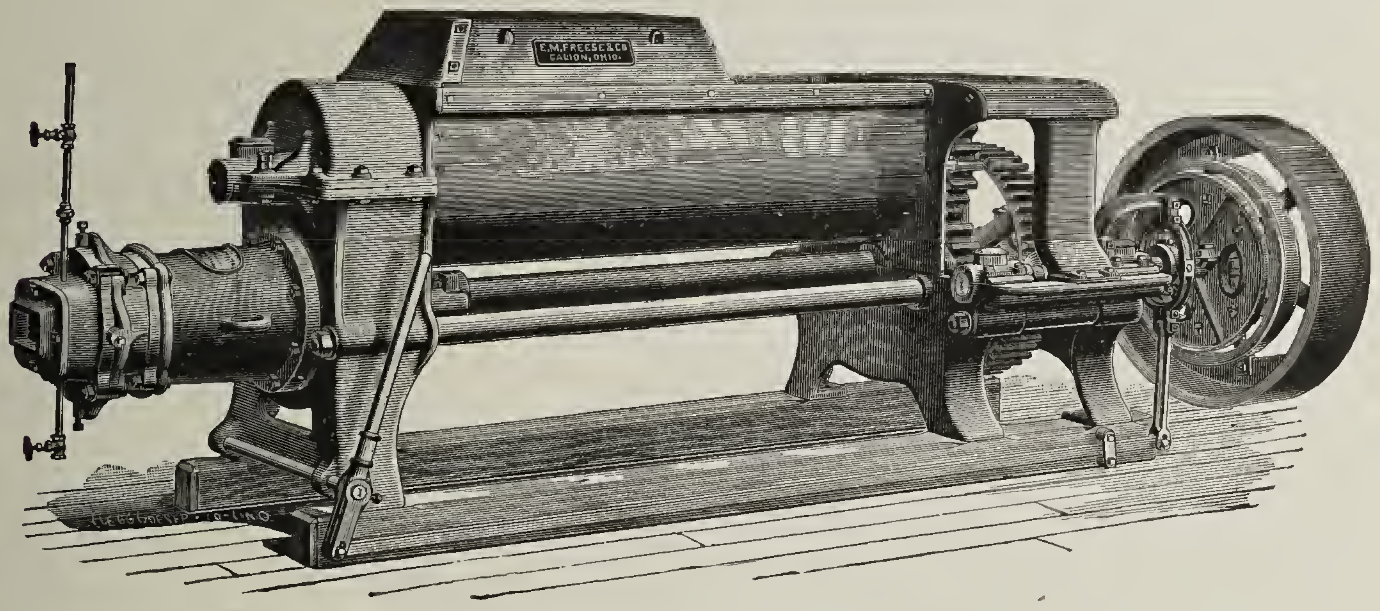
Mention The Clay-Worker.

Union Brick Machines

With Pug Mill Combined.


MANUFACTURED BY
E.M. FREESE & CO.
GALION OHIO. U.S.A.

UNION BRICK MACHINE. (SPECIAL SIZE.)



UNION BRICK MACHINE. (No. 1 SIZE.)

We build these Machines in five (5) sizes.

Their reputation for convenience, enconomy and satisfactory service generally is established by their use in scores of the best Brick Plants.

E. M. FREESE & CO.,
Galion, Ohio.

Mention The Clay-Worker.

SOME OF THE ARTICLES WE MAKE

Horizontal & Vertical Brick Machines

Clay Granulators,
Clay Elevators,
Clay Cars, Pug Mills,
Revolving Dump Tables,
Tempered Steel Brick Strikes,
Kiln Castings,
And other castings.

◆ ◆ ◆

Friction Winding Machines,
Friction Clutches,
Friction Clutch Pulleys,
Friction Cut-off Couplings.

◆ ◆ ◆

Power Freight Elevators,
Hoisting Machines,
And Some Other Things.

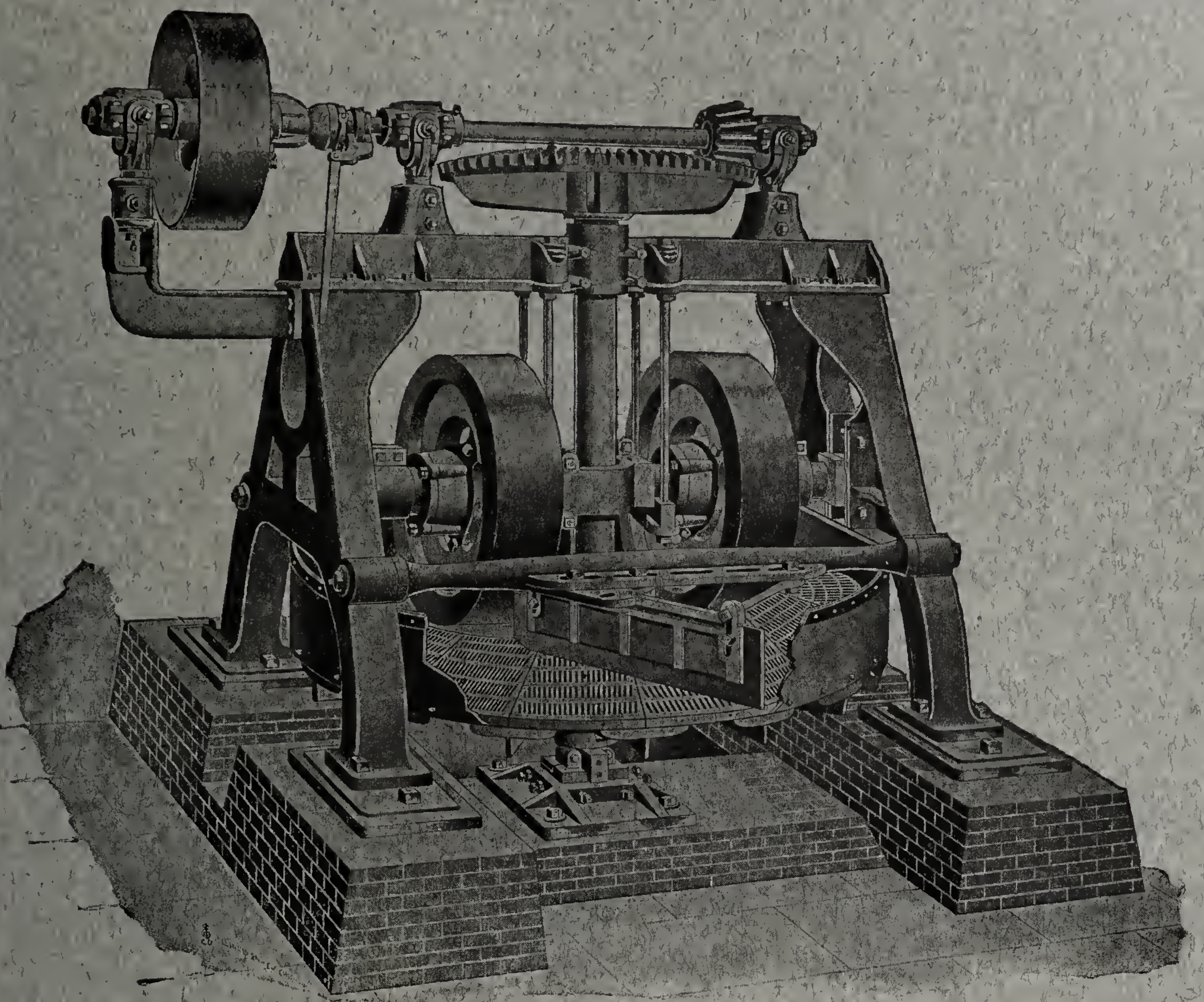
Have printed descriptive sheets describing many of these articles, which we will be happy to furnish, with prices on application.

It's not our aim to build the cheapest but we do try to build the best. Better Investigate Them.

The Eastern Machinery Co.,

Mention The Clay-Worker.

NEW HAVEN, CONN.



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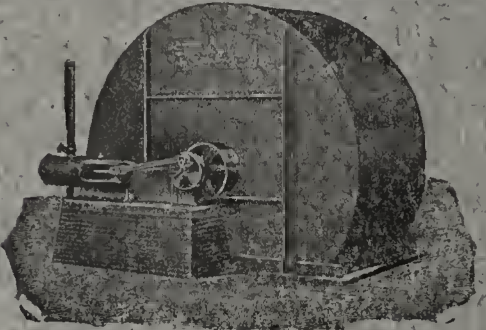
Its installation will guarantee a perfect product and a big saving in fuel expense.



"A B C" WASTE HEAT DRYER

"DOING GOOD WORK."

"It affords me pleasure to advise you that the apparatus furnished us for utilizing the waste heat from our continuous kiln for drying green brick is doing good work and is entirely satisfactory. It not only saves us a large amount of coal during a season, but it removes the objectionable heat from the kilns and thus gives a double service. HORSEHEADS (N. Y.) BRICK CO.
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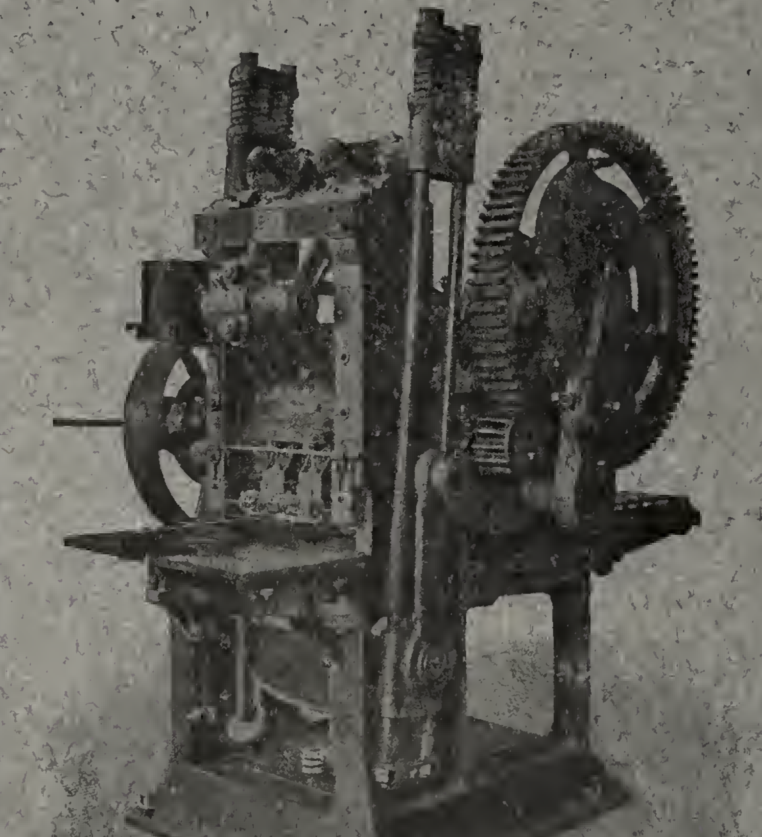

THE RICHARDSON DOUBLE DIE REPRESS.

We recently made mention in this space that we had shipped the thirteenth RICHARDSON REPRESS to the City of Washington. Before this had been in print thirty days the fourteenth repress was on the way there.

WHY NOT buy your first from us, and begin right?

And with it we suggest you use our steel dryer cars. They will not spoil what the repress has done so well.

The Ohio Ceramic Engineering Co.,
CLEVELAND, OHIO.

Table of Contents, Page 60.

THE
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A JOURNAL DEVOTED TO ALL CLAY WORKING INTERESTS.
INCLUDING BRICK TILE TERRA COTTA SEWER PIPE POTTERY ETC.
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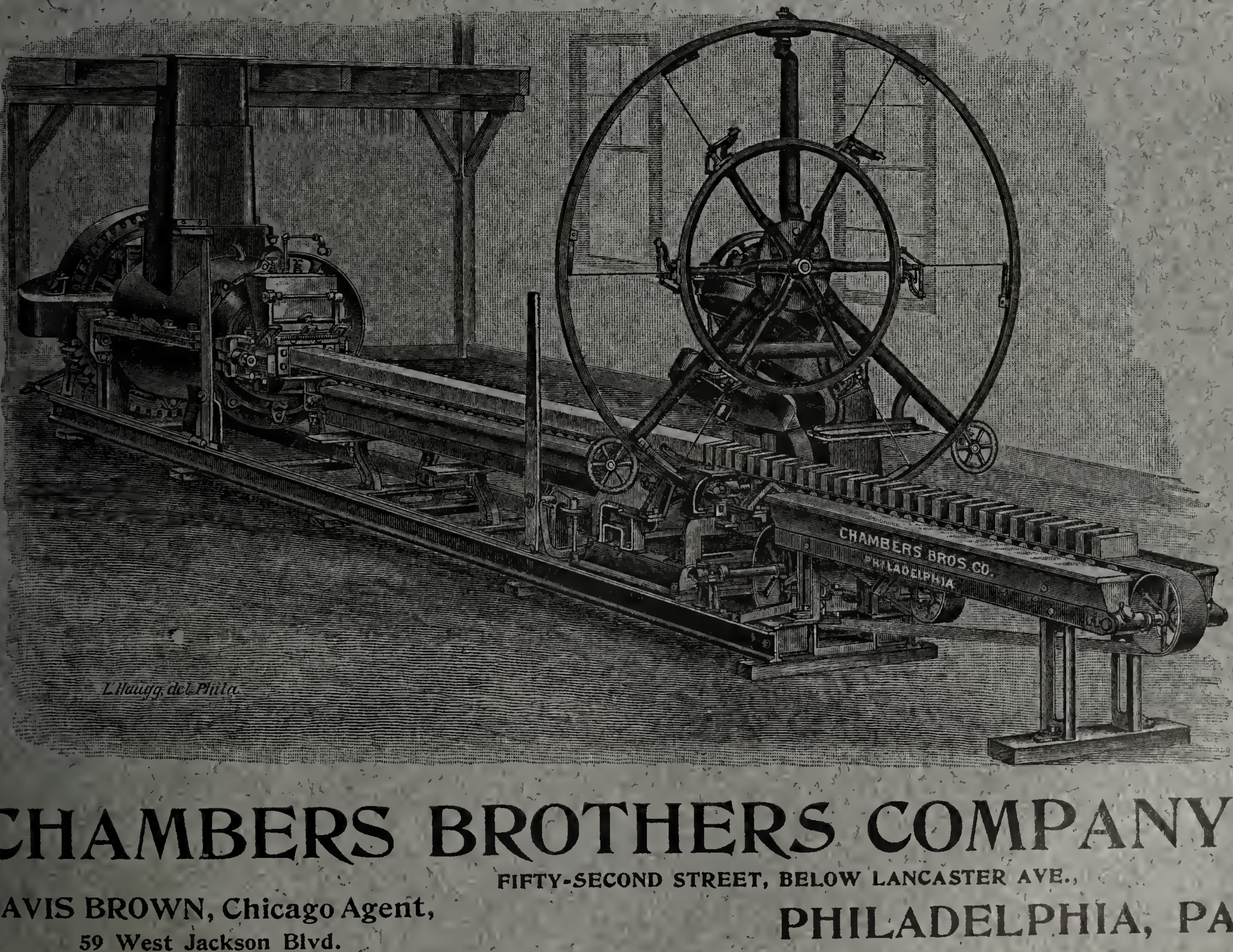
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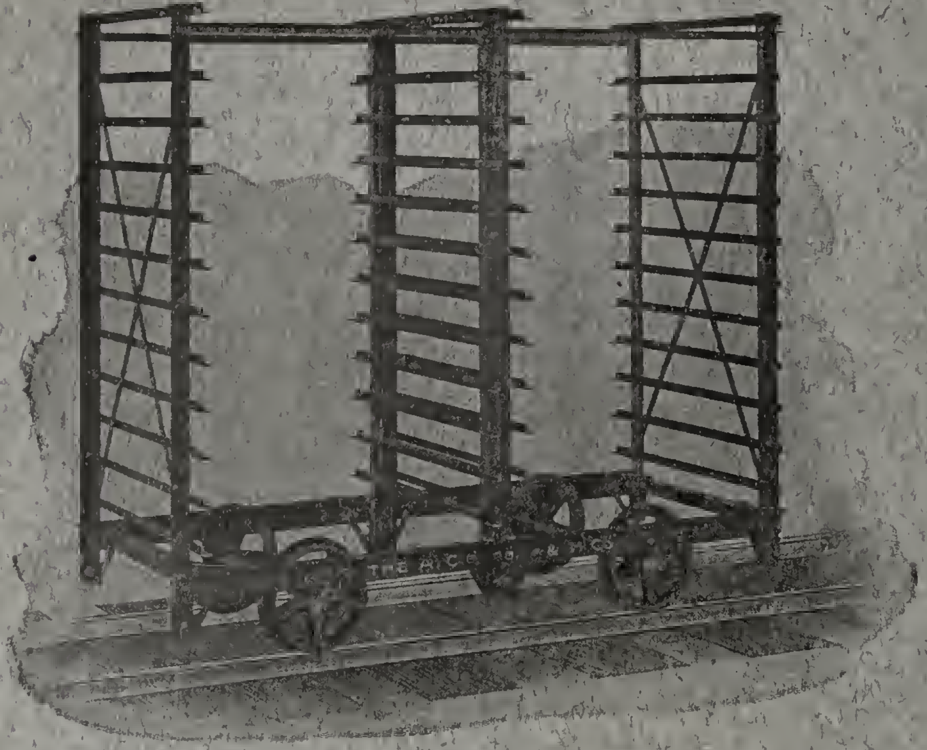

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INDEX TO ADVERTISERS.

Brick Machinery—Dry Press Process.

Name. Page.
Anderson Foundry and Mach. Works 10
Chicago Brick Machinery Co. 76
Chisholm, Boyd & White Co. 4, 5, 6, 7
Fernholtz Brick Machinery Co. The 9
Ill. Supply & Construction Co. 11
Ross-Keller Brick Machine Co 8

Brick and Tile Machinery.

American Clay-Working Mach Co., The 85, 94
Anderson Foundry and Mach. Works 10, 84
Brewer. H. & Co 93
Bonnot Co, The 90
Chambers Brothers Co 1
Chicago Brick Machinery Co 76
Eastern Machinery Co, The 98
Fate & Co., The J. D 95
Freese, E. M. & Co 65, 96, 97
Henry Martin Brick Mach. Mfg Co., The 91
Hensley, I. W 3
Horton Mfg. Co., The 89
Ill. Supply & Construction Co. 11
Kells Foundry and Machine Co 75
Leader Mfg. Co, The 84
Madden & Co 72
Ohio Ceramic Engineering Co., The 100
Potts & Co., C. & A. 86, 87
Raymond Co., The C. W 61
Stedman Foundry and Machine Works 13
Steele & Sons, J. C 81
Wallace Mfg. Co, The 92
Wellington Machine Co, The 63
Wiles Co., A. M. & W. H 79

Brick Kilns and Dryers.

American Blower Co, The 100
Barron Dryer Co 67
Bushong, M. M 76
Crown Dryer Co., The 82
Eudaly, W. A 77
Haigh, H 74
Illinois Supply and Construction Co, The 11
Justice, I. M 77
Morrison & Co., R. B 74
New York Blower Co., The 83
National Dry Kiln Co, The 82
Phillips, S. G 69
Pike, E. M 74
Reppell, L. H 77
Sharer, Geo. W 83
Standard Dry Kiln Co, The 16

Brick Yard Supplies.

Atlas Car & Mfg. Co. 2
Arnold, D. J. C 13
Bechtel, B. E 78
Cleveland Car Co 80
Caldwell & Son Co., H. W 72
Carnell, Geo 79
Central Iron Works 68
Cox, Geo. S 74
Dunlap Mfg. Co 71
Frost Manufacturing Co 99
Gandy Belting Co., The 70
Gray, S. B 74
Harrington & King Perforating Co, The 3
Henry Martin Brick Machine Mfg. Co., The 91
Horton Mfg. Co, The 89
Jeffrey Manufacturing Co, The. 73
Kendall & Flick 72
Marion Steam Shovel Co 82
Main Belting Co 71
Mershon, Schuette, Parker & Co 68
Phillips & McLaren 75
Rockwood Mfg. Co, The 75
Smidth & Co., F. L 78
Scotts Patent Brick Car Co 88
Shaw, Willis 71
St. Louis Pulverizer Co 100
Thew Automatic Shovel Co, The 81
Wells & Hall 71
Williams & Co., M. F 78
Williams Patent Crusher and Pulverizer Co 12

Miscellaneous.

American Ceramic Society 14
American Road Machine Co 72
Audel & Co., Theo 69
Big Four Route 74
Bloomfield Clay Co 14
Caldwell Co., W. E 73
Chesapeake & Ohio R. R 75
Clark W. J. Co., The 71
Clinton Metallic Paint Co 69
Clinton Paving and Building Brick Co., The 15
Connolley, W. A 69
Crown Fire Clay Co., The 70
Dean Bros. Steam Pump Works 71
Evens & Howard 70
Evert & Co., H. C 72
Gabriel & Schall 72
Hook, F. E 67
Indianapolis Engraving and Electro Co 70, 72
Indiana, Decatur & Western 74
Indiana Paving Brick Co 14
Johnsonburg Vitrified Brick Co 14
Kaufman Burial Vault Co 67
Lake Erie & Western 73, 74
McAvoy Vitrified Brick Co 15
J. L. Mead Cycle Co 73
Miller Oil and Supply Co 73
New York Brick and Paving Co 14
Ohio Steam Pump Co., The 73
Ohio State University 71
Pennsylvania Line 75
Purington Paving Brick Co, The 15
Perrine & Son, H. C 72
Reese-Hammond Fire Brick Co 70
Roessler-Hasslacher Chemical Company, The 79
Sangamo Brick Co 15
Terre Haute Brick and Pipe Co. 15
Vandalia Line 75
Wabash Clay Co., The 15
Ads., Small Wanted, For Sale, etc.

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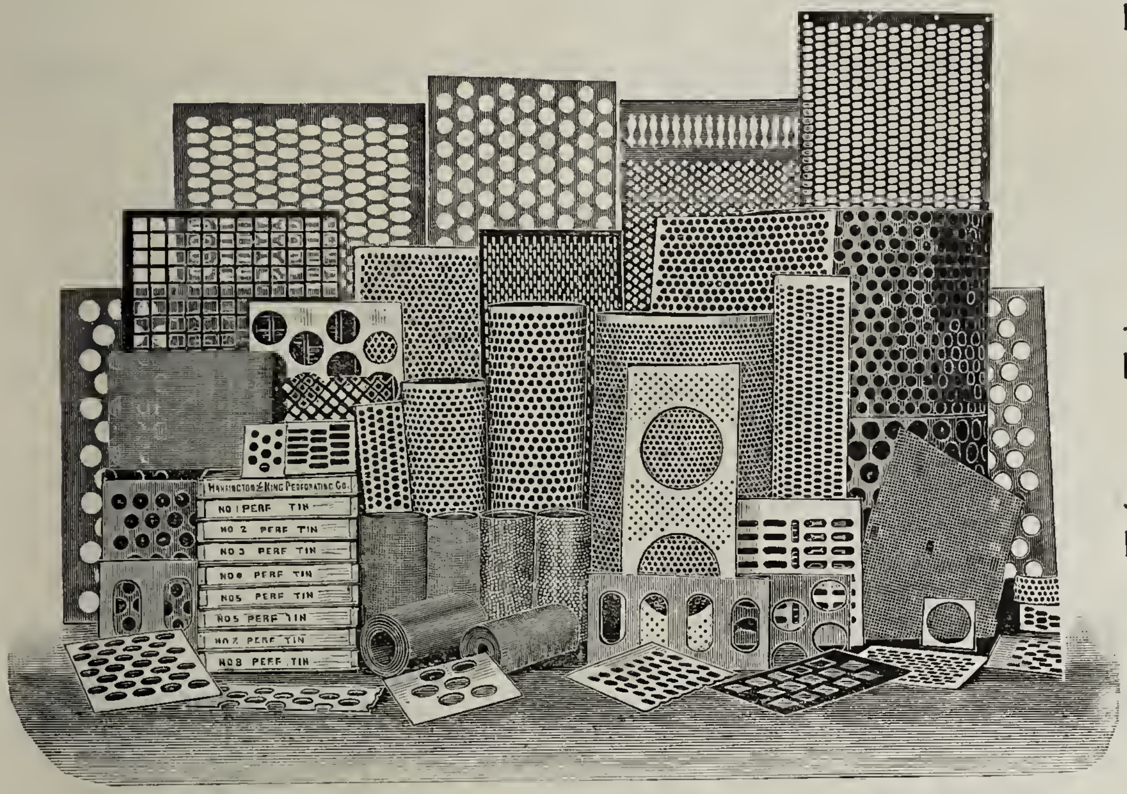

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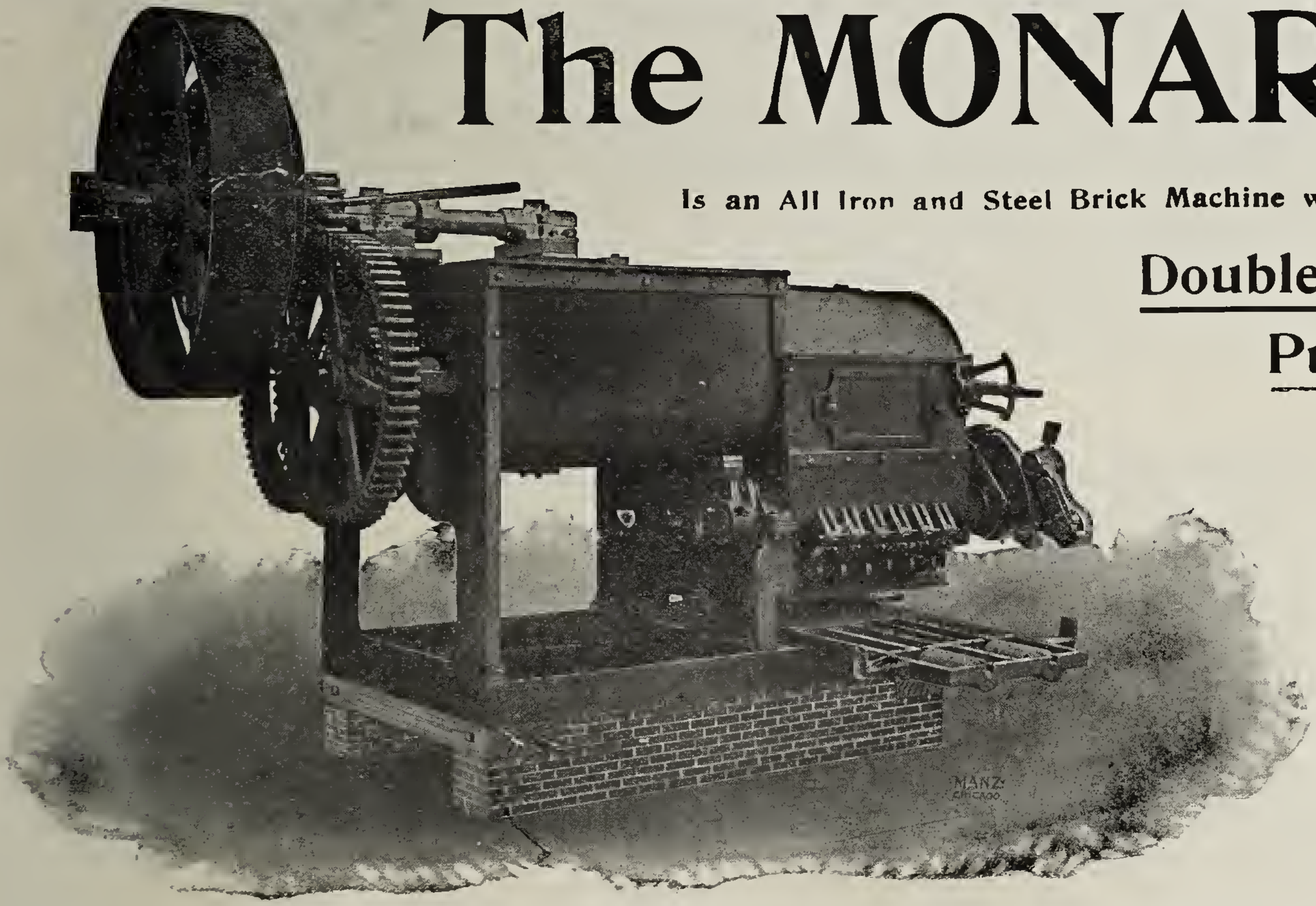

Is an All Iron and Steel Brick Machine with

Double — Pug Mill.

• • •

SIMPLE IN CONSTRUCTION, DURABLE AND . . . POWERFUL.

• • •

Every working part stands open to view both front and rear. It is a World Beater when it comes to quantity and quality of brick. We carry in stock a full line of first-class Brickyard supplies at a very reasonable price. Also the new **IRON QUAKER.** Engines and boilers. Send for new 1901 Catalogue.

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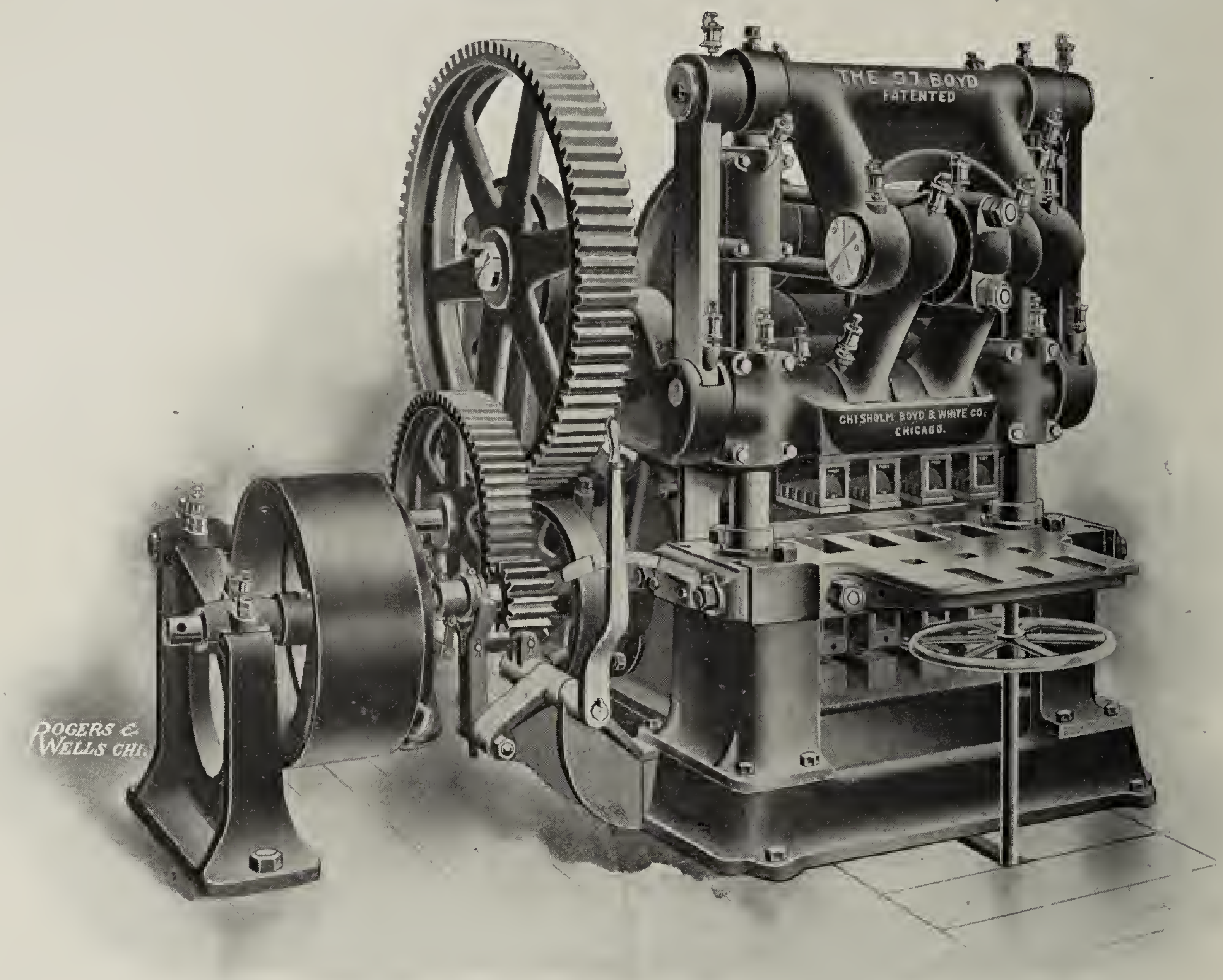
The Improved Boyd Brick Press.

The '97 Model.

IT'S NAME A GUARANTEE.



The '97 Boyd Brick Press has Enormous Strength and Great Durability: It is Compact; The Adjustments are Convenient; It Operates Quietly and Smoothly; The Workmanship and Material are of the best; The Design Ingenious, and shows the most Perfect Application of Scientific and Mechanical Principles to the Art of Brickmaking.

Sent on trial and subject to purchase after the making and burning of one or more Kilns of Brick.

Fifty Presses of this Pattern Now in Use.

Can not be broken in pressing brick. Fully Guaranteed.

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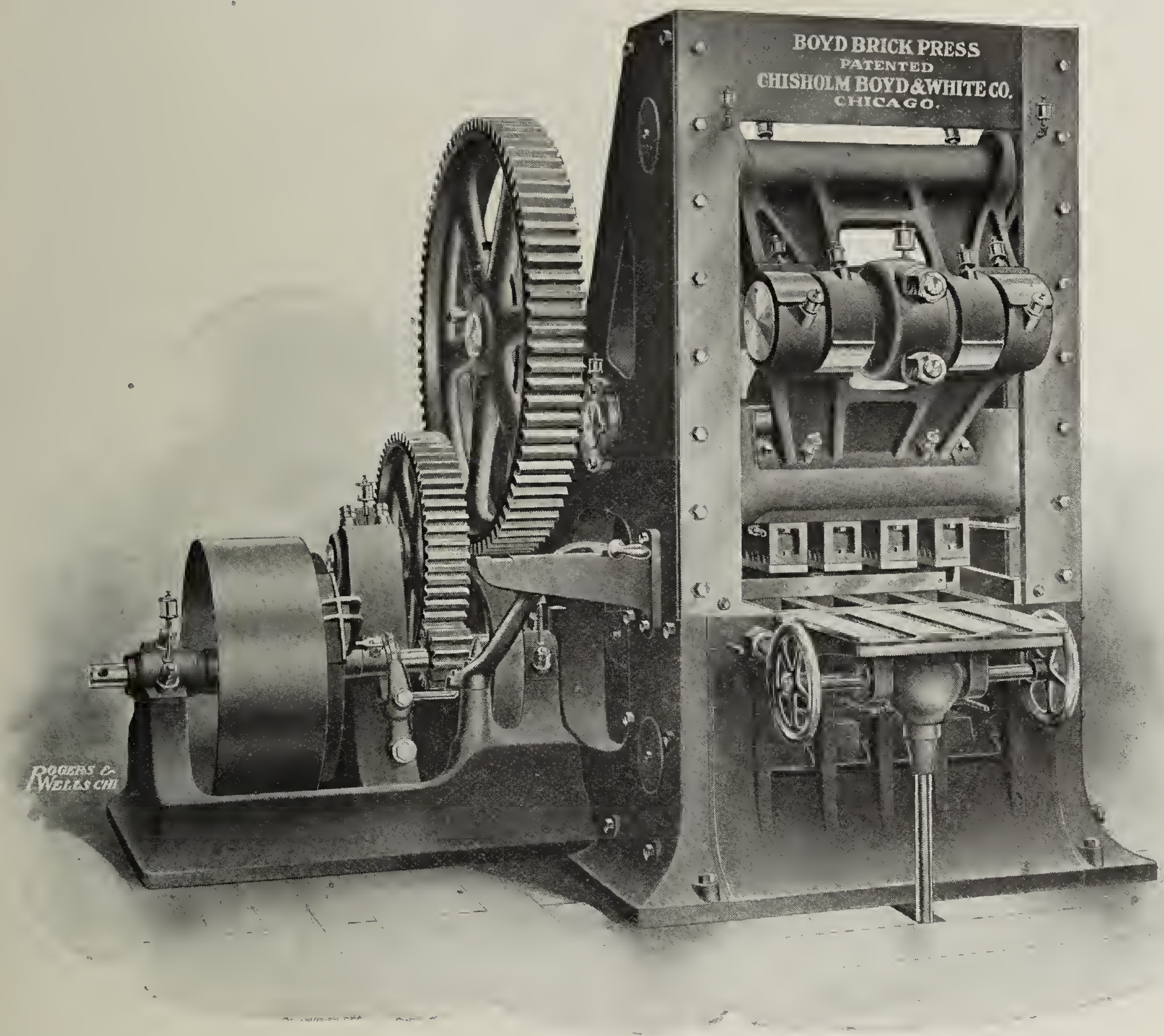

The Boyd Brick Press will make Better Brick from Clay or Shale than can be made from the same material by any other press.

Especially adapted for Working Shales; and is the only Successful Machine for Making Fire Brick.

Its Record: More Boyd Presses in Actual Operation than of all other Press Brick Machines Combined.

Brick Plants of any desired capacity designed and constructed complete, Under Guarantee of Producing Satisfactory Burned Brick.

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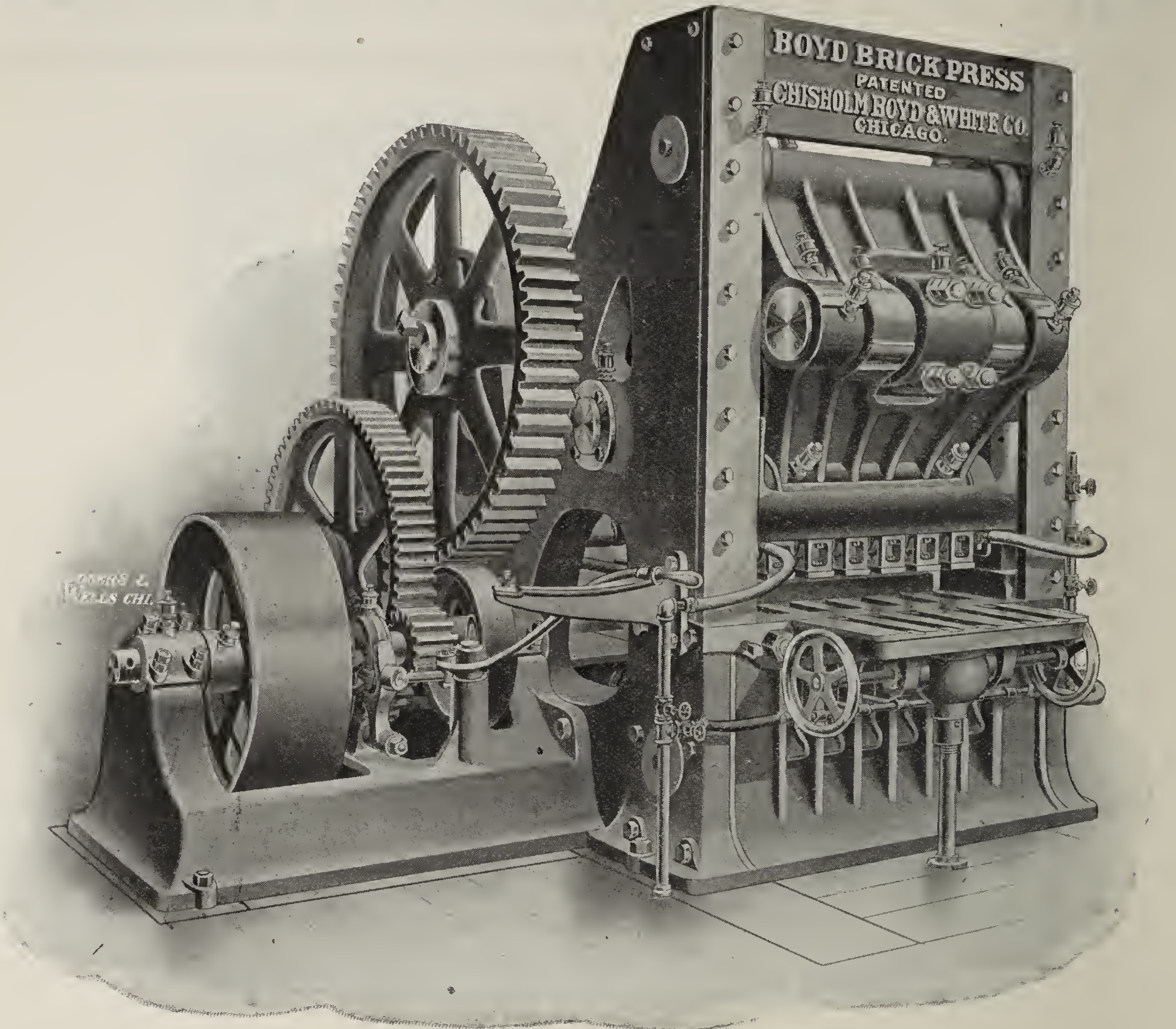
America's Greatest Brick Press.



Another Record for the Boyd Press! Six of our Six-Mold Presses in use **on one yard** since 1892. Average cost of repairs for each machine $1.00 per year.

The Boyd Press exerts greater pressure than any other machine made. It is the only Press in which the lower plungers are independent of the lower crosshead. This feature positively ensures equal pressure and finish on both sides of the brick, and no granulated or soft centers.

The mold liners are made of the hardest and toughest known metal, and are guaranteed for two years. The movement of the Boyd Press is noiseless and without jar or shock; no rubber or air cushions, hooks, latches or other uncertain and unmechanical devices are employed. Write for General Catalogue No. 10.

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ENGINEERS AND CONTRACTORS FOR BRICK PLANTS.

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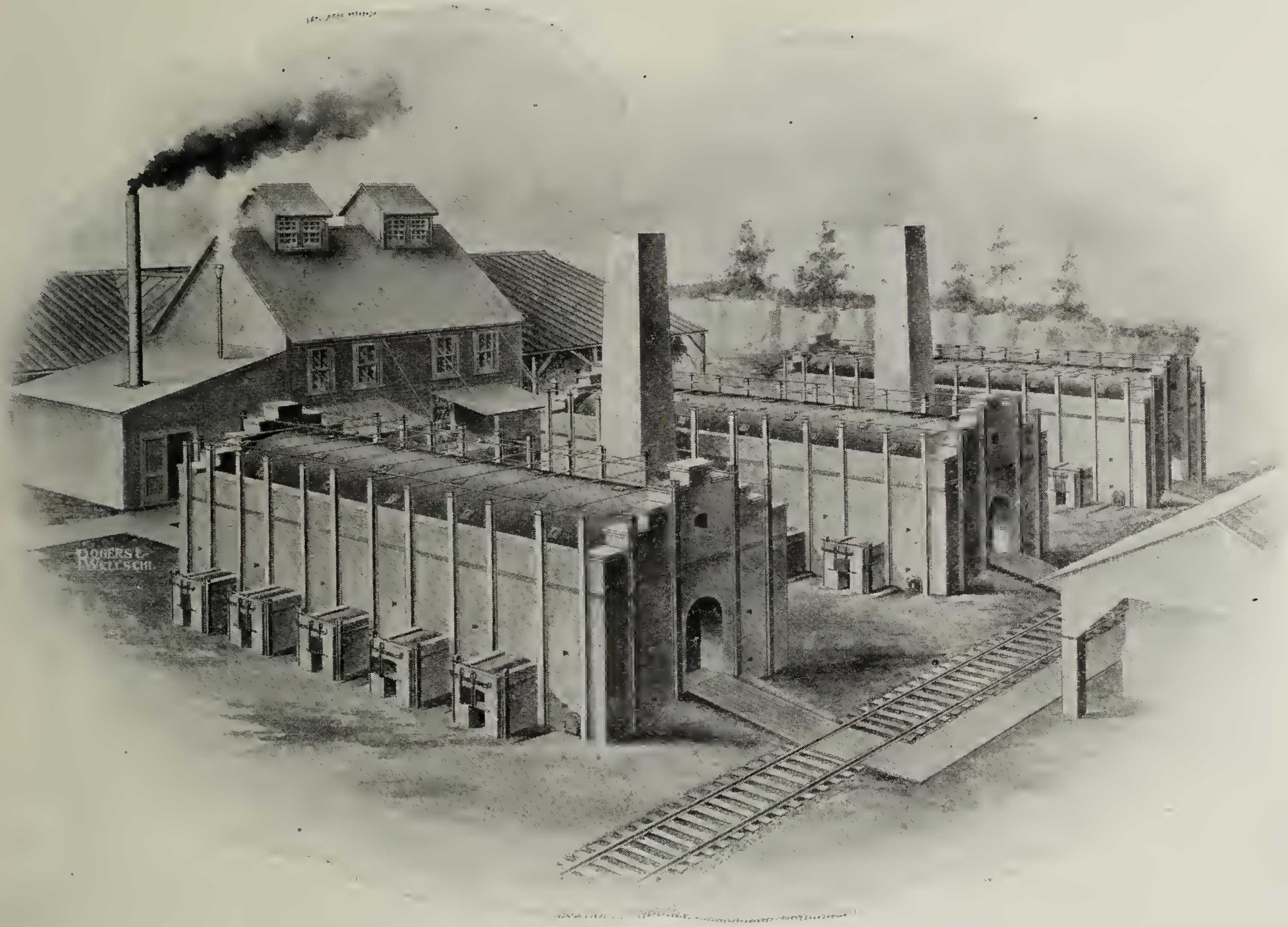
The Boyd Brick Press.



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A Sure Thing—We are prepared to construct and equip a Brick Plant of any desired capacity, furnishing the brickmaking machinery and power plant, erect the necessary buildings and kilns, and turn the plant over to the purchaser in proper working order, under guarantee of satisfactory results.

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The LATEST IMPROVED

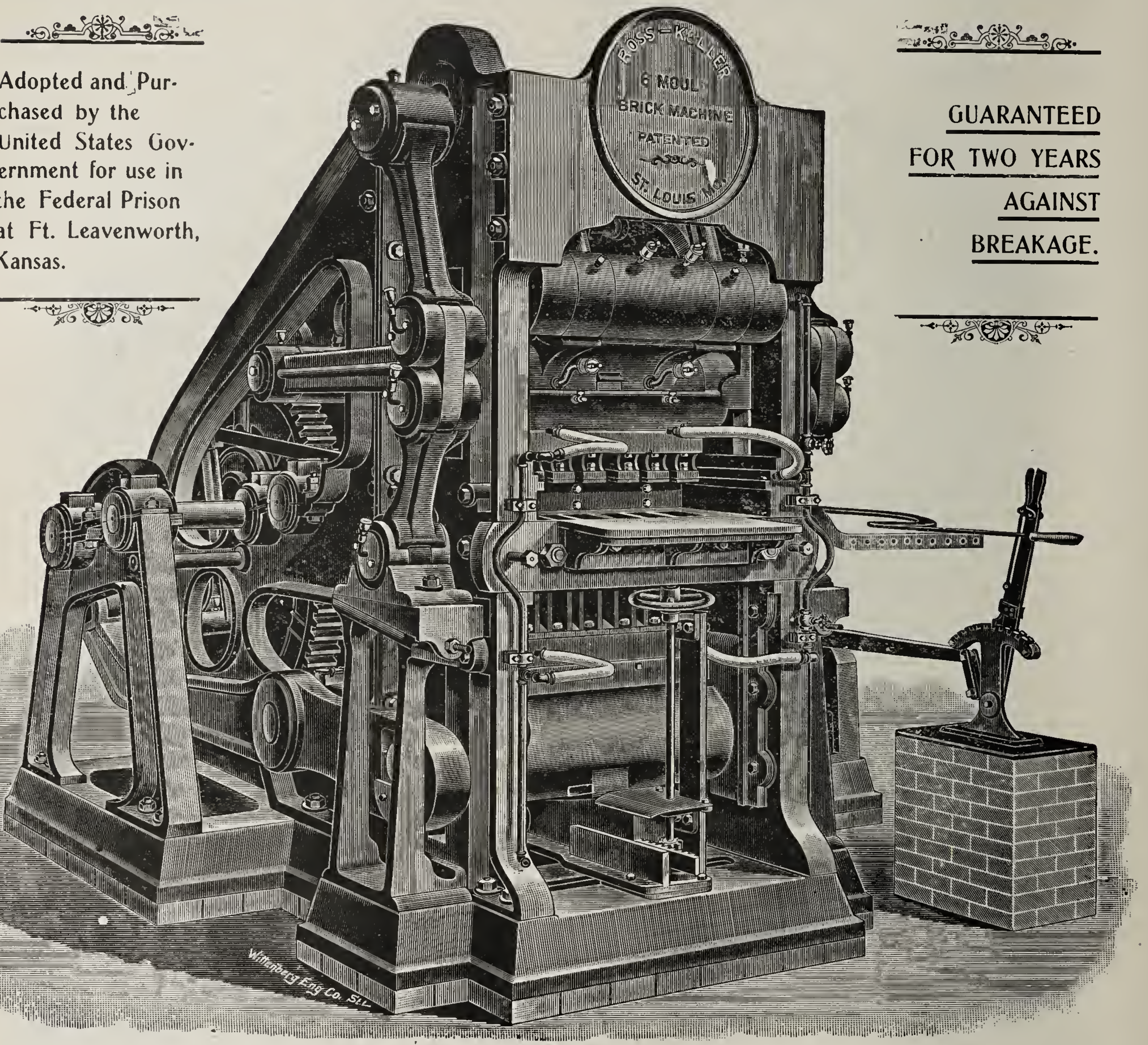
Ross-Keller TRIPLE PRESSURE Brick Machine

Manufactured in four and six-mould sizes. Weight of four-mould machine 58,000 pounds; capacity 24,000 brick per day. Weight of six-mould machine 75,000 pounds, capacity 35,000 to 40,000 brick per day.

BRICK SET IN KILN DIRECT FROM MACHINE.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

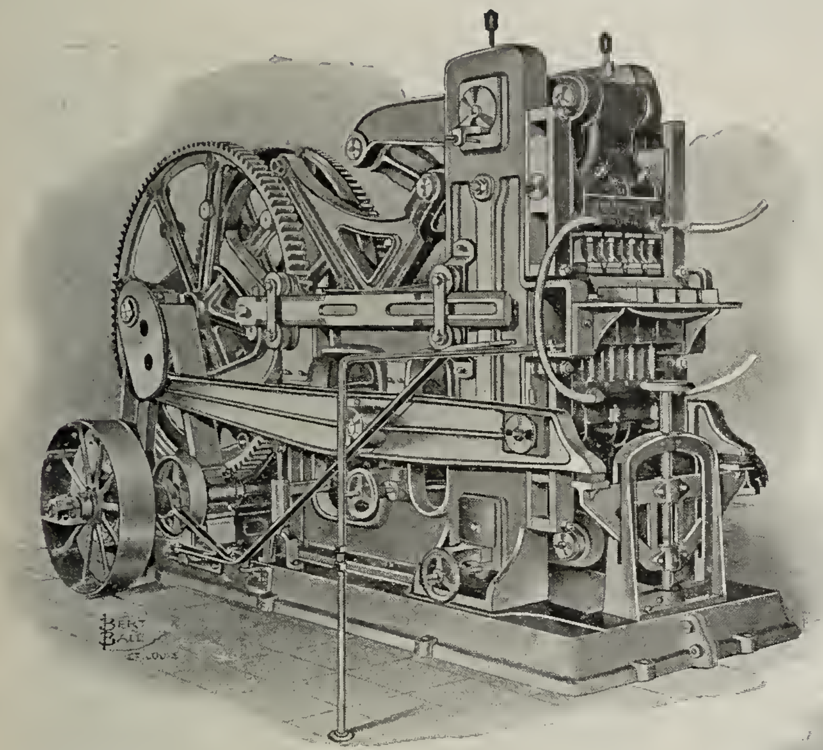
GUARANTEED FOR TWO YEARS AGAINST BREAKAGE.



THIS machine has an unbroken record of success. It is used on a number of the best equipped brick plants in the United States. It has never failed to give entire satisfaction and we are perfectly safe in guaranteeing that it will work any clay of which pressed brick can be made, and make them better and cheaper than any other press. It makes better brick because the pressure is greater and is applied in a way most effective. It makes brick cheaper because it is unbreakable and hence there are no repair bills or expensive delays and stopping of work which brickmakers know are more costly than the repair bills themselves. If you want to make the best brick at the least expense the season through don't fail to investigate this machine, with it you can "put money in your purse." Let us tell you more about it and give the address of those now using it. Remember "the proof of the pudding is in the eating of it."

For Prices and Full Particulars, address **ROSS-KELLER BRICK MACHINE CO.,** Fullerton Bldg., ST. LOUIS, MO., U. S. A.

The New Fernholtz Brick Press.



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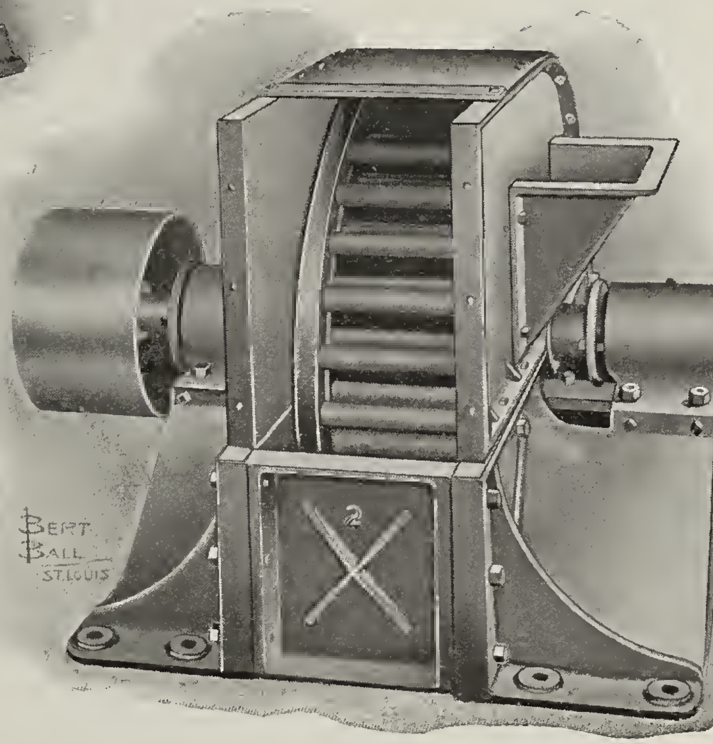
Fitted with the Celebrated

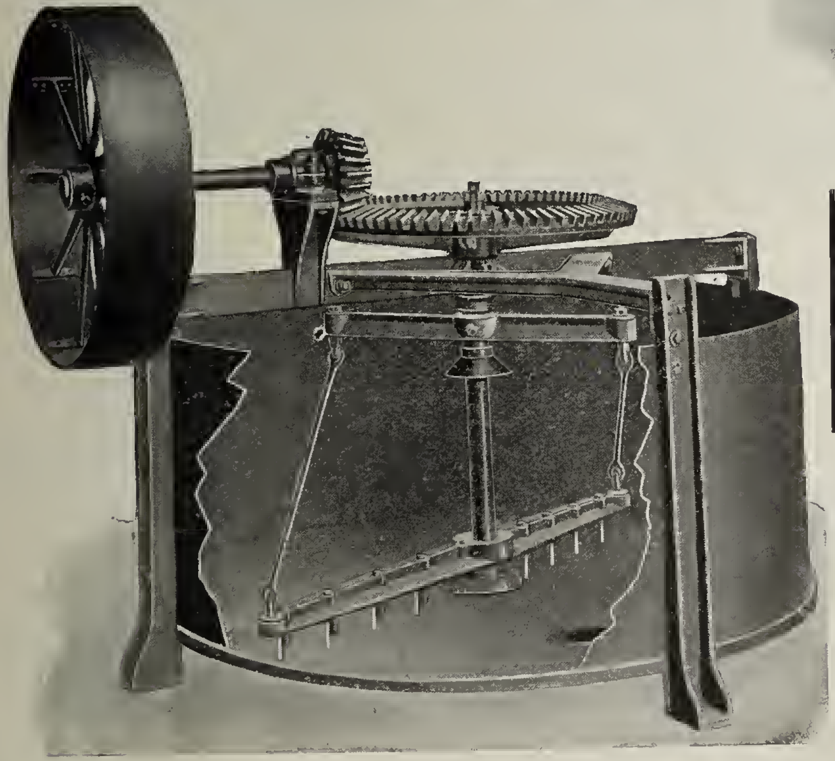
FERNHOLTZ MOLD BOX

Which is used by leading Brick Manufacturers in other Dry Presses.

The Fernholtz PATENT Clay Pulverizer.

No more rivetting Pins in Cage.
Any one can put them in Most economical Clay Grinder ever made.





The Fernholtz Iron Frame Clay Mixer.

"The Mixer that Mixes."

WE HAVE a first class repair department and can repair all kinds of Brick Machines and Machinery. We make a specialty of Molds for Fancy Shape brick at reasonable prices.

Dealers in BRICKYARD SUPPLIES.

If you don't see what you want ask for it. No trouble to answer questions.

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CABLE ADDRESS "FERNBRICK."
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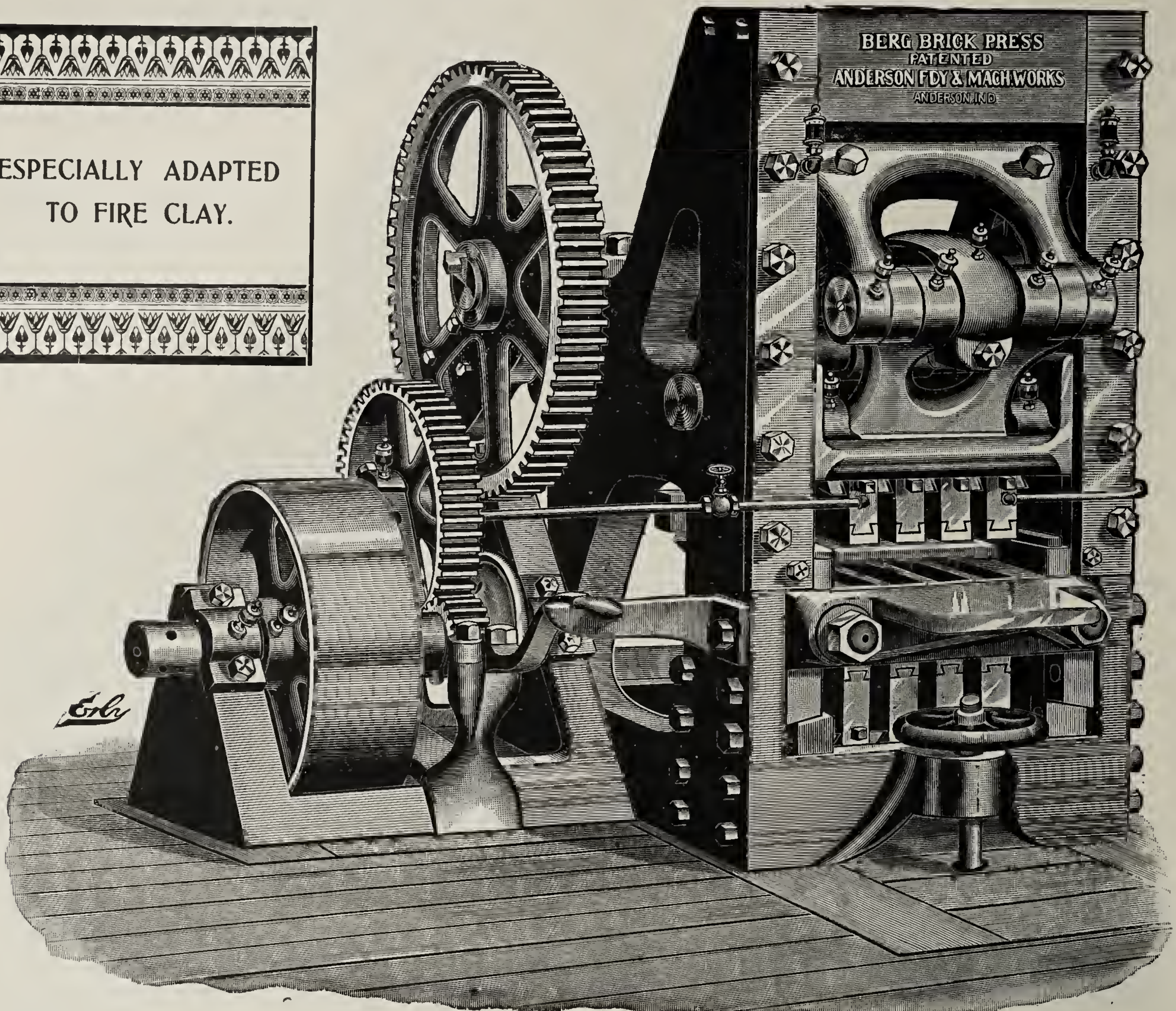
The BERG BRICK PRESS.

ESPECIALLY ADAPTED TO FIRE CLAY.



The Highest Development of the Art of Brickmaking—so Pronounced by the U. S. Government.

Three distinct pressures.
Greater Pressure than any other machine.
Greater Strength than any other machine.
Will put more clay into given space than any other machine
Less working parts than any other machine.
No Plunger Stems, eye rods or Springs.

Mold Liners Made of Tempered Tool Steel.

Makes all size Brick and Tile from 2 to 24-inch.

SOLD BY

Chicago Brick Machinery Co.,
225 Dearborn St., CHICAGO.

MANUFACTURED AND SOLD BY

The Anderson Foundry & Machine Works,
Anderson, Indiana.

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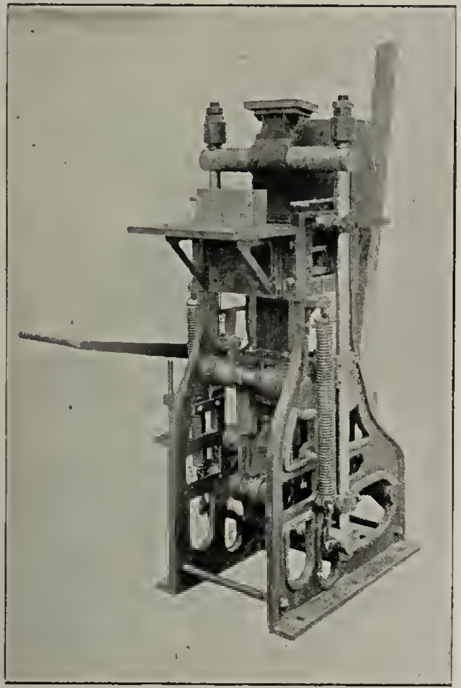
THE NEW

Grath Hand-Power Brick Press

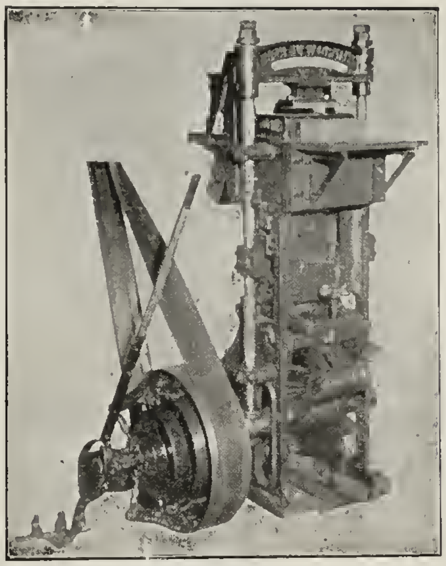


FOR MAKING PLAIN AND ORNAMENTAL PRESS
BRICK FROM SEMI-DRY CLAY.

The accompanying cut shows the only successful **HAND POWER PRESS** for pressing brick direct from the clay. The brick made on same are equal to those made on any steam power or hydraulic press. They have a polished face and perfect edges and corners. As will be seen, the press is equipped with charger and feed box. Two men can easily make 2,000 best quality press brick per day. By simply changing the liners and die plates, brick of any size up to 12½ inches long, 8½ inches wide and from 1 to 4¼ inches in depth can be pressed. In making brick on edge the mould is 9 inches deep. No brickyard is complete without a press of this sort. It is also recognized as the only successful press for making plain press or front brick for small yards that are making brick by the plastic process.

The Coffeyville (Kansas) Vitrified Brick & Tile Co. were the first one to order one of these presses, and to show what they think of same, they have only recently placed an order for two more of them.

The Grath ONE AND TWO Mould Steam Power Press



The accompanying cut shows the latest improvement in Brick Presses which are built in two sizes. The One Mould, which has a capacity of 5,000 best quality press brick per day. The Two Mould having a capacity of 10,000 best quality press brick per day. This press is so constructed that all shapes and sizes of ornamental brick can be made on same by simply changing moulds and die plates, and is the cheapest as well as the simplest and most powerful Press of its kind in the market. The brick made are very dense with perfect edges and corners. The Press is guaranteed against breakage for one year. All parts subject to strain are of steel.

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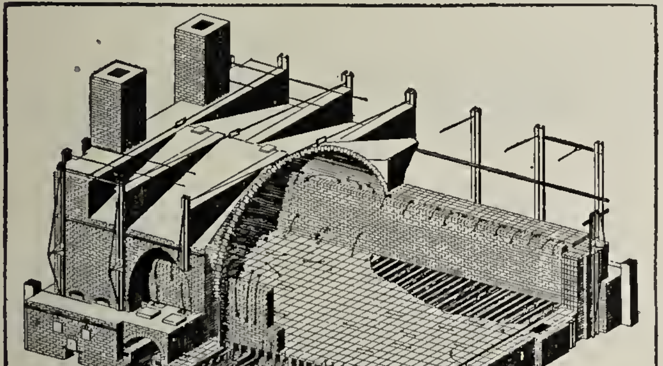
Can be attached to ALL kinds of Kilns, either old or new, and produces better results with SLACK than lump coal in ordinary furnaces. PROTECTION GUARANTEED TO ALL USERS. REWARD FOR INFORMATION ON INFRINGEMENTS.



The GRATH Combined Radiating Floor and Direct Down-Draft Kiln,

(THE PERFECT KILN.)

BUILT ROUND, SQUARE AND CONTINUOUS.

PATENTED.

BY OPERATING the Tile Dampers over the furnaces the heat is directed to any part of the kiln. When the dampers are closed all the heat from the furnaces is drawn into the flues under the Radiating Floor, then up the bag on the opposite side, then down through the ware. If the dampers are entirely open, all of the heat from the furnaces ascends directly up the bag and then down through the ware. If the dampers are split, part of the heat ascends up the bag and the balance is drawn into the flues under the Radiating Floor, up the bag on the opposite side, and then down through the ware. The heat passing under the Radiating Floor burns the ware in the lower part of the kiln by radiation to any degree of intensity. Thus it will be seen that all the material in the kiln is thoroughly burnt to any degree all at the same time. This constitutes the long sought for perfect kiln. For Catalogue and Prices apply to

The Illinois Supply & Construction Co., 800 Columbia Building,
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The Williams Patent Crusher and Pulverizer Co.

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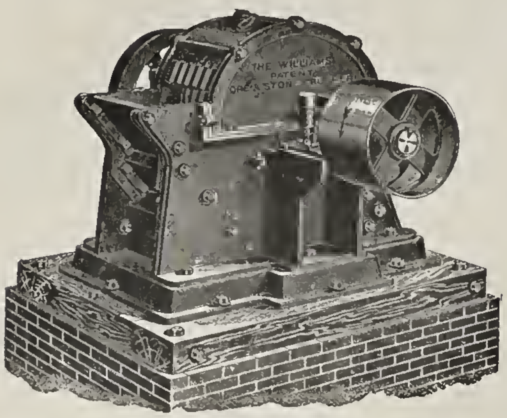
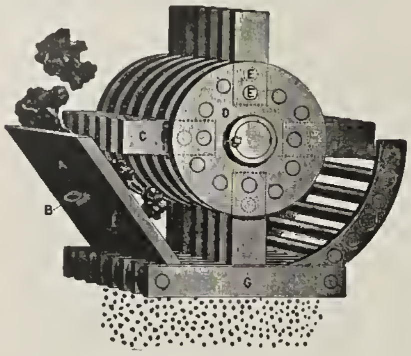
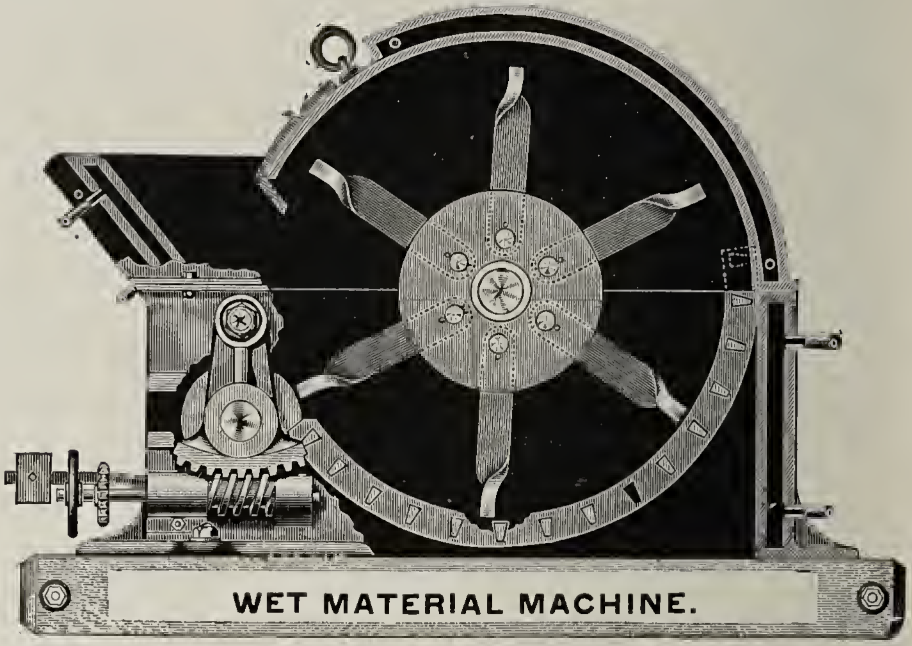


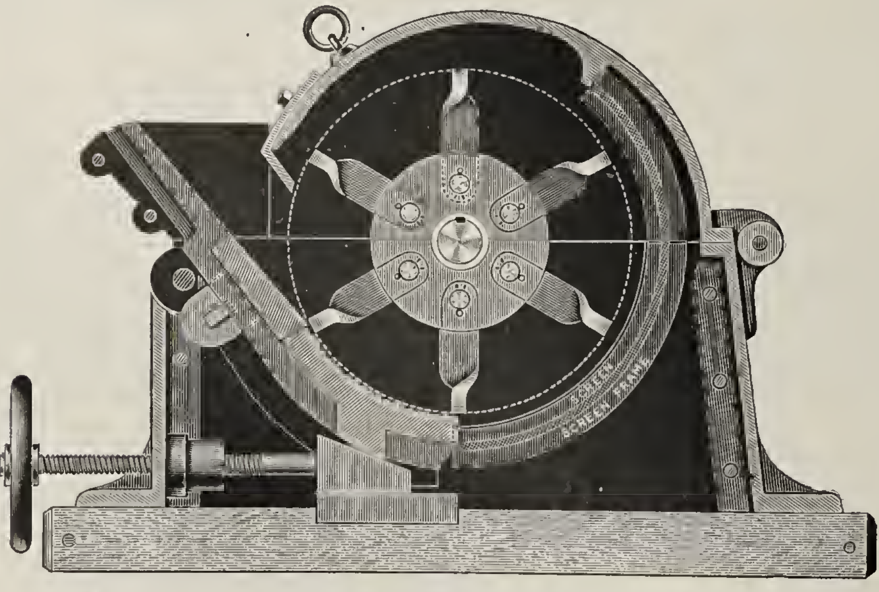
SHALE CRUSHER ahead of a Pan. 5 Sizes.



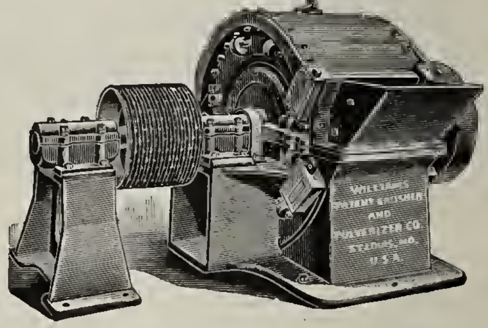
Interior of Same.


WET MATERIAL MACHINE.

WE NEVER FOLLOW BUT ALWAYS LEAD. Our Steam Screen leads them all. We guarantee to work satisfactorily any clay that will make a Brick, wet or dry, with less cost than any other machine on earth. : : : : : :



TAILINGS GRINDER (which finishes without additional Screening). Five Sizes.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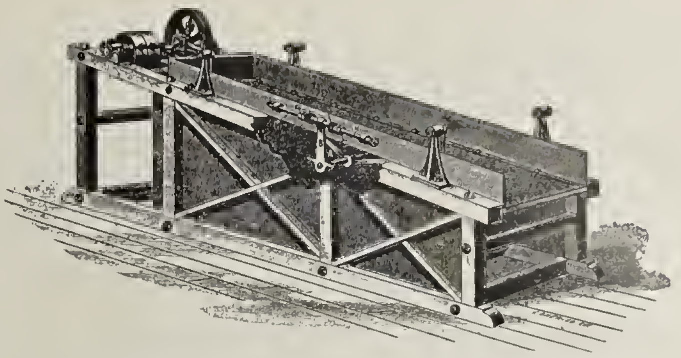
STEDMAN'S AGITATING INCLINE SHAKER SCREEN.



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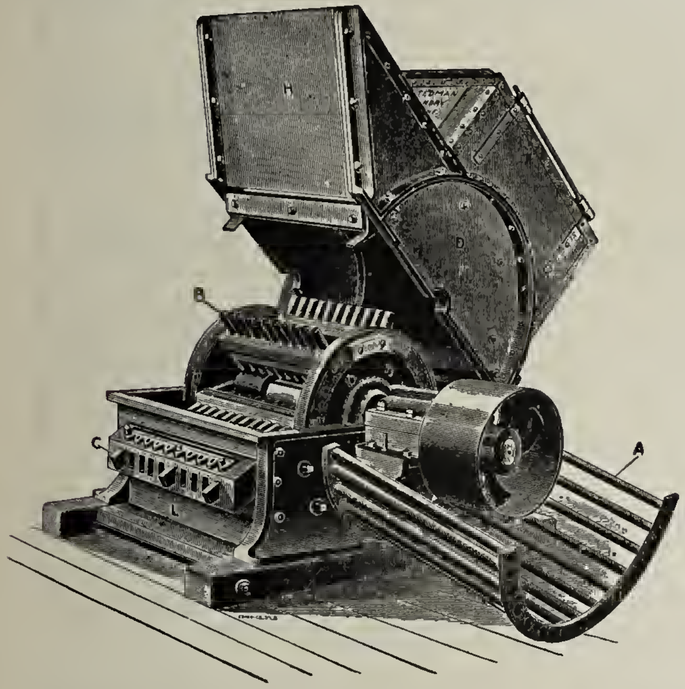

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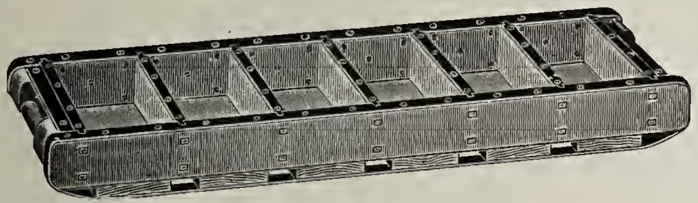
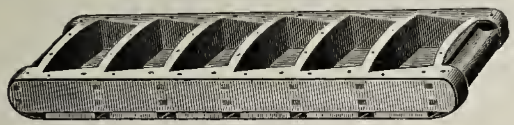
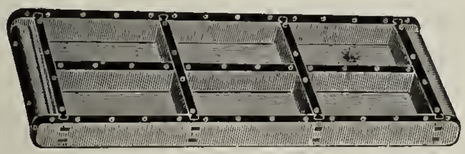


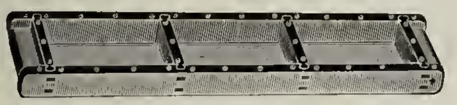
Six Brick Machine Mould.



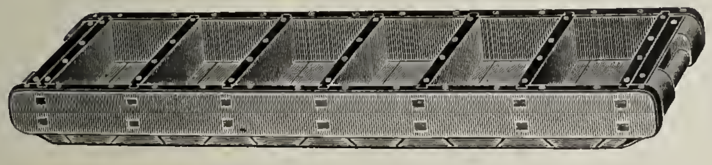
Circle Mould.



Hand Mould, Six Brick.



Hand Mould, Three Brick.



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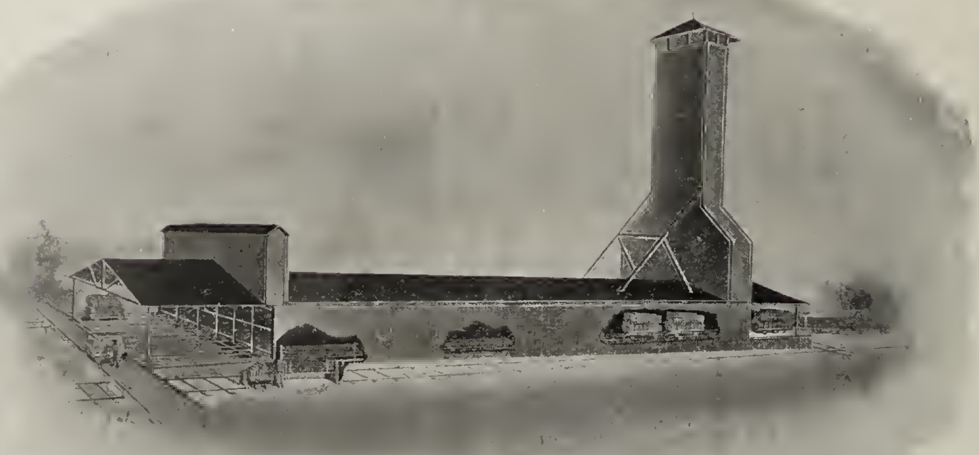

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THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

Vol. XXXVIII. INDIANAPOLIS, IND., JULY, 1902. No. 1.

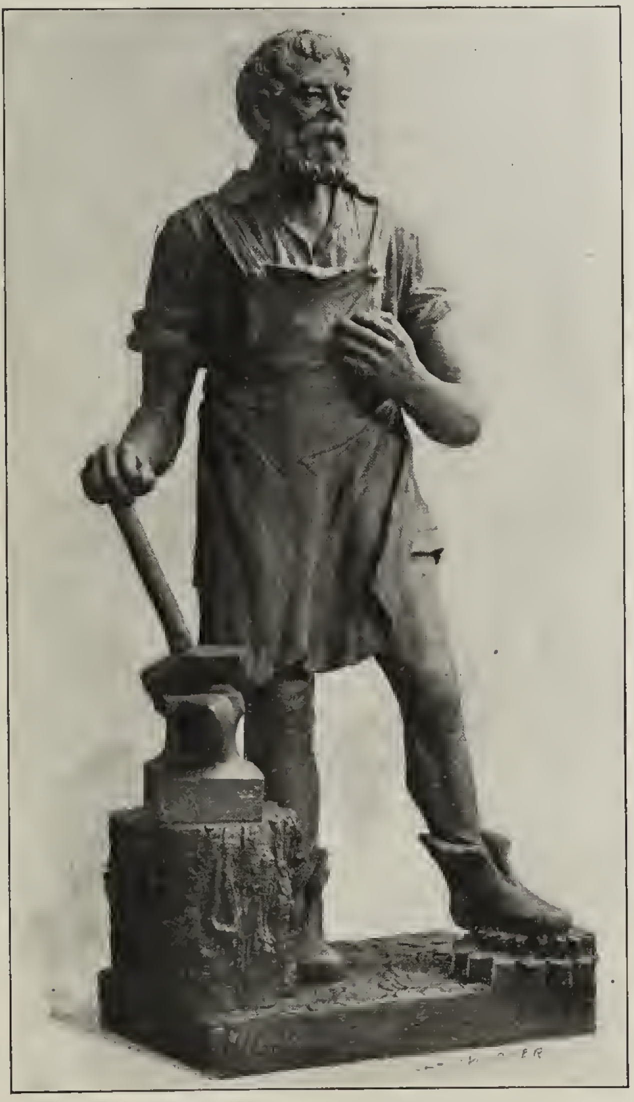
Written for The Clay-Worker.

STABILITY IN ARCHITECTURAL DECORATION.

A Notable Clay Product.

THAT PORTION of Paterson, N. J., which was recently devastated by fire and flood has risen, or is rapidly rising, from its ruins. If the statue which will crown one of the edifices is a fair indication of the spirit of the builders, the city will be more beautiful than before.

Our illustration shows a terra cotta statue seven feet high, the work of the well-known figure modeler, Mr. H. Madsen, who is employed by the Brick, Terra Cotta and Tile Company, of Corning, N. Y. This important piece at our last advice was undergoing the trying ordeal of fire, that is to say, it was being burned. The figure, representing Vulcan, is a splendid idealization of the blacksmith god, son of Zeus and Hera. It is a very fitting adornment for a building designed to house a big hardware store, as will be the case here. Too often a statue is very unsatisfactory in its general outline — what architects call the sky blotch. It is not so with Madsen's Vulcan. The pose is fine; it is at once simple, dignified and natural. The features have, perhaps, a more Teutonic suggestion than Greek, more of Thor, the hammer god of the North, than of him who was "fired" out of Mount Olympus. Even if this be so, it is not, to our mind, any defect, and perhaps the gods of old, like the European rulers of to-day, were closely related and resembled one another.



VULCAN.

Terra Cotta Statue 7 Feet High. Executed by the Brick, Terra Cotta and Tile Co , Corning, N Y.

One great pleasure that this terra cotta statue will give to clayworkers is the proof of our evolution and progress. We are getting away from the galvanized iron decorations, painted to look like terra cotta, though we are doing this all too slowly, still we are moving upward and onward towards stability in architectural decoration, and every worthy specimen of high art in terra cotta, of which our illustration is an example, will be an increasingly multiplying force in this direction.

BRICKMAKING IN LONDON.

DURING the fall of 1901 the Times, of London, published a series of letters from "To the Public," an unknown correspondent, on the general decline of "output" in several lines of industry, and, among others, in bricklaying. In the issue of November 18 it was stated that in bricklaying "the maximum of 400 bricks per day per man is the recognized limit for dwellings, shops and business premises built by a private contractor. In the case of public buildings, and especially London County Council and School Board work, the limit is considerably less. Certain bricklayers have stated that the London County Council limit is 330 bricks per day. That is what they consider a fair day's work. Naturally, this created a stir in the London County Council, and the Council made reply to the charge. But the reply was decidedly vague and unsatisfactory; indeed, it is a lame and impotent defense, concluding with the statement: "We conclude from the figures that, taking into account every class of brickwork found in buildings of the above character, the figure of 330 brick per man per day is considerably below the number actually laid."

The simple statement of the number actually laid would have been very much more conclusive. Other testimony substantially corroborates the complaint of the Times, as to the number laid, and it has been written up "pro and con" by nearly every newspaper in London. But the ability of the British bricklayer has been demonstrated in many instances cited by those interested in the subject, and the letter of Mr. Stewart, the building manager of the British Westinghouse Electric Company, has been quoted extensively by the journals of this country. It is stated in that letter that for common work they averaged 2,250 brick per man, per day. Very few of the journals attempt an explanation of the difference in quantity, for the statement of the Times is, in England, regarded as substantially true. There was a time when the London Council did away with the contract system in the execution of their work, and executed it by day under their own foreman, under the general management of the "Works Department."

It was the best way and the work was much better than when done under the contract system, but the labor element dominates the Council, and John Burns and other labor leaders declared that the work was that much better, and justified the system, and the Council adhered to it. In fact, the trend of the discussion in the Council and out of Council justifies the contention of the Times to a very great degree—that it was the domination of trade unionism that was responsible for the state of affairs as they described it.—Exchange.

WRITTEN FOR THE CLAY-WORKER.

LIGHT AND HEAT—SIXTH PAPER.

By Master Mechanic.

IN THIS SERIES of papers we have reached for our consideration the at present all-important product of the earth, mineral coal. Until we learn how to produce light and heat from other abundant elements on our globe, coal will stand pre-eminent as stored carbon for a heat and light producer. Owing to the great importance of this article, its many varied forms and uses, we find that one paper devoted to it as one of the fuels would be insufficient to do it justice. In our next paper, therefore, we will continue the subject of mineral coal, which, as stated in a previous paper, is fossilized vegetation.

In order to arrive at what it really is, and how it came to be, we have to take the geological version of its genesis and structure.

In the dim ages past the period in earth's history called carboniferous was the age in which the formation of the present coal measures was begun. Geology teaches that for many thousand years the atmosphere was highly charged with carbon in the form of carbonic-acid gas. As this gas is the nutriment of plant life, vegetation became enormously abundant, so that vast portions of the earth's surface were thickly covered with growing vegetation.

The peculiar state of the atmosphere did not allow it to rot, as it would now at our present time, but let it accumulate into vast peat beds. Inundations and convulsions in the earth's crust gradually covered them up, when the process of the coal formation began. Pressure and heat first made these peat beds into lignite, and as time went on this changed into brown coal. The next but very slow operation changed the brown coal into bituminous coal, and at last, as crystallization advanced, it became anthracite as we find it now.

Some authorities say that both heat and pressure distilled the bituminous coal, thereby producing the petroleum, while the residue remained as anthracite coal. Many coal beds are found that furnish this coal in its transition state, called semi-anthracite.

When bituminous coal containing an oily or resinous substance is treated with heat, similar to wood in making charcoal, it becomes coke. Of this we will treat further on. This, we readily understand, is a quick process in comparison to nature's method; hence we obtain a different result. I will remark, however, on the assurance of a creditable citizen of Richmond, Va., that nature also can produce coke, as he stated to me that he had a mine of natural coke. The writer did not go to see the mine, but took the evidence on trust, believing that the internal heat of the earth could readily bring about such a phenomena.

Mineral coal is the stored-up energy of the sun. This is self-evident when we trace the action from the beginning, when the sun first causes the germs of the plants to sprout, until it reaches the vast stores of coal in the bowels of the earth.

The action of the sun in depositing the superabundant carbon in the earth also freed the atmosphere from the carbonic-acid gas until it was fit for man and animals to breathe.

Chemically we can note the slight gradations vegetation undergoes until it reaches the solid form of anthracite coal.

In the following table we will start with wood fibre:

	Carbon.	Hydrogen.	Oxygen.
Wood fibre	52.65	5.25	42.10
Peat	60.44	5.96	33.60
Lignite	66.96	5.27	27.76
Brown coal	74.20	5.89	19.90
Bituminous coal	76.18	5.64	18.07
Semi-anthracite	90.50	5.05	4.40
Anthracite	92.85	3.96	3.19

We see by this that during the forming process coal loses most of the oxygen contained in the wood fibre, until only a small portion remains, as also does hydrogen. In the above table we left out the other ingredients, which are very small in good coal, while in the poorer qualities they may run as high as 50 per cent., in the aggregate. These nearly always are detrimental for proper combustion, especially when it is sulphur.

The table we give below shows the chemical constituents of some of the well-known coals in the market. We must bear in mind, however, that some grades vary very materially from special mines of the same section.

For instance, under the title of "Pennsylvania Anthracite" it gives an average of 14.8 of ash, from which it differs very much both ways:

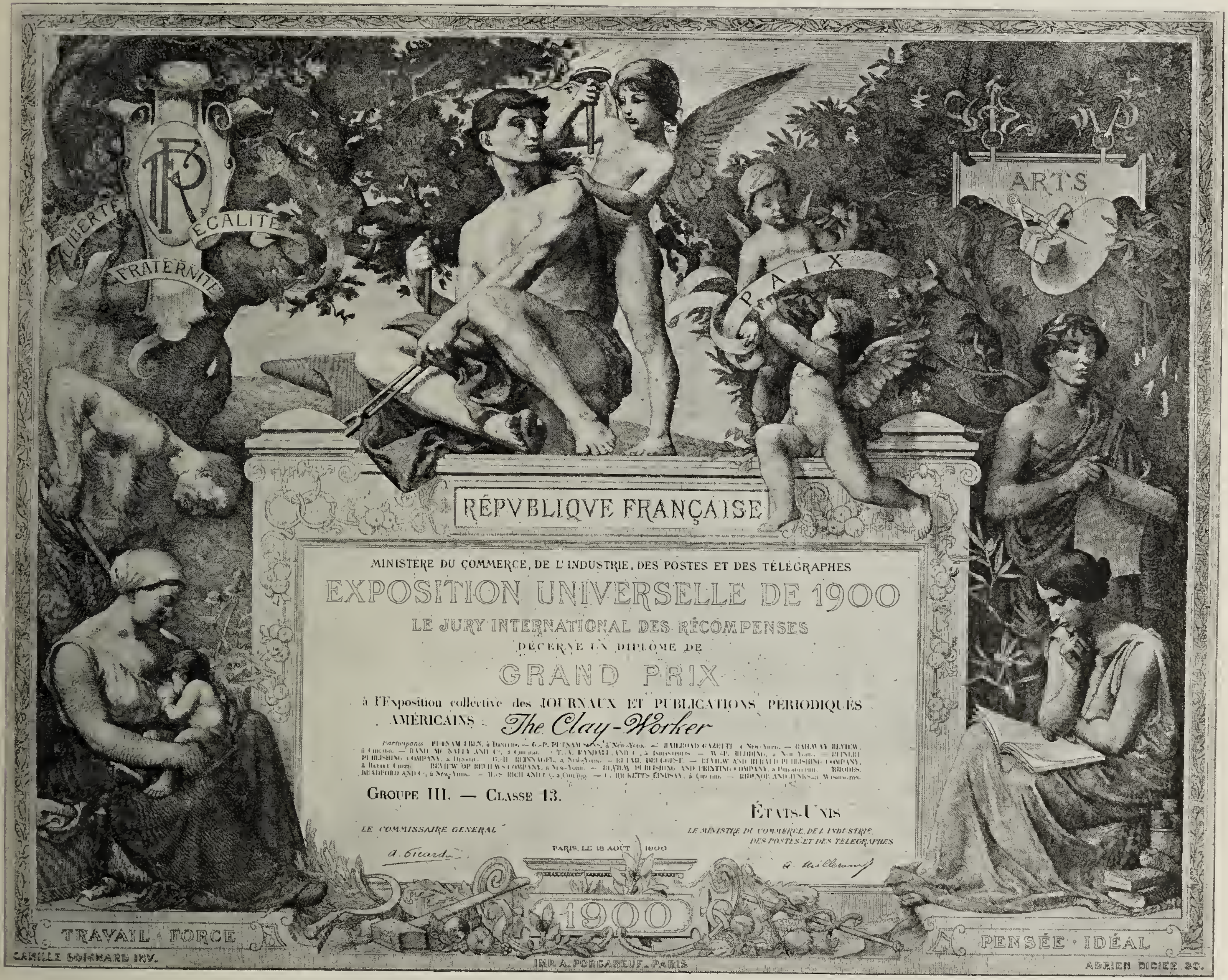
TABLE OF COMPOSITION OF VARIOUS COALS.

Name and Locality.	Carbon.	Hydrogen.	Oxygen.	Nitrogen.	Sulphur.	Ash.
Anthracites—						
Pennsylvania	78.6	2.5	1.7	0.8	0.4	14.8
Rhode Island	85.0	3.71	2.39	1.0	0.90	7.0
Wales	91.7	3.78	1.30	1.0	0.72	1.5
France	90.9	1.78	1.53	1.0	0.80	4.7
Semi-anthracites—						
Maryland	80.8	5.0	2.7	1.1	1.2	8.3
Wales	88.3	4.7	0.6	1.4	1.8	3.2
China	84.0	4.5	2.5	1.0	1.0	7.0
Bituminous—						
Pennsylvania	75.5	4.93	12.35	1.12	1.10	5.0
Indiana	69.7	5.10	19.17	1.23	1.30	3.5
Illinois	61.4	4.87	35.42	1.41	1.20	5.7
Virginia	57.0	4.96	26.44	1.70	1.50	8.4
Alabama	53.2	4.81	32.37	1.62	1.30	6.7
Kentucky	49.1	4.95	41.13	1.70	1.40	7.2
Van Couver Is.	66.9	5.32	8.76	1.02	2.20	15.8
Lancashire	80.1	5.5	8.1	2.1	1.5	2.7

Lignites and brown coal always run lower in carbon, low in hydrogen, but high in oxygen and ash. Peat, the starting element for coal, is yet lower in carbon, but very high in ash.

The writer has just returned from Canada, where he saw the waves of Lake Erie cast large chunks of peat upon the sands. The fibrous roots of some marine grass had kept it in a compact, spongy mass, while the loose portions were thoroughly washed out. Upon a moderate drying it burned readily in the grate, leaving very little ash behind. This solved to me the problem why some coals have such small quantities of foreign matter. The peat from which the pure coal came, before it was submerged with sand and clay, had received a long-continued washing process. Not being able to look up the source from which the waters had torn the peat, which evidently was close by where it came ashore, the peat in its bed could not be examined and compared with the washed portion obtained.

Further on we will give heat values of the different coals, amount of air required for perfect combustion and proper construction and firing of furnaces. We will also show up the wasteful manner in which coal is generally burned, with hints how to economize.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EXPOSITION UNIVERSELLE DE 1900

LE JURY INTERNATIONAL DES RÉCOMPENSES

DÉCERNE UN DIPLOME DE

GRAND PRIX

à l'Exposition collective des JOURNAUX ET PUBLICATIONS PÉRIODIQUES AMÉRICAINS : *The Clay-Worker*

GROUPE III. — CLASSE 13.

ÉTATS-UNIS

LE COMMISSAIRE GENERAL

a. Picard

PARIS, LE 18 AOUT 1900

LE MINISTRE DU COMMERCE, DE L'INDUSTRIE, DES POSTES ET DES TELEGRAPHES

a. Millerand

1900

TRAVAIL · FORCE

PENSÉE · IDÉAL

CAMILLE BOIGNARD INV.

IMP. A. PORCABEUF. PARIS

ADRIEN DIDIER SC.

BRICK COMPANY RECLAIMS COAL MINES BY DRAINING.

The North Alton (Ill.) Paving, Building and Fire Brick Company has completed a drain from its clay quarries at the brick plant, which will carry off all the water that may collect there and will also furnish drainage for all the coal mines in the North Alton coal-mine district. President Ed Rodgers, of the brick company, says that the drain is at a lower level than the bottoms of the coal shafts, and through it some valuable coal mines which have been flooded with water may be reclaimed. Some of the mines were abandoned years ago as useless, although there is much good coal in them. If the new drain proves what it is expected to be it will mean much to the North Alton coal miners who have abandoned old mines.

THE CLAY-WORKER HONORED.

The old saw, "Large bodies move slowly," is well illustrated in an incident of much interest to The Clay-Worker, in which we are sure our readers will also take some pleasure. We are just in receipt of the dipoma awarded The Cay-Worker as a technical publication by the officials of the Paris Exposition of 1900. The accompanying photograph of the same, though small, will give our readers an idea of the beauty of the original, which is a very fine steel engraving 17x22 inches in size. It is a splendid decoration for our sanctum sanctorum, and one in which we take much pride, for it is a recognition of the excellence of The Cay-Worker that is naturally very pleasing. Aside from these personal features, it is really a beautiful picture, a fit companion piece to the similar diploma awarded The Clay-Worker by the Columbian World's Fair, at Chicago, a decade ago.

A CANAL TURNS SWAMP LAND TO RICH PRAIRIE FIELDS FOR INDIANA'S GOVERNOR.

TWO MILES southwest of Anderson, Ind., is a low tract of land for many years known as the "prairie swamp." Governor W. T. Durbin owns sixteen hundred acres of this land, which just at this time possesses a peculiar interest to him by reason of the drainage work which has been accomplished in the hitherto uncultivated valley.

Year after year, beyond the present generation of the Durbins and the former owners of the Durbin farm, and those adjacent to on the northeast and southwest, a large area of land lay for the most of the year under water. It was practically worthless except during the dry seasons, when it was possible, for a short time, to use a part of the swamp land for grazing stock.

About two years ago the movement for drainage was revived, and, after numerous efforts, the building of a large public ditch was ordered by the county commissioners. The work of constructing the new waterway has cost upward of $40,000. Farms for a mile from either side of the big ditch were assessed, the heaviest taxation, however, being against the owners of the land touched by the ditch. Starting on the farm of C. K. McCullough and Mrs. C. N. Branch, Jr., brother and sister of Mrs. Durbin, the new drainage canal extends southwest and has an outlet in Fall creek, about eight miles away.

The Drainage Ditch Near its Outlet.

Through the Durbin farm the ditch is about ten feet deep at its shallowest places, and about fifteen feet wide at the top. For several miles, approaching the outlet, it was necessary to blast through flint stone. To follow the original plans and specifications for the ditch it would have been necessary to tunnel through stone under Fall creek, and then reverse the course of the ditch, so as to empty into Fall creek at Pendleton. There were several contractors for the work, and all lost money on it.

It became necessary to modify the plans on account of the amount of stone. The contractors at work on the outlet, rather than also tunnel under an old mill-race that emptied into Fall creek just above the falls at Pendleton, paid the owners of the mill and mill-race a large cash consideration for the purpose of allowing the ditch to be cut direct into, or through, the mill-race. It was the only way out of losing thousands of dollars, and probably afforded the best means of outlet.

When the mill-race was cut at the falls the course of the water was changed and the falls became dry and barren. But the outlet of the ditch had been made and the work of draining the great swamp was fairly begun. The ditch has just been completed and is now running from two to three feet of water and is effectually draining the lands that it was expected to benefit.

On the Durbin farm, alongside of the ditch, are wide fields that have not been entered by a plow until this season. The cultivation of this redeemed land has just begun and the plows are turning acres and acres of domestic and wild vegetation and exposing a rich, loose black soil. Some of the large fields have been planted in corn and great results are expected. —Drainage Journal.

THE BUCKEYE CAPITAL A GREAT BRICK MARKET.

Columbus Has Fifteen Brickyards That Turn Out 40,000,000 Brick Annually

BRICK HAVE been made in Columbus for the last fifty or sixty years, although the oldest brickyards now running, those of Adam Schneider and Charles Mulbridge, only date back to about 1860. There are at present fifteen brickyards in the city, producing between them about 30,000,000 brick every year. Indeed, this annual production sometimes runs as high as 40,000,000.

These bricks, all of which are what are known as common building brick of the uniform size by the brickmakers of the United States, are made from the clay on which the city stands. As they are almost all sold here, there is consequently an immense saving of freight, both for incoming raw material and outgoing products, an important consideration to the venders of such weighty articles as bricks. Some Columbus brick, however, are now being sold in London, Springfield and Dayton.

In two of the city yards the brick are dried by artificial heat, but in the other thirteen they are still sun dried. In five of these thirteen, however, new machinery and steam dryers are now being put in, which will do away with much of the present rather uncertain dependence on the sun. Indeed, the weather generally is an important factor in the brick business, affecting not only the supply but the demand.

The open winters we have had of late have increased the latter so enormously that it has been almost impossible to meet it. Until very recently the winters have been so cold that building almost ceased for several months of the year, and brickmasons could therefore count on all their product during the late fall and winter for the spring supply. This quiet season has grown shorter and shorter until this year there was no cessation of building at all, consequently, although the brickmakers began the winter with a supply of 6,800,000 brick, they had very little left by spring, and they have been further handicapped by the recent strike.

Everything is going smoothly now, however, and although the season opened with only 2,000,000 brick with which to meet orders for 5,000,000, the yards are all running and from one to two kilns are opened every day. The first brick were hauled May 17, and it is safe to say the time of scarcity is over.

—All the Brick Sold Through One Office.—

For the past fifteen years the brickmakers of Columbus have been losing money every year. They have adopted the plan of selling all their brick through one office at one price, and the Union Brick Supply Company guarantees the payments to the brickmakers every two weeks, a plan suggested by Mr. Wm. Fish, an old-time brickmaker, whose father was a pioneer in the business.

The contractor who is putting up the new shops and round house on the East Side of the city for the Pennsylvania road, has contracted for Columbus brick for the whole job.

Although this common building brick is the only kind produced from Columbus clay, Columbus is considered a very fine brick market and is the headquarters for two large plants, producing the highest grade of fine pressed brick. Indeed, the Columbus Brick and Terra Cotta Company were the pioneers in the manufacture of light colored fine pressed brick, not only in Ohio, but in the United States. This company was incorporated under their present name in 1885, and its success is due largely to L. G. Kilbourne, who has directed its affairs from the start.

Their works are situated at Union Furnace, Hocking county, where they own 240 acres of ground, and the clay all comes from the mine there, the main entry of which is a half mile in length. The clay obtained is of two kinds, buff clay from the interior of the mine and red or crop shale from the side of the hill. The varieties of brick produced from these clays are plain, molded and ornamental pressed brick in standard, Roman and Norman sizes, in gray, terra cotta, buff speckled, red speckled and gray speckled colors. The special feature of the buff clay is that as far as known it is the only clay in the United States of which all the brick in a kiln will burn a uniform color. The company have recently also begun production of enameled brick. They have at their works two continuous Guthrie kilns of twelve chambers each, and sixteen downdraft kilns, six dry press brick machines and one stiff mud machine. More kilns are already necessary. The present capacity of the plant is 12,000,000 brick a year, and these are sold all over the United States and Canada. New York, Boston and Chicago are especially good home markets and Cape Breton and Halifax outside.

Among the finest buildings of this brick in Columbus are the new law building at the University (buff speckled) and the new Outlook building (gray speckled), while in other towns some of the best examples are perhaps the Chamber of Commerce building in Minneapolis, the city hall in Birmingham, Ala.; the American Tract Society building, twenty-three stories high, in New York, and the beautiful Yerkes observatory of the University of Chicago, at Williams' Bay, Wis.

—Fire Clay Brick.—

The Columbus Face Brick Company was incorporated in 1898, with Mr. D. C. Meehan at its head. Their general offices are here in Columbus, but their plant is, of necessity, situated where their particular variety of clay is to be found, at Rock Run, Perry county. The plant was put up in 1893, and continued additions are being made to it all the time. The brick produced are made from a combination of fire clay and two non-magnetic elements of iron that when fired produce very beautiful shadings. These are known as iron clay fire flashed brick. Five different colors are produced, varying from light ivory to dark bronze. The Baldwin Hospital, on Grant avenue, is an example of the lightest, and the Hayden building of the darkest. These bricks are sold all over the United States and in Nova Scotia. The finest examples outside of Columbus are perhaps the warehouse of the Advance Thresher Company, in Minneapolis, a beautiful piece of architecture, said to be the finest warehouse in the Northwest. St. Augustine's Church, in Pittsburg, the largest church in Western Pennsylvania; the Knights of Pythias Orphans' Home, in Springfield, and the buildings for the Manhattan elevated railroad in New York. This last was the largest brick contract awarded in New York within the last three years.—*Columbus Citizen.*

MUCH RAIN IN MAINE.

SINCE MARCH it has rained on an average three days out of five. In June the percentage of rainfall was greater than the aggregate of four previous Junes. Despite this untoward circumstance, the eastern Maine brickmakers seem to be turning out brick faster than in any season heretofore. All have their second kilns burned, and by the time this letter appears in print the third kilns will be burned. The beauty of it is that the bricks disappear as rapidly as they can be cooled off, and the prices average higher than at any season in twenty years at this time of year. The yards have all succeeded in getting full crews.

"The Prettiest Spot in Indiana." The Falls Where Governor Durbin's Drainage Ditch Empties Into Fall Creek.

S. A. Holyoke, proprietor of the last of the mud yards, is crowing over the fact that his old mud machines are keeping pace with the sand machines in producing brick.

Hugh O'Brien's steam plant, which he had hoped to have running in June, is still no nearer than Bucyrus, O., and the prospects are that its first season's operations will be brief indeed. Mr. O'Brien is sorry now that he did not attend the N. B. M. A. Convention last winter. He had made up his mind to attend, but was dissuaded by somebody who expected to sell him machinery. Now he swears that he will not miss another convention.

The demand for bricks is beyond the present supply. The weather promises to be good. The men are content, and it is a pleasant world here just now.

SUNRISE.

One-cent postage is once again becoming a public question. It has come to the surface again and again, to go under as a bobbing fishing float in the stream. A petition has recently been presented to the House of Representatives, signed by 300,000 bankers and some 500,000 people, soliciting the necessary legislation. It is bound to become a law some day, and objections on the score of a decrease in revenue will be removed. One-cent postage will not only be a benefit to the general public, but to the multitude of business men whose yearly outlay in postage could well afford to be cut in the middle.

WRITTEN FOR THE CLAY-WORKER.

LOUISVILLE FIRE BRICK WORKS.

THE EASTERN PART of Kentucky is rich in undeveloped minerals. It is to be regretted that no geological survey of the State has been made making known the hidden economic resources of the State. It has been hinted by random explorers that vast quantities of coal, clay, iron and phosphate only await development to make those who have the capital and courage to prosecute such enterprises, opulent to an enviable degree. It takes some exploring to locate valuable mineral and not a little capital to push into a mountainous country and open out a line of transportation to the world's markets.

Deposits of fire clay are found in this State at several points, but the largest mine thus far operated is at Grahn's Station, in Carter county, on the C. & O. railroad. Mr. K. B. Grahn, proprietor the Louisville Fire Brick Works, owns 800 acres of land, containing inexhaustible beds of fire clay, which both analysis and furnace test have pronounced second to none for practical use. Five carloads are daily used at the works, but little of which is lost from the time it is taken from the bank to the time the finished product is ready to be delivered to the purchaser.

In general it may be said concerning fire clay that it is found in carboniferous rocks, associated with coal beds. It is found underlying coal deposits and in a plastic state is distinguished by its white color and by its exceedingly fine texture and lack of perceptible grit. It is not uncommon to find mere traces of low-grade fire clay in localities where the coal showing is only a blossom. According to the theory of geologists, which is well sustained by the position, composition and structure of the material, the fire clay beds were the subsoil which supported the luxuriant growth of tropical plants peculiar to the carboniferous age from which originated the coal deposits. The plants were instrumental in withdrawing nearly all of the elements containing alkali, leaving nearly pure silica and alumina, which, in the clay from the Grahn mines, is found in the correct proportion for the manufacture of highly refractory ware. The flint clay, which is mined much as rock or shale is mined, contains a higher relative per cent. of silica than the plastic, and is used for the manufacture of bricks requiring the endurance of the highest degree of heat. A mixture of the three grades of clay is made to meet the requirements of the brick for the purpose to which they are put. In fact, it is the skillful mixing of the clays which has secured to these works the reputation for superior brick and other fire clay goods which they enjoy.

A Glimpse of the Kilns.

The manufacturing plant is located on a tract of seven acres in Highland Park, a suburb of Louisville, Ky. Mr. Grahn has been working quietly for twelve years developing his favorite business, though more marked progress and enlargement of the plant has been the work of the last three years. The pattern room is highly prized and carefully guarded from destruction by fire by being cut off from the works by a fireproof wall. Special designs for blocks, linings and all manner of shape work are sent in for which molds must be made and preserved. Fully ten thousand dollars' worth of patterns are stored in the two-story building devoted to that purpose.

The clay is prepared by passing it through dry pans or wet pans, as the case may be. There are three wet pans and one dry pan, the mixing of the clays being accomplished in the pans. The ordinary fire brick are machine-made on a semi-dry press and immediately repressed, after which but little drying is necessary to fit them for the kiln. The machines used are made in Leeds, England, and one or two of the pans used are of foreign manufacture. All special designs of bricks, linings and shapes, of which the number is astonishing to a novice, are made by hand, of clay so soft that they will barely retain their shape, and carefully placed on hot drying floors.

One of the Stock Sheds.

The drying houses are made with special reference to drying fire clays. There are three of them, 100 feet long and from 50 to 75 feet wide. The heat is supplied by means of a tier of fire boxes across one end, from which flues pass under the floor to the opposite end and thence to a common stack.

These works are remarkably successful in the manufacture of lining blocks for locomotive fire boxes. Almost every locomotive requires a pattern of block peculiar to itself. The blocks are large and heavy, and must fit perfectly. Mr. Grahn has succeeded in meeting the rigid specifications imposed by a large number of railroads, which he has supplied for a number of years. Some of these blocks are 4x10x56 inches, a size that but few fire clay works can make and burn successfully. Seven 33-foot round down-draft kilns are used. In one corner of the yards a fireproof building for the storage of sawdust, which is used in packing brick in the car, is seen, while the ample shed for storing the stock on hand occupies one side of the grounds. A sidetrack from the L. & M. railway passes through the yard in the most convenient way possible for bringing in clay and coal and taking out brick.

Mr. Grahn enjoys the distinction of receiving the highest award for fire clay and fire clay products at the Columbian Exposition at Chicago in 1893. The large blocks he exhibited attracted the wondering attention of foreign manufacturers of fire clay goods, as well as that of our own people.

Next to potter's and ceramic ware, the goods made from high-grade fire clay probably have the highest money value for the bulk handled of any clay ware on the market. The expansion of nearly every manufacturing plant requires the use of additional fire brick, to say nothing of renewals and repairs that must be kept up. A kind of brick once tried and found satisfactory is sure to be called for again. C. G. E.

COMMON SENSE IN PAVING BRICK.

By H. A. Wheeler, E. M.

THE FRIENDS of paving brick have just cause to be proud of the progress and success that has been attained by this young industry, which, commercially, dates back scarcely fifteen years, and it is not yet thirty years since the first effort was made to introduce this material in this country. For while its well-known merits had been utilized for over a century in Holland, it is an industry like soda ash, roofing tile and tin plate that has had only a short life in the United States, though so well-established abroad. To have attained such a large development, and to now be used in so many towns and cities, should be a just cause of pride to our paving brick makers, as this new industry has had to contend with much more than the usual commercial difficulties that beset all pioneer enterprises But, while paving brick have at last won out and attained a very enviable position, and as the great business improvement promises to benefit greatly this industry, its friends should show moderation and good sense in not overdoing and exaggerating its merits, for paving brick has too much merit and the reputation of some of the better known brands are too firmly established to need false boasting or unwarranted assertions. For let it be remembered that the well-informed municipal engineer insists that we have not yet found the ideal paving material, and that all the present pavements, brick not excepted, have their shortcomings. But as brick is among the very best having the most merit for the least money, makers of good paving brick need have no fear of the wholesome rivalry of other paving material, but should squarely face the facts and act accordingly. Let brick be pushed, and pushed energetically, where it has a legitimate field, but don't insist on its being used where subsequent results are going to damn it more than a hundred successful cases can atone for, for it is the failures that are advertised and whooped up by rivals, and one failure is known over a greater territory, and is more persistently kept in front of the people, than can be counteracted by innumerable successes. So when a city engineer invites bids for paving on a street with heavy, continuous traffic, let the brick man advise the engineer that he can furnish a pavement that will give a much lower traction, be much cleaner, less noisy and far more desirable than granite, but as bricks are now made, don't let him think that the brick will wear as long. Let him know that a strictly high-grade paving brick will give a reasonable life under the heaviest traffic, which, with its much lower first cost, is likely to be as cheap in the end as granite, as in most places two to four brick pavements can be put down for the cost of a good granite pavement. If an engineer is willing to thus renew the brick to secure the smoother, quieter, cleaner pavement in preference to the more durable granite, especially as it greatly reduces the first cost, no argument can subsequently be made against the brick for its lack of durability, as the best paving brick cannot compete to-day with good granite in withstanding wear; while the writer thinks that these advantages of brick will result in their displacing granite in many cases, it will be in spite of their not having the highest durability. And the people will prefer an occasional renewal of a smooth brick pavement to the more durable, but rougher, noisier granite, just as in the heart of London they renew the wooden pavements every five years, as preferable to the noise and roar of any other kind of pavement.

Factory of the Louisville Fire Brick Works.

Again, where noise must be suppressed or reduced to a minimum, as around hospitals, courts, etc., let not the enthusiastic brick advocate attempt to claim that brick can compete in this respect with wood or macadam, as, if he succeeds in getting the brick used, he will get more advertising for a grossly exaggerated idea as to the want of noiselessness of brick, that is liable to prevent its use where the moderate noise incident to its use would not have been objectionable. For while brick is much less noisy than stone, it cannot compete with wood or macadam, if noiselessness is the first consideration, until all vehicles have rubber tires, all horses are rubber-shod, or else the horse is displaced by automobiles, which is still in the future.

A matter that is known by every intelligent paving brick maker, but which is rarely realized by the general public, is the great difference in the quality of paving brick. This is partly due to manufacturing details, but mainly to the clay, as scarcely any two clays will make quite the same quality of brick. The best interests of the paving brick trade, therefore, require that the brickmaker should see that only the very best brick are used where the traffic requirements are severe, and the less durable brick may be used where the service is less trying, as on alleys, residence streets, smaller cities, etc. For there are plenty of places that do not require the highest grades of brick, and where a cheaper article, even if less desirable, would be much more valuable to the community. As these differences in cost and wearing value are seldom appreciated by the public, it is the business of the paving brick man, for his own interests, to educate the public to this, as the architect does in selecting brick to suit each client from a price list ranging from $5 to $50 per thousand. There are numerous cases where the light traffic will enable a poor grade of brick to make a fair record for itself and help the traveler out of the mud, which could not be used if the extra expense of freight had to be borne to secure a better grade of brick from distant places.

There is an old prejudice that is still retained by some so-called engineers (and usually in that class of individuals who have become so narrow in their ideas as to have outlived their usefulness), and that is in favor of very low absorptions as being absolutely necessary to prevent frost disintegration. Such men ignore the work of the special committee on testing paving brick appointed by the National Brick Manufacturers' Association, and insist that if a paver absorbs over 1 or 2 per cent. of water it is valueless for street paving, no matter how good a rattler test it may stand. The only way to handle such a disgrace to the engineering profession (as an engineer becomes valueless when throttled by prejudice) is to hammer him with facts—cold-blooded, unanswerable facts. Cite the oldest brick pavement in the country, at Charleston, W. Va., absorbing 4.5 per cent., and still in excellent use after thirty years' service; mention a pavement in Bloomington, Ill., that lasted twenty years before it wore out, though it absorbed 4.3 per cent.; cite the pavement of the Peoria, Ill., court house square, which has been down for sixteen years, although it absorbs 10 to 12 per cent., and finally cite the brick sidewalks and houses about him, which likely absorb from 5 to 15 per cent. Of course, if a brick is so lacking in toughness as to make a poor rattler test, it is unsafe to use it; but to ignore an excellent rattler test that demonstrates the brick to be a tough, high-grade paver, and condemn it because it absorbs over 2 per cent. of water, as is done by a few fossils, calls for the sledge-hammer of facts.

BY THE LIGHT OF THE KILN FIRE
CLAY-WORKER PROPS

A SOLILOQUY ON LUCK.

"SOME FOLKS ARE always howling about the superstitiousness of folks," said the old man as he calmly pre-empted the woodpile near the outside arch. "Every day you hear some wise owl complainin' about the superstitions of other folks and particularly about what they call the superstition of luck. Hain't no such thing as luck, a college man told me t'other day. 'The man,' he says, 'who thinks there is, is next door to a wild idolator or a pagan.' Now, maybe that young college feller, with his three years of experience with the football and the mitt and the racing oar and the outsides of a few books, has got the ground facts to back up his statement, but as for me, I say forty years in a mudyard is as good a schooling for some purposes as three years in a big brick house with a crowd of loony book worms pumping dry dust into 'em. Forty years in the mud tells me that there's more luck than money in the brick business, more luck of one kind and another in this world than anything else except love. But, you see, like love, it's so common everywhere that we don't take note of it only when there comes a break in the stream, and then we notice the break and forget all about the stream. If there hain't no such thing as luck, can you explain how twenty young men of first-class training and education and brickyard experience, backed up by money enough to work with, could go into the brick business and fail, and all the time one insignificant-locking Irishman, a stranger without backing and without money, and without schooling enough to know his own name if it run against him on the street, went into the business in some way and rolled up a good round fortune during the time it took to try the twenty out and leave them wrecks, I've seen just that very same trick done in my time, and if you can show me any possible way that the thing could turn about so, except by luck, then I'll acknowledge I'm an old woman, a voodoo, a Hindoo, a hoodoo or any other old do do. Luck! Why, man alive, these fellows burning this kiln here can tell you that forty times in the course of a burn luck steps in and turns the balance one way or the other. If it's superstition to believe in luck, then you can safely put every old burner down on your list of idiots. But they ain't idiots by several jugfuls, else you wouldn't find 'em burnin' brick.

"Luck! Well, I guess there's luck. My cousin down in Nova Scotia had four sons. He was poor, and he thought him and his boys would make money if they made a few brick. He learned the trade down in Jersey 'fore he went into the provinces. They didn't make much of a go of it, and the boys got the gold fever and struck for the Black Hills. Well, they was gone ten year or thereabouts and struck back home one by one—broke. The whole family was poorer than Pooduck's pasture, and it looked mighty blue. But one spring one of the boys sot out to open up the old yard to make some brick for a mill that was goin' up in town. He had to clear his bank of wood and roots, and hadn't cleared ten yards' space when he struck rock, a solid ledge. That busted the last ounce of courage in him. 'It's no use, Cy,' sez he; 'luck's agin us. It chased us all through the Black Hills and back home, and I guess it'll chase us over the hill to the poorhouse. D——n the dod-rotted luck, anyway!' sez he, and he slammed a great crowbar out of his hands into the ledge. A big chip flew off, and without thinking what he was about he picked it up. I'm tellin' facts now, mind ye. That family's the wealthiest in their county, and they own acres and acres of gold, silver, copper and iron and coal mines. The fellow, in his despair, fell into his old prospectin' habit without thinking and found the wealth at the door of the home they had left years before several jugfuls, else you wouldn't find 'em burnin' brick.

"Luck! I laid one night on a battlefield on the outskirts of a little Virginia town, alongside a little boy whose leg was shot off below the knee. My leg was shattered, too. I twisted strips from my trousers around my leg and checked the flow of blood. Then I tried to do the same for him. But somehow I was weak from my own wounds and I couldn't get a bind on that little fellow's leg that would stop his lifeblood flowing away entirely. We were near a Catholic chapel, and the boy had noticed it, and he wanted to see a priest awful bad. Wanted me to go and get the priest for him. 'God sakes, little rebel,' said I. 'Don't you know my old leg's just as bad as your poor little one is? We can't get no priest. Let's pray that the ambulance 'll come for us soon before we bleed to death.'

"Well, I fussed and fussed, trying to stop the flow of his blood, but every time his heart beat it pumped it clear through bandage and twisters. He began to tell me all the wicked things he ever did. Poor little innocent baby! Told me how he disobeyed his ma and got into the battle because he thought how much good them $30 would do, and he cried when he told how helpless she'd be, now that he was never to return to her. Seems he was the last of her sons to die fighting for the Southern cause. First his father and two brothers went to battle and were killed. Then his other brother shouldered his musket and went away. They all fell in the first battle. He was fourteen and had supported his mother and sister for a year. It was hard scratching to keep starvation away. When the rebel army camped near his town he earned a few cents doing jobs for the officers and men. The rebs were pretty hard pressed for men and offered him thirty Confederate dollars to go into that one fight. He had the $30 in the ragged farm suit that he wore when he fell. It was his first fight, and the luck that followed the father and the other brothers followed him and took him. He was a brave little hero, though. He didn't seem to mind his own pain. His only thoughts were for his mother and sister. Just 'fore he died he says to me: 'Yank, I see something!' 'What is it?' sez I, and I see his eyes were sot. "I see father,' sez he, and then he seemed to be carrying on a pleasant conversation with somebody, and then he clasped his arms as if he was huggin' somebody, and smiled a happy smile and stopped breathing.

"Don't tell me there hain't no such thing as luck. I only hope that the luck that called that poor reb family out of this life in their first battles j'ined 'em together at first roll call on the other side."

And the old man lit a fresh pipe, sighed and silently slid off in the darkness toward home. THE DREAMER.

WRITTEN FOR THE CLAY-WORKER.

LATTER-DAY DEVELOPMENTS IN AMERICAN POTTERY.

(Reprinted by special permission from the February, 1902, issue of "Brush and Pencil.")

ONE OF THE MOST interesting of recent developments in American pottery is the Teco ware manufactured by the American Terra Cotta and Ceramic Company, of Chicago. This beautiful product has as yet scarcely been introduced to the public, yet one is justified in predicting for it wide popularity. If I mistake not, the intrinsic beauty of the pottery, the variety and fineness of its finish, the richness of its colors, and withal the reasonable price at which the charming pieces can be placed upon the market will make this ware a sharp rival of the older, better known and more expensive wares that have long met favor in artistic circles.

Water Front of the American Terra Cotta Company's Factory Where Teco Pottery is Made.

In saying that Teco pottery is a recent development of the fictile art of this country, scarcely known among collectors, I do not wish to imply that it is a new departure from an older form of manufacture, or that it is a novelty hastily developed under fortuitous circumstances. Really the ware, as it is presented to-day, represents the experiments and efforts of upward of twenty years. It was about 1880 that William D. Gates, president and general manager of the present company, began the manufacture of brick and terra cotta, and experimental work in the direction of art pottery has been kept up ever since the parent industry was established.

The growing popularity of terra cotta for architectural purposes has made a brisk demand for good texture and fine color effects, and the company was not lacking in enterprise to meet the demand. An extensive chemical laboratory was built, which, with the kilns and other necessary equipments, formed a nucleus for the little town of Terra Cotta, Ill. As the business grew every possible facility for turning out work of the highest character was added, until the plant, as it now exists, probably has no superior in the country.

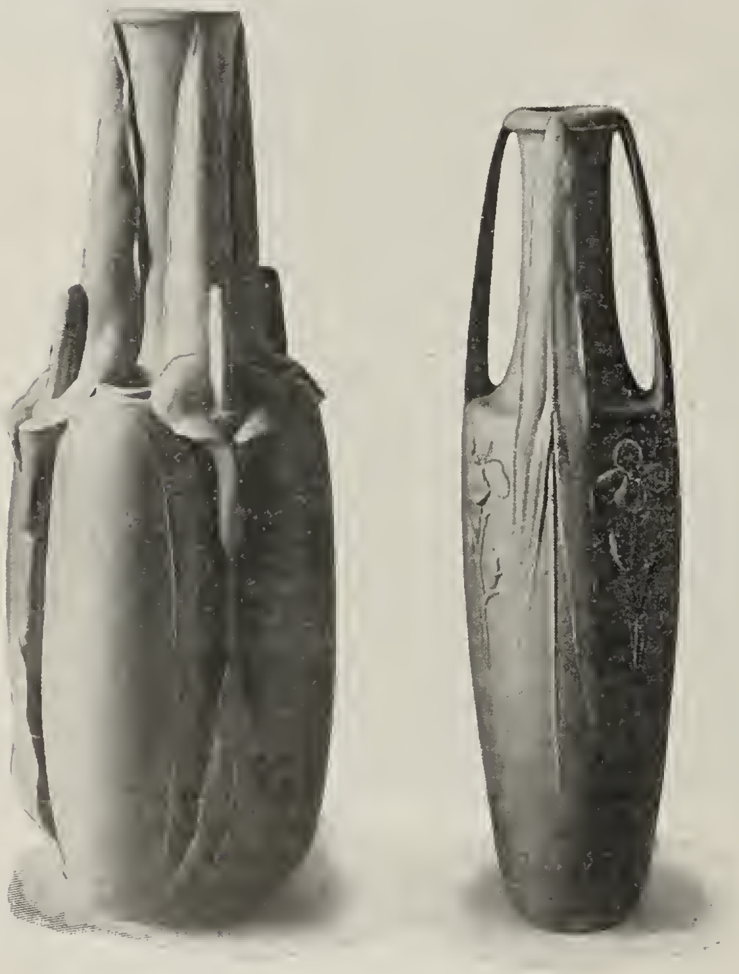
The manufacture of artistic ware is with Mr. Gates a matter of love, and there is to-day in this country no more enthusiastic potter than he, and none more ambitious to furnish the public with artistic designs of beautiful finish at a price which will permit people of taste and moderate means to indulge their fancy in the collection of ceramics. Once his attention was turned toward the manufacture of pottery he put his chemical laboratory under the management of graduates from the best schools, furnished unexcelled facilities for test work, and kept his employes as busy in ceramics as the exigencies of the terra cotta business would permit.

Much of the work done has been conducted under the direction of graduates of the department of ceramics at the Ohio State University, the president's two sons, Paul and Ellis, both being graduates of that institution. Thus, from the inception of the enterprise, the Teco pottery works have had plenty of room and the best of workmen, with unlimited kiln facilities and every appliance necessary for the manufacture. Capable artists have acted as designers, among whom are Fritz Albert, Hugh Garden, Blanche Ostertag and W. J. Dodd. The work of developing the pottery department has lagged only as activity in the terra cotta business has precluded the possibility of devoting time to experiments and research.

The Teco pottery is varied in color and finish, and has passed through several stages before reaching its present state. Experiments were first tried in subdued reds of different tones, then in buffs, and then in browns. When a demand was created for architectural terra cotta with marbled or mottled surface experiments were tried in producing similar effects in artistic pottery. Lastly, the vogue of green in decorative ware gave new direction to the company's efforts, which produced the happiest results. Much of the most recent product of the works is strongly suggestive of Grueby pottery in tone and finish, but this has been a matter of accident, and not of deliberate imitation.

Side by side with these experiments in color, the company has been systematically seeking to perfect its ware by developing distinctive surface effects. At first it was content with producing simply a fine glaze. Four years ago, however, a mere chance resulted in the production of a vase with a positive metallic luster. The effect was purely an accident, but its possible beauty in a higher state of perfection was recognized, and much time and expense were devoted to ascertaining the cause of the peculiar surface. Persistency and industry finally disclosed the odd combination of conditions that was responsible for the unique surface, and the company has since succeeded in producing vases so suggestive of the rich luster of metal as to be deceptive.

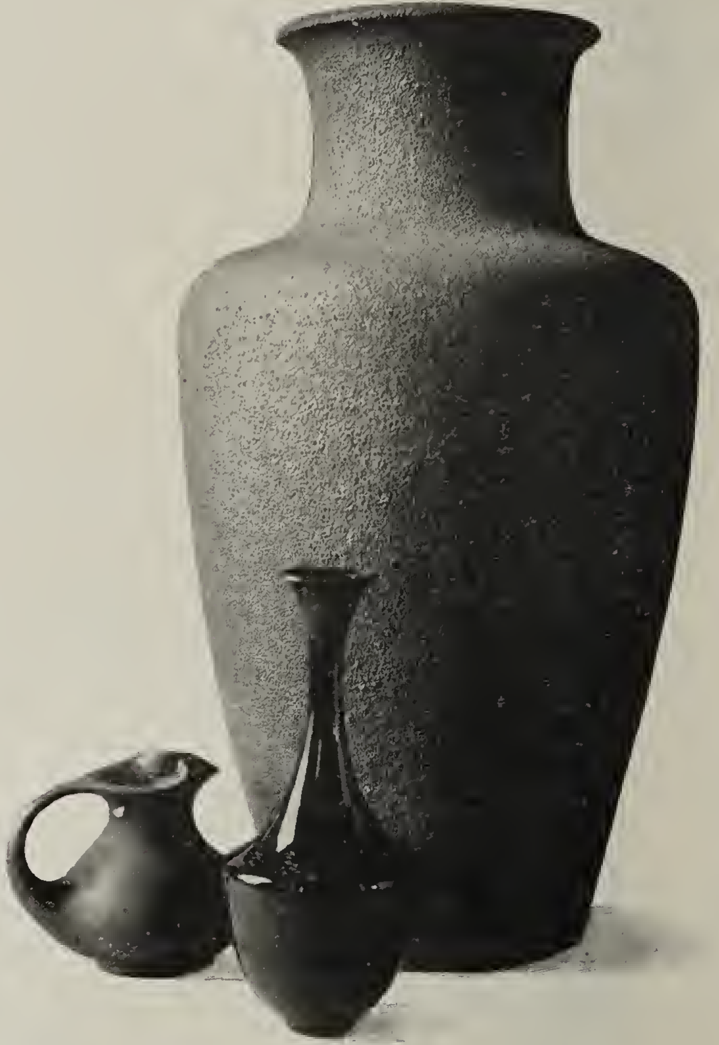
Later a similar accident resulted in the production of a piece of pottery whose surface was covered with minute crystals, whose effect was little less than iridescent. Again a long investigation was instituted and numberless experiments were tried to find the hidden cause, this time as successfully as before. Once the cause of the peculiarity was discovered, no pains or expense was spared to improve the quality of the peculiar finish. Latterly the efforts of the company have been directed toward the production of a soft, velvety, glossless surface, and much of the product of the works will bear comparison with the product of the older and better known concerns whose ware is noted for this finish.



Teco Pottery Designed by W. D. Gates.

The Teco pottery, therefore, has undergone a gradual evolution, and has become by its very development differentiated into distinct types. Being essentially a side issue of an extensive business of an allied but different nature, and having the advantage of all the facilities provided for the parent industry, its production has been a sort of avocation rather than vocation for Mr. Gates and his confreres. The terra cotta department has resulted in some unusual and strikingly beautiful effects, and it has been a matter of delight for those in charge of the chemical laboratory and the kilns to duplicate in ceramics the best effects produced in the terra cotta branch of the establishment.

As might naturally be expected, therefore, the product of the works shows an utter absence of monotony. Whatever be the color scheme adopted, the tones are so varied that with the different designs employed and the different finishes produced an interesting collection of Teco pottery could be made in which one piece would scarcely suggest the same origin as the other. In this regard the Teco ware is unique. Some of the most highly prized products of the American potter rely for their beauty on a given tone and a given finish, so that a collector having one piece as representative of the make would scarcely want another. No one piece of Teco pottery could be called representative of the company's output, a peculiarity that adds to the interest of the ware.



As regards design, apart from a number of strictly conventional shapes, hints have largely been taken from aquatic plants. For this the location of the establishment is largely responsible. The company has worked on the assumption that beautiful surroundings help to produce beautiful results. It located its factories in a picturesque valley beside a little lake, and as a help to its artists cultivated flowers, and particularly acquatic plants, urging the designers to take motifs from these forms of nature. Reference to the accompanying illustrations will show that a liberal use has been made of these natural suggestions.

Mr. Gates is an enthusiast and has succeeded in imparting his own enthusiasm to his associates, and every possible encouragement has been given to both designers and chemical experimenters. As regards the mechanical part of the manufacture, different methods are followed. Some of the pieces are molded and others are thrown upon the wheel. Mat glazes have found most favor at the works, since these have been found to give the best crystalline surface, not glossy or refractive, but pleasing and velvety to the eye and to the touch. What is more to the interest of the purchaser, the methods of production are fairly certain, the percentage of defective pieces or failures being so small that the ware can be placed upon the market at a figure to make it popular, while still preserving its artistic quality and elegance.

"In its development Teco ware," said Mr. Gates, "has probably been unique among American pottery. We have not gone to work deliberately to produce an artistic ware for commercial purposes. Indeed, the goods were not offered for sale until within a year. Our business has been to make as fine a grade of terra cotta as possible, and the pottery department of our business has been a natural but unpremeditated outgrowth of our regular business.

"Personally, I simply had a fondness for that sort of art product, and my experiments in the line of pottery have largely been a matter of recreation. When I found that the employes at the works had caught something of my own enthusiasm I sought in every way to stimulate their interest. One little success led to another, until we produced what merited the name of artistic pottery. Having accomplished this, having learned the secret of applying metallic oxides, and firing in such a way as to produce a series of beautiful effects, each having a strict individuality of its own, it was but a step for us to place our product before the public.

"The initial hints for our new departures were for the most part mere chance incidents, but the best finished effects have been scientifically produced, and our formulas have been so perfected that our products are no longer subject to experiment. They are positive and certain, and be the surface crystalline or metallic or glossless finish, when we have produced one piece we have practical assurance that we can duplicate it.

"We are convinced that there is a large element of the public cultured of taste and in love with the beautiful who cannot afford to indulge in the luxury of high-price articles of a decorative nature, and hence we feel that in putting the Teco ware upon the market in artistic designs, and with finishes comparable with those of more expensive ware, we will meet a public want. Our methods enable us to do this."

It should be said in conclusion that the manufacturers of Teco ware have eschewed all mere painted decoration—heads, flowers, conventional patterns, and the like—relying for the beauty of their ware on the richness of the color schemes used, on the chasteness, simplicity and grace of the designs selected, and on the strictly individual and distinctive finishes which their long line of experiments in chemical composition and firing have produced.

WALTER ELLSWORTH GRAY.

COMBINATION OF FIRE CLAY MANUFACTURERS.

The latest combine in clayworking industries, according to newspaper report, is a combination of all the fire clay companies of Pennsylvania, including the Harbison-Walker Company, Isaac Reese & Sons Company, Philipsburg Fire Brick Company, Basic Brick Company, Clearfield Fire Brick Company, Wallaceton Fire Brick Company, Clinton County Fire Brick Company, Fredericks, Munro & Co., American Fire Brick Company and the Layton plant, of the Fayette Manufacturing Company, and the Basic Brick Company. The directors of the new combine will be fifteen in number, it is said, and will probably include the following: H. F. Bigler, Clearfield; T. H. Wigton, of the Philipsburg Company, of Philadelphia; H. W. Croft, of the Harbison-Walker Company; George Reese and S. C. Walker, of the Harbison-Walker Company; R. W. Fredericks and Alexander Patterson, of the Wallaceton Company, of Clearfield; Moore Fredericks, of Clearfield county; S. P. Harbison, of the Harbison-Walker Company; F. H. Seeley, of Altoona, of the Basic Brick Company; two directors to represent the New York end of the underwriting syndicate, and two to represent the Chicago end.

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OBITUARY.

Prof. J. B. Johnson Meets Death Accidentally.

THE DEAN OF THE College of Mechanics and Engineering of the University of Wisconsin, Prof. J. B. Johnson, met with a fatal accident at his summer home, at Pier Cove, Mich., June 23. It seems that he fell from a wagon loaded with household goods, which he was taking to his cottage. One wheel of the wagon passed over his head, crushing him to death almost instantly.

Professor Johnson had a national reputation as a scientist and educator, and his untimely death will be a great loss to the Wisconsin University, with which he has been associated since January, 1899, when he went to Madison from St. Louis, where he had been connected with the Washington University for many years.

Professor Johnson was an able advocate of brick pavements and served on the N. B. M. A. committees which promulgated the standard tests for paving brick. He claimed the credit for being the first to use what is now known as the standard test for paving brick. He was fellow and past vice president of the American Association for the Advancement of Science. For a long time he was president of the Engineers' Club, in St. Louis. He was also a member of the International Society for the Testing of Engineering Materials, the American Waterworks Association, the St. Louis Academy of Science and the Missouri Historical Society.

The late Prof. J. B. Johnson, Madison, Wis.

Dean Johnsons' addresses on engineering subjects and his magazine contributions have been widely reviewed.

Col. Thomas Richeson, St. Louis.

COL. THOMAS RICHESON, vice president of the Evens & Howard Fire Brick Company, for nearly sixty years one of St. Louis' most prominent citizens and a former city treasurer, died at his residence, 3122 Pine street, June 17, after an illness of only three days.

Colonel Richeson was born in Amherst county, Virginia, Jan. 1, 1820. He went through the graded schools and was graduated from Washington College, Lexington, Va., in 1840, receiving the degree of bachelor of arts. His aversion to slavery caused him to leave his native State, and he located in St. Louis Jan. 23, 1843, where he soon became associated with Henry T. Blow, at that time connected with a lead and oil works at Tenth street and Clark avenue. He remained with this company until 1850, when fire destroyed the plant. After rebuilding, the new company was incorporated as the Collier White Lead and Oil Company, and Colonel Richeson was elected president. Mr. Blow was appointed minister to Brazil, and their business relations were severed. He remained with this company until 1889, when the plant was purchased by New York capital and became the National Lead Company. Mr. Richeson then became an officer of the Evens & Howard Fire Brick Company.

In May, 1848, he was married to Mrs. Elizabeth Ruggles. His wife died Dec. 27, 1870, leaving no children. Mr. Richeson then made his home with his two nieces—Mrs. William B. Becktold and Miss Genevieve Hebert.

The commission of colonel was given to him in the civil war, when he was appointed by Governor Gamble as militia enrolling officer. He failed to pass the health examination for the regular army on account of a gunshot wound accidentally received in his college career.

He was the third president of the Union Merchants' Exchange, of which the present Merchants' Exchange is the successor. He was a member of the Masonic Order and of the Odd Fellows' Lodge, and was prominently connected with all the interests leading to the public welfare.

He was a member of the special committee appointed to draw up the constitution and by-laws of the Mercantile Library, and was a member of the Public Library School Board from 1866 to 1880. In 1857 he was elected treasurer of St. Louis on the Free Soil or Benton Democratic ticket. This was the only city office he ever held.

On the Sunday before his death an attack of indigestion was followed by uraemic poisoning, and he died on the following Tuesday. The funeral took place from the residence, and his remains were buried in Bellefontaine Cemetery.

The directors and ex-presidents of the Merchants' Exchange, at a meeting on the day after his death, adopted a memorial which characterized him as a man among men, wise in counsel, earnest in purpose, upright in principle, generous and charitable towards all and deservedly respected and admired. They also attended his funeral in a body.

THE EAST LIVERPOOL BRICK MANUFACTURING CO.

THE EAST LIVERPOOL Brick Manufacturing Company has been organized and incorporated under the laws of the State of Ohio by Robert Hall, D. J. Wallace, John Horwell and R. T. Hall. Robert Hall will be president of the new company, D. J. Wallace manager and R. T. Hall secretary and treasurer. The company has purchased ground between the plants of the Globe and Wallace and Chetwynd plants of the East Lierpool Potteries Company, and ground has already been broken for the new works, which will be erected at once. The contracts have been placed for the equipment of the plant, which will consist of one 18x22-foot throttling slide-valve engine, one 72x18-foot tubular boiler, one Champion rock crusher, one 9-foot dry pan, one Freese brick machine and automatic cutting table. The contract for the dryer has been let to the Pittsburg Dryer Company, and will have, for the present, a capacity of 25,000 per day, although it is the intention of the company to increase this to 50,000, as the rest of the equipment will permit of this capacity. The kilns to be built will be of the down-draft pattern, and will be of the latest design in construction. The plant will be completed as soon as possible, as the company is extremely anxious to get its product on the market.

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BUFFALO BRICK AND BUILDING NEWS.

THE month of June, just passed, was the coldest and wettest June in this vicinity in many a year. One old lady says we had just the same weather thirty years ago. I hardly remember the exact year, but think she must be right. Only we brickmakers don't want it to occur again for another thirty years. The open yards or those using the rack and pallet system, have suffered a good deal, especially as stocks were very low and the demand good.

In spite of the high prices of building material—such as steel, iron, brick, cement, lumber and other material—contracts for new buildings are made daily. All the leading contractors unite in saying they have their hands full. Few of them expected such a season immediately following the exposition. Everybody expected a slump, and all have been agreeably surprised.

All labor differences have been settled, and contractors are working hard to fill contracts. They say the people who want to build do not grumble, although prices of material and labor are 10 per cent. higher. One prominent builder says: "'I honestly believe that the Pan-American has proved a lasting benefit to Buffalo," and he ventures to assert this year will be one of the best seasons for contractors in this city's history.

Machine House at the Sonyea Brick Yard.

Our Brick Association expects sales will exceed those of last year by 20,000,000 or over. Our neighbors at Niagara Falls are right in the swim, too—its future as a power and manufacturing center is brighter than ever. Additional power plants will be erected, and some large industries that will employ a great many men are purchasing land, with a view of locating there.

The latest power plant, making the third one on this side of the river, is the Lower River Power Company, which obtained a vauable franchse from the last State Legislature. They are capitalized at $5,000,000, and contemplate taking water from the river above the Whirlpool Rapids, tunneling the bank and discharging the water at the Devil's Hole. About eighty feet of a head could thus be obtained. Its capacity will be about 200,000 horse-power. The Hydraulic Power Company, or the Schoelkopf canal, is now developing 35,000 horse-power. The enlarging of the canal will double its power capacity. This canal was originally built by a man named Day and lay dormant for years, till finally Jacob Schoelkopf, a wealthy German, of this city, was induced to purchase the Day canal. The price was about $65,000. He went to work, enlarged and improved it to supply the demand for the power, till it has proved a veritable gold mine for its owners.

I have been informed that an agent claiming to represent an English syndicate has offered £2,000,000 for the plant, which was promptly refused by Mr. Schoelkopf in his quaint German way, as he said: "For why should I sell? It is good enough for the Schoelkopf family. I guess I keep it."

The Niagara Falls Power Company is talking of still further enlarging its plant to supply the increased demand for power. The interests of the two cities are in some measure identical—we take their power, they buy our brick and other material. The new plants being built outside the northern line of our city, and those along the river this side of Niagara Falls, are gradually lessening the distance between them, and it is only a question of time when the two will be united under one head.

—A Brickyard Run by Epileptics.—

The two photos inclosed—one of the machine and the other of the down-draft kiln—were just received from James Mannix, former superintendent of the Lancaster Brick Company, but now located at the Craig Colony for Epileptics, Sonyea, N. Y. The superintendent reports the colony never will have a better-paying or more valuable industry than brickmaking. The deposits of pure clay on the premises are practically without limit. An acre of clay one foot in depth will make 1,000,000 bricks, and they have more than one hundred acres that might be used for that purpose. This wealth of raw material, the cheapness and abundance of labor and the certainty of a market for their output all combine to give this industry great value. He says: "We can make brick for less than $2 per thousand, and we now sell them to contractors on colony work at $7 per thousand or whatever the market price may be, and the yard now clears over $2,500 annually. The brick yard opened on May 10 and closed down Oct. 1. During this time there were only forty-one dry days, consequently the season was very short. The number of brick made was 250,000 common hard brick. The labor and coal cost $697." He asks for an appropriation of $800 to erect one more down-draft kiln, shed over crusher and one more drying rack. They do not work the inmates very hard. Sometimes two hours in the forenoon and two hours after dinner constitute a day's work. It may seem rather hard to work men and boys subject to fits, but really it is better for them to have something to occupy their attention. They only use those able to work. The foreman has some experienced hands with him, but has to do most of the burning himself.

NORTON.

A New Kiln at Sonyea, Supt. James Mannix in the Foreground.

THE FERNHOLZ BRICK MACHINERY CO.

In STARTING OUT to describe a great machine manufactory it would seem right to begin with an account of the buildings and surroundings, but to clayworkers the point of first interest is the machine with which they expect to transmute dull earth into shining gold, so that a few words about the Fernholtz brick machinery, particularly the dry press, will be first in order.

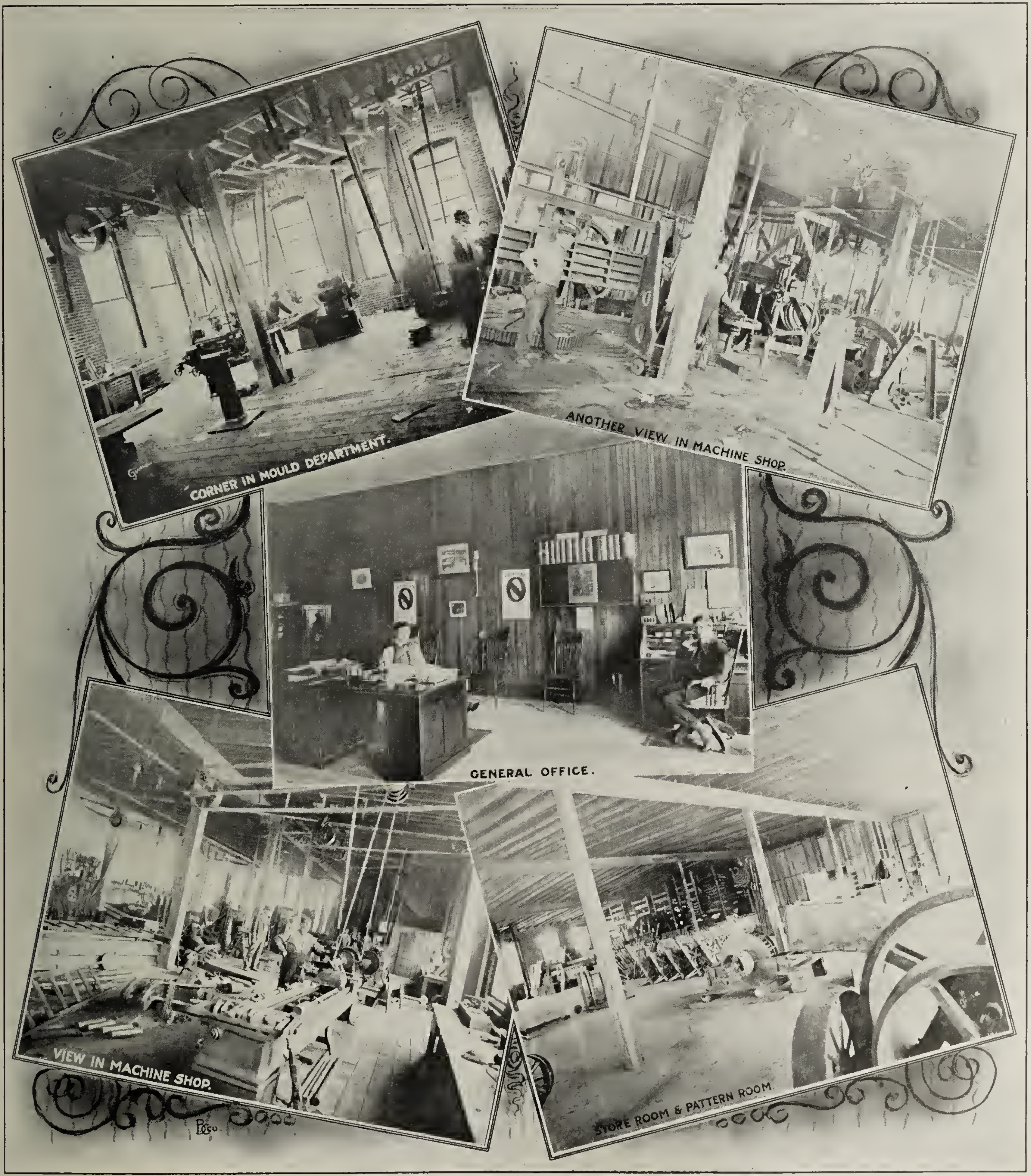
Emil Fernholtz, the man who designed the Fernholtz dry press brick machine, came to this country about fifteen years ago. He was an accomplished engineer, and had, too, considerable practical brickmaking experience, acquired in European yards. In this country dry pressed brick, with which he was not familiar, at once attracted his attention, and in order to become thoroughly acquainted with it he worked in several dry press yards, where different systems were used, in one of which four different types of presses were in operation. He finally worked for the Tower Grove, afterwards the Progress Dry Pressed Brick Company, of St. Louis. There his ideas of improvements in the machine so impressed the able and enterprising proprietors of the company—Messrs. Beckman and Stocke—that they furnished the capital for taking out Fernholtz's first patents and for building the press. Several machines were completed and gave great satisfaction. Later on the success of the press determined the formation of a company for its manufacture, and in 1896 the Fernholtz Brick Press Company began the manufacture of machines at Twelfth and Poplar streets, St. Louis. In the latter part of 1898 the company was completely reorganized. This work was done by Mr. Wm. F. Scott, and the success that has attended his efforts is proved by the position of the enterprise to-day.

MANAGER'S OFFICE.

The remarkable success of the press is due to Mr. Fernholtz not only bringing his inventive genius to bear, but profiting by all the work that had been done by others and correcting everything that he considered a mistake. At the same time, as can be seen at a glance, the machine is not a copy of any other make. Up to the time of the reorganization, in 1898, a number of presses were sold and delivered, but, though the first ones might well be considered to be in the trial or experimental stage, it is a remarkable fact that not one Fernholtz machine has ever been returned to the maker or thrown out of work, which is strong testimony to the value of the thorough preliminary study of the dry press system made by the inventor before he even put his ideas onto paper. Another very significant fact is that up to the present time of writing no Fernholtz press has ever been offered for sale as second hand or exchange. This may be only a fortunate accident, or it may be due to points in the machine, such as the scientific disposal of the metal—the iron and steel—putting it exactly where it is needed to resist strain, with the result that breakages are almost unknown, while those parts that are subject to wear and have to be renewed from time to time are so designed that they can be easily and economically replaced. The great principle which, perhaps, as much as anything else has helped to place American machines in advance of all the world—interchangeability of parts—has been adopted in the Fernholtz, so that a piece can be replaced with the minimum of delay and trouble, without any fitting or making to order. Add to this that all bolts and nuts are standard, that every part of the machine is in sight and can be got at with the greatest ease, that considerably less power is required than by the ordinary press, and we have a few of the reasons why there are no second-hand presses on the market.

The mold box of a dry press has been very well described as its heart, so important is this part; it is, indeed, a vital organ of the machine. The Fernholtz mold box is just as distinctive as the press is. The material of which it is made, while inexpensive itself, approaches nearest among the metals of commerce to the hardness of the diamond. This metal is chilled iron. There is chilled iron and chilled iron, and while it needs skill and knowledge to chill correctly and a full knowledge of metallurgy, the chemistry of metals is necessary to determine the exact proportion of carbon the iron must contain; yet, given this skill and knowledge, the operation is simple and inexpensive. The most striking advantage of the mold box is the ease and speed with which it can be taken out or put in place. Two set screws are loosened, two keys holding the mold in place are removed, and the mold box slides out. Reverse the proceeding, and the box, or another one instead of it, is in position again, the whole operation taking only a few minutes, while in presses of different construction it takes as many hours. In this connection we may note that by a simple contrivance the ram heads are adjustable on the cross head without the troublesome necessity for using shims, as in the old-fashioned way. Although the material composing the mold box is harder than cast steel, it is nevertheless subject to wear. The box is a "knock-down"—by loosening four bolts the whole thing comes apart to permit of the worn surfaces being reground. As a matter of course, partitions in the mold are slightly reduced in thickness each time of grinding, so that the ram heads have to be brought a little closer together, and it is quite a consideration to be able to make the adjustment simply, quickly, without much labor and, at the same time, as accurately or even more so than by using shims.

The company undertakes to produce and supply everything that the dry press brick manufacturer needs in his work, but there is one machine that is the especial pride of the gen-



CORNER IN MOULD DEPARTMENT.

ANOTHER VIEW IN MACHINE SHOP.

GENERAL OFFICE.

VIEW IN MACHINE SHOP.

STORE ROOM & PATTERN ROOM.

eral manager, for, though it is called the Fernholtz clay pulverizer, its introduction is due to Mr. Scott, as are also the principal improvements in it. This is a pulverizer of the cage type. It has only one shaft and one pulley, and, comparing it with the ordinary double-shaft, two-pulley pulverizer of equal capacity, it requires only from a quarter to half the power to run it. Comparing it with a dry pan of equal capacity, it takes from one-sixth to one-fifth less power. In this type of pulverizer the pins, forming the bars of the cage, do the pulverizing, and consequently are subject to wear. All the machines we know of have the pins or bars riveted in place. This means that when the pins are worn out the whole cage has to be sent to the machine shop to have the rivet heads drilled out. The Fernholtz pulverizer has the bars fastened in place by counter-sunk set screws, instead of rivets. When the bars become worn, all that has to be done is to order new ones, and any brickyard laborer can put them in place, thus saving freight, expense of drilling and riveting and avoiding loss of time. As an evidence of the economy in power, one of these pulverizers was put in a brick plant about a year ago. It is a 42-inch machine and was put in the place of two double-shaft pulverizers—one a 40-inch, the other a 36-inch. It has proved an efficient substitute for the two machines, doing all the work satisfactorily ever since.

Front View of the Fernholtz Brick Machinery Company's New Factory.

This subject is, perhaps, too tempting and fascinating, but just one more notice of a machine, and we are done. Every successful manufacturer of fine face brick has discovered that a clay mixer is of great benefit in turning out high-grade work and, in fact, for other grades of work, too. The Fernholtz clay mixer was originally made with a wood frame and proved very satisfactory. Last year Mr. Scott changed it to an iron frame machine, at the same time adding some important improvements. A number of these machines are in use to-day, giving excellent results.

—The New Works.—

It would be difficult to find a more ideal location for a dry press brick machine works than this. In the heart of the greatest center of dry press brickmaking in the world, the Fernholtz Brick Machinery Company's works occupy an acre of ground, directly on the tracks of the Missouri Pacific Railroad, within one block of the 'Frisco and three blocks of the Wabash and Rock Island roads. The front is on Manchester road, at Boyle avenue, along which street cars run at three-minute intervals. The distance in time from the Union Depot by street car is only fifteen or twenty minutes, and the excellent transfer system of St. Louis enables any one to reach Manchester road and Boyle avenue from any part of the city or suburbs for a nickel in from thirty to forty minutes. The buildings cover about half the ground, leaving room for the inevitable extensions. The erecting floor and the loading platform are built on one level, and are also on a level with the floors of the railroad cars, which run in on the company's switch. The buildings were planned by a St. Louis architect, under the supervision of Mr. Scott. As will be seen by the photographs, there are no attempts at pretentious decoration, but the architecture shows a simple beauty and dignity in perfect harmony with the purpose for which the buildings were erected. That the good-looking, red, dry-pressed bricks were made on a Fernholtz press "goes without telling." They were made by the Superior Pressed Brick Company, of St. Louis, and, although they are such good-looking bricks, they were rated at little above "merchantable" and the price was $7.75 per thousand. The ground floor is of two-inch oak, on red cedar sills. These are laid in cinders, and it took 120 wagon loads of cinders to do the job. The second floor contains the lighter machine tools, the pattern-making shop and the pattern store. Here also are the stores for trucks and barrows, belting, elevator buckets and everything needed by the dry press brick manufacturer. The tool room, we find, is in charge of a man who superintends the making of tools used by the machinists, and a system of checking has been adopted similar to the admirable one in use at the Chambers Bros. Company, at Philadelphia.

—Equipment.—

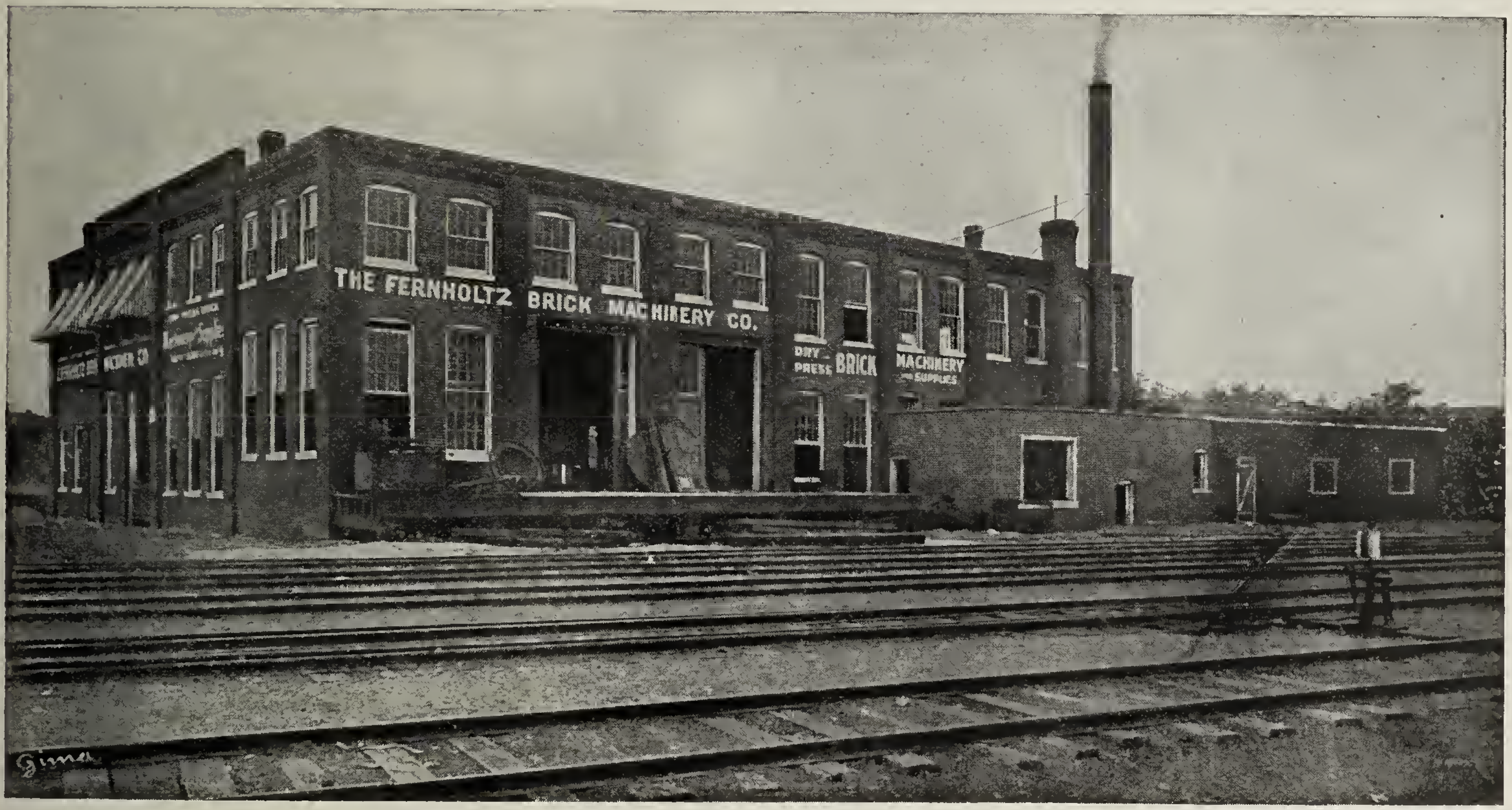
The equipment of a plant, whether it be for making bricks or for building machines, is of the first importance. The great victory that American machines makers have had over all the rest of the world is due, to a very considerable extent, to the fact that the American will not be content with a tool, no matter how good or serviceable it may be, if he knows of one a little better. The difference in earning capacity between the new tool and the old one may not justify the expense, but the improved tool places its possessor in the front rank of competition and enables him to dominate the market. Mr. Scott was thoroughly alive to this, so we find the most modern equipment in the new works. Here is one of the largest upright boring mills in the city, equal to taking pieces larger than brick machines are likely to demand. With a tool, as with steam power, it is well to be on the safe side and hold a good margin. Of lathes, shapers, planers, key-way cutters, drills, there is everything that can be required, for the works are planned with the fundamental idea that all machine work must be done upon the premises and nothing be sent out. A system of overhead tracks enables one man to move heavy pieces that, in the old way, would require the united strength of four or five men. A circular overhead track above the erecting floors proves of great value. By this track one man can move the heaviest piece and place it on any one of five machines.

The department for mold-box making is full of special machines, designed by the Fernholtz Company. In this shop the grinding and surfacing of the molds are performed. From such work there is produced a quantity of harmful dust, composed of the diamond-hard particles of chilled iron and of the abrasive, carborundum or emery, used for grinding. This dust is all carried away by a powerful suction system, so that what would be a dangerous and deadly occupation for the workmen is as healthy as any other part of the work. The comfort of every one employed has been carefully studied, with ample lavatory accommodation, filtered drinking water, etc. At the time of our visit a filter plant was being installed in a corner of the works. This has a capacity of 10,000 gallons per day, so that the water for the boilers will also be filtered. by exhaust steam from the engine, and the company's own In winter the shops will be warmed by steam radiators, heated dynamo will furnish electric light, arc and incandescent, throughout the works.

—The Business Management.—

The business end of an enterprise is always of the greatest importance, not only to the owners of it, but to its customers, too. Inventors are plentiful, scientists, journalists, orators abound, but successful organizers of business, like that famous lot of J's—J. P. Morgan, J. E. Rockefeller, J. Hill—are rare, indeed. The importance to the customer of a good business management is that everything is done in order. He has the certainty that his interests will not be neglected, because that would be not be good business policy. He knows that the management will, by hook or by crook, secure the best talent for the work, and, with high-class business management, he feels safe in every way in dealing with the firm. It will therefore be of interest for us here to consider the personality of the one who plays the part of Morgan-Rockefeller-Hill in the Fernholtz Brick Machinery Company, Mr. William F. Scott. This gentleman is a Missourian by birth, of Kentucky and Virginia parentage, and was born, a little more than thirty years ago, on that great nourishing mother of American manhood, the farm. At sixteen years of age he began his business apprenticeship in a country store. Afterwards he came to St. Louis and held various positions of responsibility—clerkships in a grain office, in the Laclede National Bank, cashier to the St. Louis branch of one of the great assurance companies, the Mutual Reserve Fund Life Association, of New York, etc. Starting with nothing, he had made and saved money, so that he was able to resign his position with the assurance company, buy the assets of the original Fernholtz Company, reorganize it and bring it to the position it occupies to-day. Mr. Scott's sound judgment and extraordinary health and vigor unite to make him the success he is. His titles are only vice president and general manager, though he is the head and front of the whole concern. The president, Mr. Robert M. Foster, is a prominent citizen of St. Louis, but takes very little part in the management. He has been identified with brick manufacturing for a number of years, and is, besides, at the head of several other important manufacturing interests. The secretary, Mr. William L. Rogers, is, like the general manager, a young man of force and vigor. He only took the position the 1st of May last, but he is an old and tried friend of the manager. He gave up a lucrative business connection for the purpose of getting into this growing success, and the probabilities are very strong that he will not regret it.

Gima.


THE FERNHOLTZ BRICK MACHINERY CO.
DRY PRESS BRICK MACHINERY SUPPLIES
Gima

Rear View of the Fernholtz Brick Machinery Company's New Factory.

THE NATIONAL CHINA COMPANY.

ONE OF THE NICEST and most modern potteries in the Ohio valley or we might say in the world, is the plant of the National China Company, located in the East End, at East Liverpool, O. If taken as what might be achieved in modern pottery construction, we are forced to concede that the works is a "cracker jack."

The main buildings of the works are 310 feet in length and 130 feet in width. They are substantially constructed of brick, and no expense has been spared to make the works durable and practically everlasting. The plant presents an extremely neat appearance from the street and is bounded on one side by the immense plant of the Homer Laughlin China Company and on the other by the East End plant of the East Liverpool Potteries Company. Sidings run in from one side and the raw materials are loaded into the different bins direct from the cars, and the finished product is loaded into the cars from the opposite end of the factory.

The plant has six kilns; three 16 feet 6 inches and three 17 feet 6 inches in diameter. Three of these kilns are used for burning bisque and three for glost ware. When the plant was originally started, in the summer of 1900, the capacity was limited to five kilns, but it was found that the sixth kiln was an absolute necessity and it was added one year later.

Upon entering the works of the National China Company one of the first things that strike a person's attention is the cleanly look about the plant. All of the kilns are fired by gas, and the engines used are gas engines throughout, so that there is no annoyance on account of smoke. The company also makes it a point to keep the factory clean from one end to the other, and another noticeable point about the factory is the convenient way in which everything is arranged. The ware is carried from one floor to the other by elevators, and the mechanical part of the plant is so arranged that the material in the raw state moves in one direction in the plant until turned out in the finished product.

The plant is operated by two fifty-horse-power gas engines, which do their work very nicely. The slip-house is equipped with two single Blunger mills, into which the clay is emptied after being weighed. It then goes to the rough agitator, where it is kept thoroughly mixed. The company has two seventy-two-chamber filter presses, into which the liquid clay or "slip" is pumped by pressure pumps at a pressure of about 90 pounds. The clay is then taken from the presses in cakes weighing about 40 pounds, and which is now in the constituency of putty, and is then taken into the clay cellar, where it is stored for a period of about two weeks. It is then brought forth and is run through a taper barrel body pug mill to thoroughly wedge it or to take the air out of it. It is then delivered to the workmen, who are on the second floor, by belt elevators, where it is converted into ware by the different machines employed there for that purpose. Very little of the ware is now made by hand, although a few pieces are still pressed.

The buildings are four and two stories in height, and nearly one-half of the fourth floor of the plant is converted to what is known as the thirds' room—a room in which the third selection of ware is stored until ordered. The company intends, however, to remove these goods to the basement, and henceforth the fourth floor will be used entirely for decorating purposes, this department having grown out of its present quarters.

The accompanying illustration will show a portion of the decorating department of the National, and also shows the superintendent of this department, Mr. George Heisler, a man of rare ability in his line and capable of producing many nice things in the artistic line and as is well shown in the samples which are displayed in the commdious sample rooms of the company, which are located in the plant.

The line of goods manufactured by the National China Company consists of a fine line of semi-vitreous porcelain, which is well known to the American market and which it is useless to spend time in describing, as the reader is no doubt familiar with the many artistic designs turned out by the National Company, as its ware is used all over the country.

Factory of the National China Company, East Liverpool, Ohio.

The accompanying illustration shows a toilet set, one of the latest origins of the National Company.

The officers of the National China Company are Jefferson R. Warner, president; Sylvester C. Williams, vice president; Samuel B. Larkins, secretary, and Thomas H. Fisher, treasurer. The company is thinking of increasing its capacity if the present rush of business continues throughout the present year, and if it does it will not be less than two or three kilns, and these, together with the plant already established, will make quite a pottery. R. L. C.

PENNSYLVANIA—VANDALIA—G. R. & I. RAILWAY.

Northland Express Every Night from Indianapolis.

at 7:20 p. m. Through sleepers to Michigan resorts. Also a through sleeper to Detroit. Dining car serving a la carte Indianapolis to Logansport and Grand Rapids to Mackinaw City. Low tourist fares to Michigan and Canadian summer resorts. For particulars call on agents or address W. W. Richardson, D. P. A., Indianapolis.

Written for The Clay-Worker.

BUTTONHOLE TALKS.

Billy Had Gone to Church.

NOT THAT BILLY'S legs had carried him in strict accordance with the natural action of his brain, or as following his unbiased wish, or as they would have carried him had he not been led by outside influences. There had been, in truth, a very vigorous debate at home, and Billy had used again every one of his old worn excuses, had complained of his sore toe, his toothache, that awful pain in his side, and had felt "all weak and dizzy," and had guessed he was going to die, only to be routed at last and driven to church with many reiterated reminders of his depravity and dark hints as to his future. So that, more exactly speaking, Billy had been driven to church.

It was a balmy, cloudless day in June, and it looked like the fish would bite—if it wasn't Sunday.

Inside the church Billy braced his back against so much of the stiff back of the pew as his little spine would cover, and centered first his observation on "old Miss Jones' corkscrew curls, and they looked so stiff and precise and prim that his impulse to run his finger into them and see if they were spring steel was well nigh irresistible. A reminding dig from his mother brought him back to himself and brought his attention to the preacher as he announced his text. Billy knew him only as an austere, cold individual, who seemed to be of and from another world, and who, when he deigned to notice him at all, did so to tell him what not to do, and Billy felt that life might be really endurable without his close companionship. Billy was filled with the wonder, though, that this man should be able to take one little, simple verse from the Bible and talk about it for an hour or more and leave you wondering and in doubt as to what it really did mean or, in fact, as to whether it did really mean anything at all.

His text, I believe, was that time as to baptism, and he held it should be wet, the damper the surer Billy liked water—for some purposes, such as fishing and swimming—but he had no use for it in an applied form. His ears ached now from the weekly scrubbing, and he could but wonder why it should follow that the more water the nearer heaven. Billy wasn't in a hurry, anyway, and could wait.

A Corner in the Sample Room of the National China Company.

Suddenly Billy dropped away from baptism, water and the preacher. Just back and a little to the left of the preacher was a large stained glass window. Billy had seen it often and had studied it time and time again. It bore the legend that told how it had been presented to the church by the Young Ladies' Guild. Billy knew all about it without reading the legend. He recalled all the self-denying and laborious functions which those girls had held. He remembered how they had worked the grab bag, the fish pond and the ring cake, to add to their store until the proud moment when the window was installed. All this was in Billy's mind as he began again his oft-repeated study of the art in the window.

This window was made by foreign artists in a faraway country and sent out to Billy's burg in exchange for the bag of simoleons that the young ladies had garnered. The foreign artists claimed that this stained glass window represented the Annunciation. At the top of the window there was a hole in the sky, an explosion, a leaded wreathing of cloud, as though a shell had exploded, only, instead of a shell, there was a dove in the center. Billy wondered, did the shell have a dove in it and was it some kind of ancient fireworks? Mary, clad in a yellow and purple table spread, was kneeling on a lavender altar. At the other side there hovered an angel whose fat, swollen, inflamed and blood-shot wings protruded through a round hole cut in the back of his shirt waist. Billy was filled with wonder and doubt. Nor was it the first time. He had studied this proposition before. Surely those wings were too fat for use. Short, chubby, fat and downy, they couldn't raise their own weight in the air; hence, they were not for use, and, as for ornament, well, Billy shuddered and dropped that. He knew they would chafe and that the shirt waist would get tangled up with them, and then he concluded again that that was what made them look so swollen and inflamed. Billy recalled that he had been taught that if he was a good boy he would be eventually rewarded by being made an angel. Billy looked at the wings and again shuddered, and decided he wanted a long life. He could wait. He wouldn't hurry the reward. Indeed, he wasn't at all sure that the inducement was much of an incentive to him to live right. Billy was familiar with birds and admired their wings, but he took no stock in these. 'Way inside he just knew they wouldn't work, and he had no ambition whatever to wear wings of this pattern, and he was morally certain that if he had them they would be painful.

So Billy was driven to church, and the preacher preached over his head and Billy didn't understand the preacher, nor did the preacher understand Billy.

Billy did understand the sermon set up in glass for the Young Ladies' Guild, and it was a bad sermon and did Billy harm. The window was artistic, but not realistic. If the artists wanted it they should have it, but it ought not be left to dishearten Billys with the sermons it preaches to them when they are helplessly chained in their pews.

Billy didn't remember the preacher's sermon, but he could never forget the sermon the bad angel preached from the window. GATES.

Machinery insurance of a new form is said to be given a trial in a New England State. The idea is to provide an indemnity against the loss of time from stoppage due to breaking or other similar causes except fire.

Written for The Clay-Worker.

PITTSBURG AND WESTERN PENNSYLVANIA CLAY INDUSTRIES.

THE FOMBELL CLAY Manufacturing Company, of Pittsburg, which was incorporated last February under the laws of New Jersey with a capital of $100,000, and which has purchased 250 acres of clay land on the Pittsburg & Western railroad near Fombell, in Beaver county, Pa., has its new plant well under way. The plant will cost $60,000 and will have an initial output of 200,000 brick daily. The company will manufacture all kinds of building and fire brick. As the clay to be worked is near the surface, the company will use a steam shovel for mining. Presses are being installed for the manufacture of the very finest grades of brick.

The Monongahela Valley Brick Company, of Donora, Pa., has been formed by S. M. Donner, R. H. Robinson, Archibald McCree and Speer Bros., of Pittsburg.

The Suburban Brick Company, near Moundsville, Pa., has made a number of improvements to their plant.

The Monongahela Clay Manufacturing Company has about completed its new plant at Scott Hollow, Pa., for the manufacture of fireproofing. The new plant is equipped with modern machinery for the manufacture of fire brick and tile of all kinds. J. McKee Speer, of Pittsburg, is president of the company; J. R. Taylor, of Pittsburg, vice president, and J. R. Speer, of Pittsburg, secretary and treasurer. The plant will have a daily capacity of 500 tons of fireproofing and a large amount of brick and other clay products.

Pittsburg capital is largely interested in the Champion Clay Manufacturing Company, recently incorporated, to install and operate a large pottery plant at East Liverpool. The company is capitalized at $50,000.

The Cumberland Basin Land Company has purchased a tract of 2,622 acres of clay land at Frostburg, Md., near the famous Mt. Savage fire clay region, and will develop large clay manufacturing plants. The headquarters of the company are in Baltimore, Md.

The Beaver Clay Manufacturing Company, which was formed several months ago by a number of Beaver Falls (Pa.) capitalists, is erecting a large plant for the manufacture of enameled tile, enameled fire and building brick, and various other clay products. The company is capitalized at $50,000, and among those interested are James H. Cooper, F. N. Beegle, Louis Davidson, B. B. Todd, Harry Bonnell and Eugene S. Hoopes, all of Beaver Falls, Beaver and New Brighton. The plant is located near New Brighton, Pa.

The Bessemer Limestone Company, a subsidiary industry of the United States Steel Corporation, has installed a plant at Carbon, Pa., for the manufacture of brick from the refuse of the limestone quarries. The plant is a six-kiln one, and, while the capacity will be 75,000 bricks daily, the company expects to be able to manufacture 250,000 daily within a short time.

Edward Dunn, of Pittsburg, has just purchased a tract of clay land in Stowe township, Allegheny county, Pa., for $15,000 and will erect a new brick manufacturing plant.

W. H. Gibson and Henry Wessing, of Homestead, Pa., have perfected a new method for the manufacture of refractory brick and fireproofing material. The new process consists in mixing pure crushed ground or dirt or ground silica with pure silica reduced to a fine pulp, then drying and burning the same.

The Peebles Paving Brick Company, of Portsmouth, Ohio, which was recently damaged by a storm, has been repaired.

The Darlington (Pa.) Brick Company recently placed an order for an automatic blower and waste heat dryers. A similar order has been awarded to the same company by the Standard Brick and Tile Company, of Clearfield, Pa.

The Shenango Pottery Company, of New Castle, Pa., has completed improvements in its plants which more than double its capacity. The capital stock has been increased from $150,000 to $200,000.

A rich clay deposit has been discovered near Roxbury, Pa., and a company is preparing to install a brick manufacturing plant, which will be erected by the Henry Martin Brick Machine Manufacturing Company.

The Coxey Steel Casting Company and the Coxey Silica Sand Company, of Mt. Vernon, Pa., have been combined under the name of the Coxey Steel and Silica Sand Company, with a capital of half a million dollars.

The Big Savage Fire Brick Company, of Mt. Savage, Pa., and Frostburg, Md., has been incorporated under the laws of Maryland, and will begin operations at once, having purchased large tracks of fire clay and coal lands.

The Patton Clay Manufacturing Company, at Patton, Pa., has decided to enlarge its plant during the summer. The capacity of the present plant will be about doubled.

The East Liverpool Brick Manufacturing Company, of East Liverpool, O., has begun the erection of a new plant at that place for the manufacture of stiff-mud brick. The company has a capital of $30,000 and is largely owned by Pittsburg capitalists.

Work has been begun on the new plant of the American Conduit Company, which is being erected at New Kensington, Pa., a contract having been awarded for 12,000 tons of materials.

The Lock Haven (Pa.) Paving and Building Brick Company is installing a new dry press and paving brick plant at Lock Haven, which will have a daily capacity of 12,000 brick.

The Clearfield Clay Manufacturing Company will build a new plant, to be known as plant No. 2.

The Montello Brick Company, of Reading, Pa., has booked an order for 100,000 paving brick for the League Island (Pa.) navy yard.

The Manchester (Pa.) Shale Brick Company has been formed by W. E. Brady, D. W. and R. G. Cox and others. Capital, $20,000.

A combination of six of the largest white pottery companies of the country has been formed by Pittsburg capitalists, and will be known as the American Pottery Company, which is capitalized at $5,000,000. Col. J. P. Yaylor, of East Liverpool, O., has been elected president and L. A. Aaron, of Pittsburg, first vice president. The firms in the new company are Knowles, Taylor & Knowles Company, Homer Laughlin China Company, D. E. McNeil Pottery Company, Taylor, Lee & Smith Company, Edwin M. Knowles China Company and the Harker Pottery Company. A number of other firms are expected to enter the company.

The Beaver Valley Sandstone Company, of New Castle, has been incorporated with a capital of $10,000.

William Simpkins, who is connected with the Pittsburg Plate Glass Company, has discovered a new process for the manufacture of fine clay brick from waste from glass manufactories. Silica waste sand by the new process can be manufactured into a fine grade of silica brick.

Several valuable beds of fire clay have just been discovered on Drury's run, near Renova, Pa., in Clinton county. A number of fire brick manufacturers are now investigating the deposits with a view to installing clayworking plants.

The New Castle Pottery Company, of New Castle, Pa., at a recent meeting of the board of directors, decided to increase the capital of the company in order to meet the expenses of improvements now under way. About $50,000 will be expended in the building of new kilns and machinery.

George W. King, of Pittsburg, has received the contract for the erection of a $4,000 addition to the clay pot plant of the McCullough-Dalzell Crucible Steel Company, located in Alle gheny, Pa. The construction will be of brick, stone and concrete.

A company capitalized at $100,000 has been formed by Pittsburg and Philadelphia capitalists to install a sewer pipe plant at Newton Hamilton, Pa.

The Atlas Portland Cement Company, of Northampton, Pa., has placed another order for oil filters with the Burt Manufacturing Company, of Columbus, O. The company is now using a number of these filters, and, with those to be installed, will have nine in use.

WRITTEN FOR THE CLAY-WORKER.

THE GERMAN CEMENT INDUSTRY TO-DAY.

CONFIDENCE IS a good thing, but blind overconfidence possesses the evil of all things that are extreme. In the spring of 1899 an American clay journalist visiting Hanover, Germany, presented himself at the office of one of the first German Portland cement works, and begged permission to be admitted with camera and note book. He started, using his most persuasive arguments, to prove that whatever he might publish could not do any harm, while it would be of immense value as an advertisement, etc., when he was cut short by the president, who said: "My dear sir, you are welcome to get any information for your people, so far as we are concerned. We are not worrying about foreign markets for Portland cement. Our only anxiety is caused by our being quite unable to keep up with our home orders."

Here was a case of overconfidence. We may remember what a "slump" there was in German trade and industry beginning about eighteen months later. This has been called to mind by seeing the returns of eighty-nine German stock companies (clay and cement industries) published recently in the German technical journal, Clay Industries Gazette. Selecting those Portland cement works whose fiscal year closed on the last day of December, and taking them in the order in which they appear, it is shown that their dividends for the years 1900 and 1901, respectively, were as follows:

—Dividends.—

Berlin—	1900.	1901.
"Eagle" German Portland Cement Works......	17	0
Alsen Portland Cement Works................	19	15
Breitenburger Portland Cement Works........	8 1-2	4
Portland Cement Co. (formerly A. Giesel).....	6	2
Lorraine Portland Cement Works.............	14	8
Upper Silesia Portland Cement Works.........	8	3
Oppelner Portland Cement Works.............	7	3
Saxonia Cement Company	12	3
Schimischower Portland Cement Company.....	7	5
Silesian Portland Cement Company...........	13	6 1-2
Sitzendorff Portland Cement Company.........	4 1-2	0
Stettin-Bredower Portland Cement Company...	10 1-2	7
Stettin-Gristower Portland Cement Company...	4	0
Vorwohler Portland Cement Company.........	18	2
Westphalian Portland Cement Company.......	20	0
Wicking Portland Cement Company...........	7	0
Frankforth—		
Heidelberg Portland Cement Company.........	8	6
Karlstadt Portland Cement Company..........	8	4
Leipzig—		
Halle Portland Cement Company..............	8	0
Bremen—		
Bremen Portland Cement Company............	7	0
Zwickau—		
Goessnitz Portland Cement Company..........	16 2-3	4
Hanover—		
Hoexter Portland Cement Company...........	8	0
Formerly Heyn Bros. Portland Cement Co.....	15	0
Hemmoor Portland Cement Company..........	10	0
Teutonia-Misburg Portland Cement Company..	11	0

It would have been very interesting to see the returns made by the Portland Cement Company referred to at the commencement of this article. Its dividend for 1900 was 20, but as its fiscal year closes the last day of June, the returns for 1901 are not yet published.

An interesting feature of the returns published by the Clay Industries Gazette is, that while cement companies have been so hard hit, the brick companies have not suffered to anything like an equal extent, and the porcelain manufacturers appear to have been nearly as prosperous in 1901 as in 1900, which is, probably, accounted for by the fact that German porcelain finds its way to all the markets of the earth. Here, in the United States, we still import immense quantities of German porcelain, but we are making our own Portland cement. The growth of Portland cement manufacturing in this country is one of the industrial marvels of the day. Within a very few years, less than the term of a boy's apprenticeship, we have jumped from the position of being dependent upon foreign makers for our best cement to being ourselves the producers of the highest quality of Portland cement made. Not only that, but the men who were once so far ahead of us now come to us for dryers to dry their raw material, and for the American rotary kiln to burn it into cement. There is no limit in sight to our progress along this line. GEO. J. M. ASHBY.

COST OF PRODUCT.

HAS MACHINERY REALLY CHEAPENED BRICK AND TILE WORK?

PERMIT ME to say that through the kindness of some unknown party I have received the Nineteenth Anniversary number of The Clay-Worker, and that, while not interested directly or indirectly in the line of business it represents, it has been the source of an evening's pleasure.

I had thought, some time ago, of engaging in the working of clay, but have abandoned such ideas. However, I appreciate your publication, and think it a most excellent one, ably edited, and really entertaining and instructive in many particulars.

Just here it may not be amiss for me to call your attention to a few thoughts which impressed me in looking over the beautiful pages of advertisements which appear in the copy in hand.

Machinery of all kinds has had a tendency to reduce the cost of production, that is, in every part of the world except this immediate vicinity, and it is no idle jest to assert that brick—machine-made brick—are to-day selling on the Nashville and West Nashville markets at as great a price as hand-made brick could have been bought for. There may be nothing surprising in this, but when once on the market with a view of purchasing machinery, each and every manufacturer with whom I corresponded, and whose "wonderful money savers" I inspected, led me to believe that with the use of their machines brick could be made and sold profitably on these markets at half the prices to-day charged. Now, remember, some of these "wonderful money savers" were to be set up and operated with this guarantee stipulated in writing, etc., etc.

With these assurances in hand to-day, I wonder why it is that some enterprising, experienced brick men do not enter the Nashville and West Nashville markets, and reap the harvest certainly in store for anyone who can give desired relief to the thousands of anxious home builders who are patiently awaiting an opportunity of enjoying some of the advantages offered prospective purchasers of those "wonderful money savers" and price cutters.

That machine which can reduce the price of brick to the consumer in this vicinity will, indeed, prove a most wonderful and much respected invention, but I fear it will have to be operated by others than those now in business in these parts.

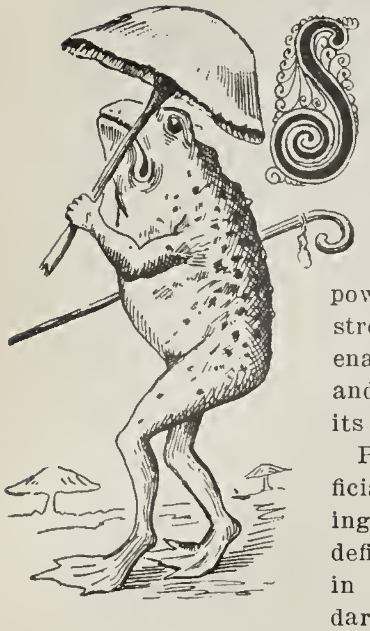
Returning to The Clay-Worker, permit me to say in conclusion that the party supplying the issue before me to-day has my unqualified thanks, and succeeding copies will be quite welcome.

All hail the machine which will cheapen Nashville brick.

West Nashville, Tenn. M. F. B.

Written for The Clay-Worker.

PORTLAND CEMENT.



SINCE THE USE of cement, and especially of Portland cement, has assumed enormous proportions, and is constantly on the increase, a brief consideration of this so very important product might not be devoid of interest to clayworkers. Many of us use Portland cement for various purposes, and many again meet it as a powerful competitor. By knowing its strong as well as its weak sides we are enabled to use it to the best advantage, and also to keep it within the bounds of its proper use.

Portland cement is, as a rule, an artificial mixture of a clay and a lime-carrying material which must have a rather definite composition and which is burned in a kiln till thoroughly vitrified. The dark colored product resulting from the burning process is ground fine in a mill, and, after being stored for some time, is ready for use. The main considerations in the manufacture of Portland cement are: First, the chemical composition must be correct; second, the raw materials must be mixed and ground together very intimately; third, the burning must be carried to decided vitrification; fourth, the grinding of the clinker must be carried to as great a fineness as commercially possible; fifth, the fresh cement must be allowed to "cure" till it has become sufficiently slow setting.

No matter what the substances are which are mixed together to make a cement, as long as the ultimate chemical composition is correct and the considerations outlined above are observed, the result will always be a useful cement. For this reason it is perfectly immaterial whether the lime, alumina and silica are derived from a limestone, a calcareous clay or a blast furnace slag. The process is strictly a chemical one, and is entirely governed by chemical laws.

The chemical composition is confined to rather narrow limits, and may be expressed by the following extremes:

Lime	58.5—65	per cent.
Silica	19.8—26	per cent.
Iron oxide	2.0— 4.5	per cent.
Alumina	4.0— 9.5	per cent.
Magnesia	trace— 3.0	per cent.
Alkalies	.2— 3.0	per cent.

All good Portland cements have a composition which lies within these limits, and any cement outside of them is always to be regarded with suspicion. This rather definite composition is due to the fact that the principal chemical compound which produces the hydraulic property of Portland cement is quite sharply defined. This substance is the tricalcic silicate, a combination consisting of 168 parts of lime (calcium oxide) and 60 parts of silica. This chemical compound, when brought together with water, unites with the latter, forming a hydrated tricalcic silicate, which hardens and becomes stone-like. This is the cause of the hardening of Portland cement. This silicate of lime, which, of course, does not in practice correspond strictly to the above theoretical compound, owing to imperfect mixing and burning at temperatures not sufficiently high, is assisted in the hardening process by a dicalcic aluminate consisting of 112 parts of lime and 102.5 parts of alumina. This compound, however, is much inferior to the silicate. These two lime compounds are really the only true hardening constituents in cements, so that the iron, the magnesia and alkalies are only accessories which assist vitrification, but do not increase hydraulicity directly. The magnesia, as has been shown by several experimentors, is detrimental to Portland cement, and hence must be kept as low as possible. It should not exceed 3 per cent. The silica may be quite high, but the alumina should not go above 9.5 per cent. In other words, the ratio between the silica and alumina, that is, per cent. of silica divided by per cent. of alumina, should be as high as possible, and should not be less than 2.7. High alumina cements set rapidly, but are not as safe as those high in silica, owing to the presence of internal strains due to abnormal expansion. In the United States three distinct mixtures of raw materials are made into Portland cement, which may be classified as follows:

1. Natural cement rock and limestone.
2. Limestone and clay.
3. Marl and clay.

The first mixture is made use of in the oldest cement-making district of the United States, the Lehigh valley region of Pennsylvania. There a limestone occurs which is high in silica and alumina, in fact often contains too much of these two constituents. In order to counterbalance the excessive amounts of silica and alumina a purer limestone must be added. Occasionally a cement rock is found which has the correct composition, so that no addition need be made.

The second mixture of raw materials applies more or less to all districts in which a limestone low in magnesia and a suitable clay are found.

The third combination of raw materials comprises those deposits of clay, very high in lime, which are found in connection with the numerous small lakes in the glacial regions of Michigan, Indiana and Ohio. These clayey materials, called marls, are, as a rule, dug by means of dredges, being very soft and almost of the nature of slush. The marls are full of shells of all sizes.

It is evident that the differing nature of these raw materials will cause a difference in the method of manufacture of the cement, as far as the preparation of the raw mixture is concerned—that is, up to the burning. After the burning the conditions are the same in all cases, it being simply the question of grinding the dark colored, hard, cement clinker.

As far as the method of manufacture is concerned, headings one and two may be considered together, since both cement rock and the ordinary limestone are hard materials. A difference will occur only where the clay mixed with the limestone is of a soft character and must be dried before mixing and grinding. Cement rock and limestone, limestone and shale are two combinations of raw materials which obviously can be submitted to the same treatment.

A general description will show the process of manufacture, and the basis of the sketch is one of the numerous cement mills of the Lehigh region using hard cement rock and limestone. The rock and limestone are quarried in the ordinary way, by blasting, and are taken to the mill separately on dump cars. At the entrance a scale is located, on which the two materials are weighed out together according to the directions of the chemist. They are now dumped together into a large bin feeding a good sized rock crusher of the Gates type. On leaving this machine the raw materials are carried along to a ball mill. Here the mixture is reduced in size so that it will pass through an eight-mesh sieve. The ball mill itself is a short cast-iron cylinder, lined with hard steel plates and a set of screens outside of the perforated plates. The mixture is introduced at the side of the mill, at the center, and is crushed and ground by a number of heavy steel balls. As fast as the rock mixture is reduced sufficiently it will pass through the grate-like plates and will fall on to the outside screen. Here any material which is too coarse is kept back and automatically returned to the interior, where it undergoes some more grinding. The screens can, of course, be changed to any suitable mesh.

From the ball mill the raw stock is carried on to the tube mill, which is one of the simplest and yet most efficient grinding machines known. It consists of an iron shell, about 20 or 22 feet long, lined on the inside with hard flint stones, about five inches square. This tube is kept nearly half full of large flint pebbles. The raw mixture is introduced at one end, gradually works its way through the pebbles and is discharged at the opposite end. The longer the stock remains in this machine the finer it will be ground by the pebbles, so that the fineness can be regulated by the feed. The less stock there is in the mill the slower will be its movement through the latter, and vice versa. A tube mill of this kind is about four feet in diameter. By means of a grate at the end the pebbles are kept from leaving the cylinder. The combination of ball and tube mill is able to grind raw material equivalent to about 400 barrels of cement per day.

(To Be Continued.)

WRITTEN FOR THE CLAY-WORKER.

POTTERY NEWS.

THE CAPITAL STOCK, of the Zanesville Art Pottery Company, of Zanesville, O., has been increased from $50,000 to $100,000. The company has a practically new plant, but even on this is making many additions and improvements. The company has a new plan of "jiggering its jugs, ewers, etc. They are made with the handles already on, thus doing away with the nuisance of pressing the handles and sticking the same on after the pieces are made.

The Beaver Valley Pot Company has been incorporated at Rochester, Pa., with a capital stock of $50,000, to manufacture glass-house pots and tank blocks. The new works will be located right alongside of the Rochester Glass Company, of that city, and in which some of the stockholders of the Glass Company are interested. Excavation has been commenced and work will be rushed on the erection of the plant as fast as is possible. The contracts have been let for the erection of the buildings and for the machinery, which is to be completed as soon as possible. Mr. Samuel Young, a practical pot builder of many years' experience, will be the manager of the new works.

The new works of the Phoenix Clay Pot Company, at Parnassus, Pa., has started up "full blast." The claymakers started to work last week and the balance of the works commenced operations the first part of this week. The plant will be run as full as possible, as the company has several large orders on hand and they are anxious to get their goods upon the market.

Mr. P. P. Wilbur, of Zanesville, O., is endeavoring to organize a company to manufacture a special jug, of which he is the patentee. The jug which Mr. Wilbur has is especially adapted to the bottling of acids and liquors, and those interested with him are said to be parties engaged in those lines of trade.

R. W. Beale & Sons, of Puryear, Tenn., write that they have a forty-two-foot vein of china clay on their property and are desirous of organizing a company to manufacture white ware in their city. They are in a position to take care of a company of this character, and those interested are financially able to back the affair.

There is some talk of several potteries being erected in the near future at a small station in Pennsylvania called Daisy. William Harvey, formerly superintendent of the Shenango China Company's plant, at New Castle, Pa., is promoting the affair. Mr. Harvey's former position is now being filled by George Wolf, for many years manager of the Peoria Pottery Company, of Peoria, Ill.

Many improvements are being made at the plant of the Lacy Pottery Company, at Trenton, N. J. The company intends installing boilers of greater horse power, and one or more additional kilns will be erected.

Mr. Karl Langenbeck, formerly superintendent of the Mosaic Tile Company, at Zanesville, O., has left that concern to take hold of the works of the New Jersey Terra Cotta Company. Mr. Langenbeck is financially interested in both concerns, which are composed of practically the same stockholders.

The works of the Monument Pottery Company, at Trenton, N. J., are being considerably improved by the addition of a new building 150 feet in length. It is authoritatively stated that more extensive improvements will be made this fall.

The following officers have been elected by the Keystone Pottery Company, at New Brighton, Pa.; Oliver Molter, president; L. H. Blair, vice president; H. A. Tanner, secretary; Wm. Lloyd, treasurer, and Hiram C. Rigby, general manager. The plant has been completed and will begin operations at once.

The Akron China Company has almost fully recovered from the disastrous fire which destroyed a vast portion of its plant about two months ago, and is shipping goods right along. It has caught up with most of its orders and will soon have recovered entirely from the accident.

The Trenton Potteries Company, at Trenton, N. J., will erect at the Equitable Works an addition 55x80 feet, and which will cost about $7,800. The buildings will be used for kiln rooms.

Mr. T. J. Gaston, of Huston, Tex., advertises that he has two extensive deposits of kaolin on his property and would either like to erect a plant for the development of the same in the near future or would like to dispose of the ground.

The Rookwood Pottery Company has a new departure in mind. It is to manufacture mantels along with its regular line of faience and art pottery.

It is said that a new sewer-pipe factory will be erected at Clarksburg, W. Va. Ohio manufacturers are said to be interested in the deal.

A new pottery company has been organized under the laws of New Jersey, under the name of the Wilsonville Pottery Company. A plant will be erected at Wilsonville, Trenton, N. J., at once.

The kilns at the different plants of the Sebring Pottery Company, of Sebring, O., are being repaired. The new pottery which the concern is also building is progressing rapidly, and it is its intention to have the buildings ready to receive the machinery by the last part of the present month. The Sebrings put their plants up in a hurry, but, at the same time, they manage to build the most up-to-date potteries in this section of the country.

All of the machinery for the re-equipping of the Ohio Stoneware Company, at Akron, O., has been shipped from East Liverpool, and the new installations will soon be completed.

The Columbus Pottery Company has been organized and incorporated at Columbus, O., with a capital stock of $100,000, and will build a large works at Worthington, a suburb of Columbus, O., in the near future. The following officers have been elected: President, A. J. Shepard; treasurer, A. J. Solomon; secretary, J. M. Schooley. Sidings have been put into the site of the new works, and ground has been broken for the new factory, which will be erected at once.

The Bradshaw China Company, of Niles, O., is about to increase its capacity 100 per cent. It has already let contracts for an additional outfit of machinery, and it will start the erection of two more kilns at once. The company has run very successfully on a line of semi-vitreous dinner ware only, and is able to keep its plant going on this class of goods entirely.

It is reported that the plant of the Carthage Pottery Company, which is located at Carthage, Mo., will resume operations in the very near future. The plant has been purchased by entirely new stockholders, and it is reported that the capacity will be increased and the plant gone all over and put in thorough order before a start is made.

The Bell Pottery Company, of Findlay, O., is erecting two additional kilns to its china plant.

The new plant of the Keystone Pottery Company, of New Brighton, Pa., has been put in complete operation.

The capital stock of the Shenango China Company, of New Castle, Pa., has been increased from $100,000 to $200,000. It is said that it is the intention of the company to increase the capacity of the works just 100 per cent.

The Riverside Pottery Company, of Wheeling, W. Va., is making several additions in the way of slip-house machinery in its sanitary ware pottery in that city. The Vance Faience Company, of the same city, is also making several additions.

The Little Star Pottery Company, which was located at Philadelphia, Pa., is a thing of the past. The company operating the works was deeply in debt and was practically insolvent. All of the interior workings of the pottery has been sold at public sale and the buildings will be wrecked.

It is reported that several additions will be made to the Comonsburg (Pa.) plant of the East Palestine (O.) Pottery Company. Just what will comprise the additions could not be learned, but it is thought that several extra jollies will be installed and possibly the kiln capacity increased.

TOM POTTER.

Written for The Clay-Worker.

ST. LOUIS BRICK AND BUILDING NEWS.

The BRICK AND TERRA COTTA manufacturers report business as being very good, and that they are quite busy, but not as busy as they might or would like to be.

A good many large buildings are in course of erection, but comparatively few small ones.

The records of the Building Commissioner show that the excess of value of buildings erected in St. Louis during the month of June exceeded the figures of June, 1901 by $272,798; the total value of permits issued in June, 1902, was $1,614,902; in June, 1901, $1,342,104; the values of new brick buildings were $1,380,271, as compared to $1,070,813 last June; brick repairs and alterations, $180,564, as compared to $247,850; new frame buildings, $45,918, as compared to $20,241, and frame alterations, $8,149, as compared to $3,200.

Values of new buildings for which construction permits were issued in the first six months of this year are $271,614.50 in excess of the values for the same period of last year. The values of this half year are $6,531,439.50, as compared to $6,269,825 in the first six months of 1901.

A comparative monthly statement follows:

	1902.	1901.
January	$ 735,453.50	$1,295,213.00
February	671,511.00	686,644.00
March	1,037,703.00	911,988.00
April	1,353,788.00	727,522.00
May	1,069,082.00	1,296,354.00
June	1,614,902.00	1,342,104.00
Totals	$6,531,439.50	$6,259,825.00

The certificate of incorporation of the Mascoutah Brick Company, capital $6,000, was filed a few days ago. The incorporators are: George W. Lischer, John Fackt, Anna M. Fackt and George P. Fackt.

Fire broke out in the clay pit owned by the Laclede Fire Brick Company last week and did damage to the amount of about $500. The fire is supposed to have been caused by the accumulation of gas in the pit.

Prices of brick still continue the same as last reported, namely: Merchantable brick, $7.25; ordinary brick, $7.75; strictly hard, $8.25; red pressed brick, $17.50; sidewalk and paving brick, $8.50.

The Art Building of the Louisiana Purchase Exposition Company, which will be a permanent structure, will probably be let in a few days. This building will contain from 12,000,000 to 14,000,000 brick, and will be a plum for whoever gets the contract for the brick.

The Fernholtz Brick Machinery Company are fairly installed in their new building. Everything has been built especially for the machinery that has at last been placed. They are very busy on orders that have been accumulating. Mr. Scott, vice president and general manager, is now in Texas on business.

The Williams Patent Crusher and Pulverizer Company still continue to have all the business they can conveniently handle. This firm has made rapid strides in the last few months, and its reputation is growing all the time. Orders have to be placed in time or there is always an unavoidable delay in getting them in time, owing to their rush of business.

The St. Louis Pulverizer Company still continue to have their hands full. They now have orders ahead, but manage to get them out on time for the patrons by putting in extra time.

The Kloess Brick Company, of Belleville, Ill., with a capital stock of $70,000, was incorporated early this month. The incorporators are: William Kloess, J. J. Kloess and Julius J. Kohl.

A SAINT.

LEGAL DECISION OF INTEREST TO BUSINESS MEN.

DEALER'S SALE REMOVES RESTRICTION ON PRICE.

An owner and manufacturer of an article—a proprietary one, by the way, made from a secret formula—and who had his trade-mark registered in the Patent Office and in the office of the Secretary of his State, sold the article, through a wholesale house, subject to the conditions of a contract in which each purchaser agreed that he would not sell nor allow anyone in his employ to sell it for less than a certain price, promising to pay an agreed sum as damages if he violated the contract, wherein it was further provided that at any time he desired to discontinue the sale of the article the manufacturer would buy back that on hand. Now, this transaction, the Supreme Judicial Court of Massachusetts holds (Garst vs. Hall & Lyon Co., 61 Northeastern Reporter 219), was plainly a sale which passed title to the property. Equally, or perhaps more, plain, the contract, it thinks, contemplated sales by retailers which should pass an absolute title to the property. The purchaser from a purchaser got an absolute right to dispose of the property. He might consume it, or sell it to another. Hence, while the manufacturer would have a remedy against a purchaser signing the contract for a violation thereof by him, he would not have against a purchaser from such purchaser. To say that this contract was attached to the property, and followed it through successive sales which severally passed title would be against authority or reason. Nor, the court holds, did the manufacturer's trade-mark give him the rights of a patentee in property manufactured under a patent. It was to secure him and the public from deception and fraud as to the origin and source of his goods and of similar goods sold in the market.

Written for The Clay-Worker.

THE NEW YORK BRICK MARKET.

OUR BRICK YARDS which, by the dispensation granted them by those who rule the trade, or that portion which will submit to being ruled, are now on the last half of the season, as the privilege was given them to begin molding on the 15th of April. The first of July is at hand, making two and a half months of molding, and with those yards which began on May 5 about two months' time has passed by.

Five months of molding would be a long season, and it has been some years since that length of time has been the luck of the men who work in the yards to be employed, including spring work of getting ready and after the molding has stopped and the setting in and burning the last kiln. In times past about five months was the time taken for molding, and, including the time taken in finishing up, gave about seven months of work in the yards. For some years back the seasons have been so short—in fact, so short it would seem as though the brick-yard laborer would look for some other kind of work, as the few months' work which is to be had in the yard would be no inducement for men to depend on that kind of work to make a living.

—The Present Season.—

This season will, from present appearances, be very short. The Fourth of July being pay day, the men drew their pay up to the last cent and were at liberty to go where they liked. At other times there is always one day's pay held back to pay for the laborer's board until he goes to work or leaves, when he is paid the balance. From past experiences men will be scarce after the Fourth, as some will wander off for better jobs and some will change to other yards along the Hudson in the hope of better wages.

—Old Stock Still Unsold.—

Strange as it may appear, in some yards the sheds are quite filled with brick, and it is only the first of July. The great demand which was looked for did not materialize. In one yard there are 1,500,000 of last year's brick. At the rate the barges are now making trips it will be some time in 1903 before the last of the stock of 1901 will reach the market. One barge left the yard on her first trip on the 5th of March. On the 4th of July, if she is at the yard, it will be the end of the second trip, or two trips in three months, carrying about 520,000 brick on the two trips. There is about enough old brick for at least six trips, and, at the rate of six weeks for a trip, it will take nine months to freight the 1,500,000 to New York, providing the same conditions rule in the market. In the same yard at the present time are thirty-eight arches of new brick that is this years' make and thirty-three of last year's, or seventy-one arches on the 1st of July. As there are thirty-eight arches in this year's make, it shows what room there would be under the shed if the last year's stock was out of the way. It will not take many days to fill the sheds, and then there will be men looking for jobs. Under such conditions there must be some move made to help the men who have such a stock of old brick on hand. Of course, all this stock is held by the members of the Consolidated Brick Company and is the result of the discrimination against them by the dealers—in one way, not buying that class of brick unless compelled to, when the men who did not join the company could not supply them. At a meeting recently the Consolidated Company gave the brickmakers who had such stocks on hand the right to dispose of that class of brick, through the company, at any figure that they should say as individuals, each one to set a price on his stock—but to be sold through the Consolidated, the price which rules not to bind them in any way unless they wished to hold them, all brick made this year to be subject to the prices which are set by the Consolidated company. Just how this plan will work remains to be seen.

The varied conditions of the different manufacturers must be taken into consideration in the present case. The man or firm who owns his property and plant is better fixed to hold his stock than the man who leases his yard. The first man may have interest charges to meet, and he may not. If so, it is not at all likely that it will be for as large an amount as the rent the other man is called upon to pay. The interest must be paid half-yearly, with something to show; the other quarterly, and the landlord after him as soon as it is due, if not before. Such has been the case before, and no doubt may still prevail.

Who will be the first to make the break—or will all stand firm? It is a hard proposition, take it any way you may. A man wants money, and the way is open to him to get it by cutting prices on his brick; but if he does, what will his fellow brickmakers think of him? And, again, if he cuts, will it be possible to get back to the rates which ruled before? No doubt there was a thorough consideration given to the case before the privilege was granted to sell at a price fixed by each manufacturer on his own stock, and no doubt if the total number of millions of old stock was known it would come in competition with the new so far as it might affect the price. We will have to wait with patience for the result. May it be beneficial to all.

—An Important Question for Shippers of Brick.—

The firm of Sutton & Sudderly, of Coeymans, engaged an outside barge to freight a cargo of brick to New York. The owners of the barge, Schoonmaker & Rice, have begun suit against Sutton & Sudderly for twelve days' demurrage at $15 per day. The brickmakers are contesting the suit and set up the defense that it is the custom of boats to lay till discharged, without any allowance for time after a reasonable number of days' laying at the dock to be discharged. There were a large number of brickmakers present as witnesses to testify to the way the boats in the trade had to lay and get no pay for it. It certainly would have been dollars in their pockets if they had kept away and Messrs. Sutton & Sudderly had allowed the parties to take judgment or in any way let the barge men beat them. It would then have been a precedent to go by, and the buyer would discharge the boat just as soon as he could. It is out of all reason for a dealer to buy a cargo of brick and keep it at a dock from one week to four, and sometimes longer, and not pay a cent for making a storehouse of the boat, while the boatman has to pay $1 per day for watching and wharfage, besides paying the crew. It is only in the brick trade that boats do not get paid. If the boats went to market and stayed one or two weeks without pay it would be right that after the cargo was sold and a week's time was allowed to discharge the cargo they should pay for it. It would make a great change in amount of money that boats would earn. If the decision is in favor of the boats, all the brickmakers who are owners of barges should help pay it, as it will put money in their pockets. The result will be eagerly looked for by those who own boats. It had to be someone outside who had the nerve to try and get their rights. The brickmaker never would have done it, but would growl because the boats were held by the buyer.

—New vs. Old Brick.—

The demand for good grade brick is good, as the subway is using a large number, but anything second-class is not in it. There is a strong competition between poor quality of brick and second-hand brick. There is a large amount of second-hand brick on the market, taken from the buildings which are being taken down around Herald Square, and this has a tendency to make a slow market for the general run of brick.

—Fuel an Important Item.—

Coal is scarce and high. The yards here are burning with coal. They made a contract for what they would want for the season at $4.50 per ton, and they got enough to burn the first kiln and no more. It looked as though they would have to go back to using wood, and they had their kiln set for coal. Necessity is the mother of invention. They thought they would try soft coal. They first heat up with wood and then they use the soft coal. There are two kilns now open and they have been shipped from, and better burned brick could not be made, and others are going to use the soft coal in preference. The soft coal costs $6 per ton alongside the kiln.

Last month I told of one yard which had to pump out its bank every day. The clay is taken out from where there was a yard a few years ago. The bankmen in getting down a fall of clay exposed the pipe of a driven well, which had been used for water for the boiler. Well, they tried to pull it out and broke it off, and the result is there is a fine stream now running into the bank and getting larger each day. There are times when the fool killer should put in an appearance, and this is one of the times. I do not think the boss made any move to try and stop the act, and now he can go to the bank and get a good drink of water. The men were as pleased as could be to think that they could have such fine spring water. The boss is thinking of how many tons of coal it is going to take to get that overflow out from season to season.

—The Brick Market.—

As usual at this time of year, there is a full supply and to spare. The same conditions exist as for the past year. The company sets the price and the buyer takes what he wants, when he cannot get the same grade from the free brick agent. The good class of brick has the call at the top rates, and those who make them are satisfied. The rates are from $5.25 to $6.25. What the figure may be on the old stock is uncertain. Each one can fix his own price and they will be in the same class as under the old scale. A. N. OLDTIMER.

DETROIT BRICK AND BUILDING NOTES.

JUNE WAS a very unfavorable month for the manufacturers in this locality. Heavy rains and of frequent occurrence were experienced, which caused considerable loss to nearly all the Detroit brick manufacturers. Prices remain unchanged, $6 per thousand being the selling price. Indications point to a rise in the near future to $7.

Internal Revenue Collector Charles Wright has awarded contracts for the erection of a brick colonial residence. Work on the same will commence some time this month. The cost of the building will be $17,000.

The Engineering Building planned for the University of Michigan will cost $140,000. It is very probable that Detroit manufacturers will be called upon to furnish the brick, but it seems certain that none will be able to supply so large an amount and still keep their city demand stocked.

It will be noted that throughout June commercial structures occupy the position of prominence in building activity. The outlook for July indicates the same condition of affairs. Architects are very busy preparing plans for business buildings to be erected in the immediate future.

Work will soon commence on the erection of the large brick factory for the American Go-Cart Company, on Kirby avenue and the Michigan Central Railroad. It will be three stories in height and entirely of brick. The cost of this building will reach $18,000.

The C. R. Wilson Carriage Company will without delay begin the construction of a modern brick factory of three stories on the north side of the Boulevard and fronting the railroad. The building will measure 75x175 feet and will cost $15,000.

Land for a manufacturing plant to cost $35,000 has been acquired at the corner of Beaufait and the Boulevard. The plans call for an up-to-date structure in every particular. The factory will be a three-story brick structure, 63x150 feet in size. Boiler house and other buildings will also be of brick. Later on an attractive building containing offices and show rooms will be erected.

At the plant of the G. H. Clippert & Bro. Brick Company one is impressed with the activity seen. The firm has improved its plant in many ways, and it is now a thoroughly modern and up-to-date establishment. A noticeable feature is the cleanliness and order of the works. Bats, stray boards, etc., are conspicuous by their absence. Good, sound, hard, red brick are in evidence at every turn. This firm enjoys a splendid business, and deservedly so, for they are honest, progressive and reliable manufacturers.

The Wolf Brick Company plant is running to its full capacity, and one cannot help thinking that large orders and a big demand are necessary to keep this immense plant going. It does so, though, and in a very smooth and easy manner. Everything moves along regularly and in perfect order. They make a fine quality of brick and their output annually reaches into the millions. Mr. F. H. Wolf, the senior member, is a veteran Detroit brick manufacturer, and deserves great credit for placing the firm among Detroit's first brick manufacturers.

A comparison of figures by months for the first half of 1902 and 1901 will show that the first half of 1902 has exceeded that for 1901 by $27,200. It is a source of satisfaction to know that the great record for 1901 has thus far been beaten. The figures are as follows:

	1902.		1901.	
	Permits.	Cost.	Permits.	Cost.
January	159	$394,400	130	$170,500
February	102	194,600	89	154,800
March	357	648,400	279	595,800
April	251	564,500	297	488,500
May	362	532,600	342	586,000
June	240	524,700	243	836,400
		$2,859,200		$2,832,000

BRICK-YARD TRIBULATIONS—REPLY TO MR. BIVINGS.

Editor CLAY WORKER—The difficulty the Jakin Brick Company is having, as related in the June CLAY-WORKER, may be caused by imperfect mixture of its clay or by setting a brick too damp, uneven setting producing hot and cold spots, or by water-smoking too rapidly for the clay, thereby causing hot and cold spots. If they will take some of each strata or kind of clay they have, make a few by hand, dry thoroughly, then burn carefully, they may locate their difficulty; or make a few and set them damp or green, and note results.

There are so many things and conditions entering into the manufacture of clay goods that one cannot safely offer a suggestion that will cover the case without actually handling the clay through its manufacture. I simply throw out these few suggestions. I have seen color of goods changed completely by setting too damp or water-smoking too rapidly.

It is really necessary for one to know just what each strata of clay will do separately, then together, to thoroughly understand how to handle the clay. I am now speaking of color and changes which are caused by imperfect mixtures, setting too damp or water-smoking too rapidly. From what they say of the center of the brick I would imagine their difficulty is caused by being set too green or water-smoking too rapidly. One cannot lay down a rule for water-smoking that will answer for any clay. A DOWN EASTER.

Written for The Clay-Worker.

NATIONAL CAPITAL NEWS.

NOW IS THE TIME when the clayworking and building business in the District of Columbia and immediate neighborhood should, under normal conditions, be at its best. But there is a little slack-up at present, owing, perhaps, to the carpenters' and plumbers' strike, which put back business, but which will now allow things to go in better shape. Of course, there will be some falling off in brick and building work during the hot season, but it is very probable there will be increased activity in the fall. Some important building operations will then be begun, which, with others now under way, will keep the brickman very busy.

One of the new buildings will be for a bank, to take the place of the present home of the National Metropolitan Bank. Another enterprise will be a big addition to the New Millard Hotel, extending this splendid structure from Pennsylvania avenue to F. street. A new city hall will also be begun in the near future, as $600,000 has been appropriated for this purpose. These mentioned and others, including structures for educational purposes, will all help the District of Columbia brickmakers.

In the matter of giving money for public buildings Congress this year is pretty generous, and it is a good way to be generous, for not only are many thousands of people given employment, but many cities and towns are thus benefited architecturally, as well as commercially. I will give here a list, including quite a number of appropriations (not all) for buildings and their situations, as it may be of use to brickmakers. This is as follows:

Atlanta, Ga., $170,000; Richmond, Va., $75,000; San Francisco, $25,000; Hartford, Conn., $50,000; Minneapolis, Minn., $25,000; Memphis, Tenn., $25,000; Philadelphia, Pa., $25,000; Portland, Ore., $35,000; Rochester, N. Y., $40,000; Colorado Springs, Col., $30,000; Elizabeth, N. J., $60,000; Hammond, Ind., $30,000; Holyoke, Mass., $40,000; Laredo, Tex., $35,000; Meriden, Conn., $45,000; Waterbury, Conn., $45,000; Spokane, Wash., $100,000; Des Moines, Ia., $150,000; Los Angeles, Cal., $200,000; New Orleans, La., $200; New York, N. Y., $25,000; Providence, R. I., $25,000; St. Louis, Mo., $210,000; Toledo, O., $82,000; Washington, D. C., $600,000; Alexandria, Va., $20,000; Wheeling, W. Va., $125,000; Greensboro, N. C., $20,000; Durham, N. C., $15,000; Charlottesville, Va., $20,000; Martinsville, Va., $10,000; Portsmouth, Va., $15,000; Norfolk, Va., $8,000.

For new buildings, under supervision of the Treasury Department's construction branch, about $5,000,000 will be available this year, and for buildings already under construction, about $8,000,000. There are now under way buildings at Altoona, Pa.; DuBois, Idaho; Baltimore, Md.; Cheyenne, Wymo.; Preston, Ia.; Clinton, Ia.; Denver, Col. (mint); Elmira, N. Y.; Pittsburg, Mass.; Helena, Mont.; Hot Springs, Ind.; San Fransico and Oakland, Cal.; Tampa, Fla. Besides these there are others, which also come under the Treasury's supversion, and are scattered over the country, in Indiana, Illinois, Kansas, Louisiana, Washington, D. C., New Jersey, Florida and other States. The Treasury Department does a great deal for the builder and the material furnisher, and it generally builds well.

—Big Brick Factories.—

Recently I visited a big and interesting brickmaking plant, one of the many that contribute to the structural progress of the Capital City. This is the factory of Mertons, Agnew & Phillips, which is situated about one mile east from Washington and on the Baltimore & Ohio railroad. The plant was established some years ago, but is now undergoing improvements which will make it a very large and first-class producer of bricks. It has three brick machines and three represses, with capacity for 15,000 brick per day; four boilers of 100-horsepower each, and two engines. The kilns are four in number, with an aggregate capacity for one million brick.

The ground owned by this brick company consists of twenty-three acres of nearly all clay land, from which an excellent red brick is made. One important feature of this plant is its clay drying arrangement, by means of a stoker. The clay is dumped into the crusher and then passes to two huge horizontal cylinders, where it is dried before passing up to the feed loft and to the brick machines. The stoker contains a large hot-air chamber, and from this the heated air is driven by powerful air fans into the clay dryers.

The clay carrier system consists of belt and wooden trough arrangement; the brick carrier of iron trucks on stationary metal tracks. The latter run from the brick machines to the brick dryers and to the kilns. The brick dryer system consists of seven tunnels, capable of holding 91,000 brick.

I was told at this factory that The Clay-Worker was read there, which is an evidence of progress.

There is a tendency toward increasing the size of brick plants in and near the District of Columbia, and also toward improvement on old methods, all of which is in keeping with the structural progress here, demand for good material etc.

One of the evidences of this—besides the plant above mentioned and others—is seen in the plant of the New Washington Brick Company, situated at Abingdon, the Park-Custis estate, three miles from Washington. Here one finds about everything a modern brick factory should need, from a clay cart and a mule to an electric plant for "lighting up business." And right on the large land holding of the company the laborers in the big factory—it has a capacity for 113,000 brick per day, the present output—dwell, buy their food, and, apparently, are a contented lot.

Before closing I will say that our President will be given more room at the White House. Sixty-five thousand dollars will soon be available for constructing and furnishing a building for offices for the President, $477,445 for extraordinary repairs and refurnishing the Executive Mansion. Already the noise in the White House is enough to remind Mr. Roosevelt of the tumult of battles past, as the carpenters bang away, tearing down old material and putting up new and more pleasing kind.

More than once, through the medium of The Clay-Worker, I have spoken of the necessity for more room and better quarters for the President of the United States, and who can say that The Clay-Worker has not had to do with bringing about this much-needed improvement. NICODEMUS.

PATENT SUIT DECISION.

The patent suit of the Chisholm, Boyd & White Co., Chicago, Ill., against the Anderson Foundry & Machine Works, of Anderson, Ind., has been dismissed by Judge John H. Baker, of the U. S. District Court at Indianapolis. The plaintiffs have taken an appeal from the decision.

ANNUAL SEASHORE EXCURSION PENNSYLVANIA SHORT LINES.

$15.00—ROUND TRIP—$15.00

—Thursday, July 31.—

Special train with through sleepers and coaches to Atlantic City. Tickets sold to Cape May, Angelsea, Avalon, Holly Beach, Ocean City, Sea Isle City, Wildwood, New Jersey, Rehoboth, Del., and Ocean City, Md. Return limit twelve days. For particulars call on agents or address W. W. Richardson, D. P. A., Indianapolis.

If you want experienced help read the "Want" ads. in the Clay-Worker.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

A Good Place for Workmen.

Editor Clay-Worker:

Enclosed find our subscription to the Clay-Worker. Also a small ad. which please run in your For Sale columns two issues.

Business of all kinds is good here on the Pacific Coast. Brick is no exception, we have had difficulty to keep up with our orders. In fact, we would increase our capacity if we could get enough yard hands to enable us to do so. Workmen are a little scarce here now. This is an excellent place for steady going laborers.. If the Eastern brick-makers only realized it they could do better here than where they are. The conditions here are more favorable for the man who wants work. He can live here in San Francisco as cheap as any place and can get better wages, and the yards run steady the year around, no cold weather. We will be pleased to give further details to any of the readers of the Clay-Worker who may want to follow Greely's advice and come West.

We are making what is known as stiff mud shale brick, burning in a continuous kiln, which, we believe, is the largest in the country, having twenty-eight chambers, of a capacity of 40,000 each. We are now making 100,000 brick daily.

June 30th, 1902. SAN FRANCISCO BRICK CO.

Sad News from Cleveland—Death of a Young Member of the N. B. M. A.

Editor Clay-Worker:

Mr. Gottlieb G. Griese, who died at his home in Lakewood, July 10, was known to few of your readers, since he had been interested in brick manufacture less than a year, yet the promptness with which he subscribed for the Clay-Worker and applied for membership in the N. B. M. A. and the interest he manifested in our last convention, as well as the position he occupied in the building and manufacturing industries of Cleveland, make it fitting that his death should be noted in your journal.

No death has ever occurred among my business friends or associates that has caused me so much sorrow and disappointment. Backed by Mr. Griese's capital and influence, supported by his energy of body and mind and assisted by his knowledge and experience of the building trades I had begun the erection of a plant for the manufacture of brick that I expected would be the crowning work of my life. The construction of the plant has been under way for the past eight months and the first product of building brick has just been turned out.

It was our intention to incorporate into a stock company for the enlargement of the business and arrangements were being made for this when Mr. Griese was taken ill. So far, however, Mr. Griese has furnished all the money invested, something over 50 thousand dollars, and the property is left in his name. What disposition will be made of the plant and what my connection with it will be I know not. But even though my plans must be abandoned with the loss of my friend, yet my association with him for the past year has been fraught with many useful, practical lessons and the memory of his noble qualities will be an inspiration for future action.

Mr. Griese was only 42 years old, and until about three months ago was apparently in good health and one of the most energetic, industrious, painstaking men I have ever known, with the prospect of many years of activity to crown a successful career.

At a special meeting of the Builders' Exchange many spoke in eulogy of the deceased and the following resolution was adopted:

"In the death of Gottlieb G. Griese the Builders' Exchange has lost a faithful and ever-worthy member. His example as an honest and fair-dealing contractor is uplifting to the calling in which he was engaged. It has often been said of him by his associates, 'His word is as good as his bond,' his reputation for probity and uprightness being of the highest. He was a good friend of the exchange, a firm believer in its principles and a supporter of its work. At one time he was the secretary and served with credit on the board of directors in the early days of the exchange. The loss of so loyal a member is keenly felt and sincerely deplored."

Surely, Mr. Editor, a man has not lived in vain to merit such high encomiums and his membership was an honor to our association. W. D. RICHARDSON.

A Profitable Investment.

Editor Clay-Worker:

Enclosed herewith please find $2.00 to pay my subscription to the Clay-Worker.

I will not say that I cannot do without it, but that I do not propose to, as long as it remains as good and useful as it now is, and it can be had for $2.00 a year. We are very modest down here, do not like to be conspicuous, hence our silence. The report from certain of your enterprising contributors make us blush, as the profit on a season's output would be but little more than we get as head burners, and there are two of us. We ship as many in a month as some of them seem to make in a year, but then I suppose they are not ashamed of little things. To the learned prophet who wrote that all kinds of clay products were better by having the air excluded while burning, as when burning with oil, I want to say that that statement is too broad. If he will come and see us, we will teach him something. But back to the Clay-Worker, it is the best investment I ever made; pays the largest interest on the money invested. I am getting a dollar a day more than when I first subscribed for the Clay-Worker.

Ferris, Texas. Very respectfully,
R. N. ALLEN.

Change in the Pittsburg District.

Editor Clay-Worker:

The presentation of resignations of two of the most prominent officials of the American Sewer Pipe Company at Pittsburg, July 15th, caused unusual talk in pottery and clay circles. First the resignation of Capt. John M. Porter, of New Cumberland, W. Va., general manager of all the paving brick plants in this section for the combine resigned his connection with that company, and this was followed by the resignation of T. Frank Anderson, general superintendent of District No. 1., of the sewer pipe department of the same company. This unlooked for action upon the part of both gentlemen caused all sorts of rumors to be heard.

Capt. Porter has been identified with the paving brick department of the American Sewer Pipe Company since that company began business, formerly owning a large plant himself. Mr. T. F. Anderson, of this city, was one of the firm of the Knowles Taylor and Anderson Sewer Pipe Company which was sold several years ago to Charles A. Smith, of this city, who in turn disposed of his interests to the combine. In all these years Mr. Anderson remained at its head, both as a part owner and later as its general manager.

When the American Sewer Pipe Company secured contral of the plant in this city and others in this immediate vicinity and at Toronto, Mr. Anderson, on account of his extensive knowledge of sewer pipe making, in every state, from the mining of the clay until the product was finished, was made general manager of the local district. Business reasons caused him to resign.

From a source that can be considered most reliable it is learned that an independent sewer pipe factory, and also an independent paving brick plant will be erected by those gentlemen who have just severed their connection with the combine. In fact, Capt. Porter has already asked for bids at Pittsburg for machinery for a brick plant which he and his friends propose to build in this section, which will be operated independently of the trust. The location of this plant has not been made public, but it will be in the upper part of the Ohio Valley.

Mr. Anderson, it is understood, is soon to become affiliated with a new independent sewer pipe company which has under construction a large sewer pipe plant near Butler, Pa. The capacity of this plant will be 34 kilns, and it is announced that it will be ready for operation within 60 days. This plan of Mr. Anderson's may be changed, as he also may associate himself with other interests in East Liverpool, O. M. K. Z.

WRITTEN FOR THE CLAY-WORKER.

CHICAGO NEWS.

JULY in Chicago building circles starts with reference to former months much like Julys of other years—a trifle slow, while on the horizon appear threatening clouds in the shape of labor troubles. Thus far, however, there is no real stagnation by any manner of means. All hands report business as in good shape, and predict that while there is not much doing just at present in the way of big jobs, that August will be an active month. In spite of the fact that there are a good many big pieces of work "in the air," there is very little real figuring being done, this being due chiefly probably to the unsettled condition of labor this summer. A good many think that the advance in prices over last year is also responsible in part for this condition. Just now prices on clay products are about where they were last month.

All building material is high just now, and the advance or decrease in the price of iron and lumber will have not a little to do in determining the amount of business done in the brick world of Chicago during the next month or so. At present prices are better—from the seller's point of view—on terra cotta and iron than on pressed brick. A local statistician figures that in the estimated cost of the permits taken out during June, 1902, that Chicago makes a gain over the same month of last year of three per cent. As the smoky burgh is experiencing all of the usual July let down right now, it is doubtful whether or not figures for this month will show any gain over those of last year. At any rate enough is doing so that the loss per cent. cannot be very excessive.

There has been considerable complaint on the part of architects and users that the advanced price on terra cotta now makes it cost more than stone. As a matter of fact, there has been a big rise in this material, in some instances a rise of twenty per cent. over last year's rates being noticeable. This rise, however, is only natural and is probably as much as anything else a sign of prosperity. There should be therefore no reason for discouragement on the part of prospective builders, as they are bound to make it up elsewhere. This is especially true if, as one sanguine editorial writer on the subject suggests, the era of good times is only just begun, and prices are possibly due to stay up for several years to come.

Most of the structures for which permits are now being taken out are for apartment or industrial purposes. The Akron Tile Company has the roofing on the C. R. I. & P. passenger station at Ottawa, Illinois, and also on three new buildings for Millikan University at Decatur, Illinois.

A NEW PRESSED BRICK PLANT IN THE FIELD.

Brickmakers in Chicago and vicinity would do well to look sharply after their interests, and would probably now be seeking strenously to reduce the cost of production if they were only aware of the thriving brick-making industry now going forward on the road between Evanston and Winnetka. Millions of bricks are being turned out every day, and the producers find a ready market for every brick put out in spite of the repeated strikes of teamsters and freight handlers and the high price on iron and lumber

The new concern is really nothing more or less than an all-grasping building trust with hundreds of thousands of branches in different parts of the country. The operators not only furnish the material for dwellings, but the site as well; do the architectural work; supervise the construction; and when all is finished insure immediate tenantry. It is by far the most stupendous and utterly daring attempt at monopoly that has ever been perpetrated, and yet for all that it is extremely doubtful whether or not the sword of justice even if swung by the arm of our strenuous President, Mr. Roosevelt, could reach it.

The most dangerous feature of this startling combination—and indeed the one which insures its safety—lies in its extremely insidious character. Not only would the casual observer fail to note the Chicago branch of the industry as he passed along the road from the Windy City to Winnetka, but the most lynx-eyed of detectives would also fail to locate the offending plant unless he were armed wtih an exceedingly powerful microscope, and then he would be obliged to employ methods known to no sleuth, save the greatest of all of them—the biologist.

For the president, vice-president, board of managers, and chief operator of this "combine," is only an infinitesimally small water animal. To naturalists he is known by a long Latin name which uses up most of the letters of the alphabet, but to the few of the laity who have had the privilege of watching him through a microscope, he is familiar as the "Brick-builder." He attaches himself to the stem of some water plant growing beneath the surface of a muddy pool, and there with the water passing through his head, so to speak, he selects the proper materials and refers them to the gizard. This is his press, and dispensing with any burning process, he removes from thence, one at a time, tiny round bricks with which he constructs about himself a house. This process can only be seen through a very powerful microscope, as the animal is so small that even the completed structure can scarcely be noted with the naked eye.

Experiment has shown that by the addition of non-poisonous coloring matter to the water in which the Brick-builder is at work, he can be made to lay bricks of different shades.

Chicago, July 10th, '02. SCRIP.

THE GENTLE ART OF CONTRACTING.

A Russian correspondent sends us an amusing tale about an American contractor in Russia. A few years ago the contractor in question cast eyes upon a certain contract on the Nikolævsky Railway. Not being able to obtain it by fair means, he went on a beautiful cloudless day to the personage who had control of the contract, taking with him a huge umbrella. In reply to the personage's remark that there was no danger of rain, the Yankee contractor offered to bet 100,000 rubles that it would be pouring within half an hour. The offer was accepted. At the end of the half hour the sky was still cloudless, the sun was shining even more beautifully. The contractor therefore lost his bet—but he got the contract. Our correspondent adds that personally speaking he believes that the thing is usually done in a much simpler manner. Of course, such things are happily confined to Russia. It is a backward country.—*Commercial Intelligence.*

If you have anything in the way of machinery that you don't want put a card in the Clay-Worker "For Sale," "Wanted," etc., column.

Translated for the Clay-Worker.

FOREIGN SCRAPINGS.

Slate Colored Glaze for Roof Tiles.

A SLATE COLORED GLAZE is used in many districts for lock-joint and for shingle tiles and a description of the way it is produced should be of interest to roofing tile makers.

The slate colored glaze, by its dull finish, may be said to form a transition from a slip to a glaze and is produced for use at very different heats,—from Segers cone 0.10 to 10.

It consists largely of a brown iron-ore—a good ochre, burned pyrites, or other mineral rich in iron may be used instead. To this some clay, sand, ground glass, common salt or soda and, for lower temperatures, an easily fusible barax glass, are added so as to give the whole sufficient durability and gloss. In some factories a little manganese is added, but this is not absolutely necessary.

It will be better to first grind the raw materials in a dry pan and then in a ball mill.

When using iron pyrites (Fe S_2) it is advisable to leach it out with several changes of water, so as to get rid of the harmful soluble salts contained in it.

As a flux for high temperatures ground glass is the best. The addition of common salt and soda should be avoided as much as possible, as after the glaze has stood for some time they crystalize, in consequence of the evaporation of the water, around the edge of the glaze tub, which causes an alteration in the composition of the glaze, besides this the crystalization of these salts in places on the ware will make more or less shiny spots. For this reason, too, borax should always be first roasted.

The addition of clay should be as large as possible, as by this means a good bond is effected between the glaze and the ware, besides which we can dispense with the use of dextrin. Then, too, the fact that the glaze must be put on in a thicker condition than ordinary glazes is a reason for employing a large portion of clay.

Should it be found that the glaze does not hold on and that dextrin must, therefore, be used it is only added to the quantity of glaze to be immediately worked up, the balance of the glaze is saved for future use without the dextrin.

The glaze is always applied to the ware when it is in the state of dryness known as "leather hard." The ware must be dusted off before dipping in the glaze. When the tiles are thoroughly dry they are set in the kiln in the usual way.

When burning in the periodic (the ordinary, non-continuous) kiln the water smoking takes from 6 to 12 hours, according to the character of the ware. The draft is increased until we get a red heat, after which the burning is done by an alterating oxidising and reducing fire until the burn is finished. By firing in this way various oxides of iron are formed in the glaze, giving to it the slaty blue tint.

When the burn is finished, which is found by drawing trial pieces, the flue damper is closed and made tight with sand; the furnaces are also shut, air tight and the kiln is allowed to cool slowly until the temperature falls to a dull red, whereupon the holes in the roof are opened, then the setting door and, finally, the furnaces.

When burning in the continuous kiln, where cooling can not be allowed to take place so slowly, we use from 10 to 20 per cent. of retort coke, which can be got at any gas works. This is a considerable help in obtaining a fine blue-gray color and prevents the glaze turning brown.

(Keramisches Rundschau.)

German exporters of cement to South Africa do not, as a rule, have any difficulties placed in their way by the British government; in fact, the English crown agents for the colonies regularly call upon the German manufacturers for tenders for cement. Now that peace is concluded, unless any alteration is made, South Africa should be a valuable market for cement manufacturers.
—*(Thon Industrie Zeitung.)*

Prices of Building Materials in Berlin.

All prices are per thousand, cash, Berlin. The bricks are standard size, 9⅞x4¾x2 9-16 in.

From the upper Spree district	$ 6.58	to	$ 6.82
From the upper and lower Havel	6.46	"	6.82
From the Finow Canal, the Oder, Warthe, Oberberg, Eberswalde, Frienwalde, Heegermuehle, etc	7.05	"	7.52
Delivered by rail	8.46	"	9.40
Delivered by rail from Rathenow	9.22	"	9.40
Vitrified front, hard yellow, from Birkenwerde, 1st quality	11.80	"	14.10
2nd quality	10.78	"	11.80
Vitrified front, hard yellow, from Birkenwerde, 3rd quality	8.94	"	9.40
Hard burned bricks	7.05	"	8.00
Hard burned bricks from Bralitz	6.58	"	6.82
Common building clinkers	6.58	"	6.82
Porous bricks	8.00	"	8.46
Firebrick	23.50	"	64.00
Rathenow roofing tiles	8.46	"	9.40

—*(Deutche Toepfer & Ziegler Zeitung.)*

BOSTON'S BRICK ARCHITECTURE.

WHOEVER IS TO HAVE the glory of finding Cambridge on the Charles brick and leaving it marble, it is going to be brick first "all right." The new grand entrance to the transpontine city is of the vitrified brick pavement that has made Brookline Village's roaring traffic so comfortable of late and so clean; this broad portal at the bridge-end is flanked by a fine demonstration of what is possible to simple brick in the way of grandeur of architectural effect, though the greatness of the architect's success in Riverbank Court has been only tardily appreciated, even by the architectural fraternity—not until a block or two of buildings of the ordinary height had arisen in close neighborhood on the embankment; then the college yard has been inclosed by its brick gates and fence; and to crown all an immense brick chimney, fortunately very beautifully shaped, the tallest in Greater Boston as well as the most graceful, has risen to dominate the landscape forevermore as the Cambridge landmark, just thirty-four feet higher than Bunker Hill monument.

The brick "keynote" is certainly an architectural style pleasingly suggestive of Old Cambridge. The old prerevolutionary halls in their "colonial" quaintness have led to our regarding it with a pious affection as giving the very atmosphere of Cambridge and the college life. Mr. McKim, with unerring architectural instinct and a fine sensibility, felt this and gave it such an emphasis in his first college gate that everybody has accepted it as though he always knew it, just as the gate looked, the moment it was finished, as though it had always been there. The question is raised, though, as to whether he has not overdone it in the gate and terrace on the corner of the yard opposite Beck and the Union. Here a solid wall of light brick, rising to perhaps twice the height of a man's head and extending about half a block, is pierced for the gate, and surmounted by a balustrade in the old colonial style. It is, in fact, a terrace, and by-and-by the deep purpose and clever adaptation of means to it will be better appreciated. The ingenious architect has undoubtedly achieved by this device a break in the monotony of the level of Old Cambridge, or rather an accentuation of the break in this flatness, the only drawback to the charm of the region, which has always been made so much of in Dana Hill. It makes towns that have real hills smile to hear that gentle rise called a hill, but it was the best Cambridge had to show this side of the Observatory. It is the western tip of Dana Hill that is inclosed in this big and handsome terrace, and more of that making-the-most-of-it that is characteristic of Cambridge. A little more filling on of earth, the disappearance of the big house on top of it, that dwarfs its height, and the proper arrangement of the foliage, old and new, behind the balustrade of the terrace, will make it a really imposing eminence, or, what in art is the same thing, suggest it, from beneath the wall on the street.—*Exchange.*

Written for The Clay-Worker.

MILWAUKEE BRICK AND BUILDING NEWS.

JUNE HAS SEEN a continuance of the same remarkable activity in building in and about Milwaukee that has characterized the preceding months of this year, and the demand for brick and tile stock has been so great as to lead some of the dealers to believe that a shortage is not impossible if it keeps up at the same rate during the balance of the year.

The great industrial activity of Milwaukee, together with the large amount of foundation work for apartment buildings, creates a demand for all the product of the brickyards of this city and immediate vicinity, and, in addition, a considerable quantity of the wire-cut brick from Chicago is being sold here.

The great works of the Allis-Chalmers Company, which absorbed the business of the old-established Edward P. Allis Company, are assuming tremendous proportions in the suburb called West Allis, just west of the city limits, and every Milwaukee manufacturer and dealer in brick has had a share in filling orders for that great plant. All the buildings are being erected of brick and steel, and will cost when completed in the neighborhood of $2,000,000.

At various points in the State of Wisconsin pretentious public buildings are being erected, for which a high-class brick and other ornamental material is being used. Ricketson & Schwarz, whose catch phrase is "Who furnished the brick?"—and, by the way, they furnish great big quantities of it—have a contract for 150,000 hydraulic brick for the new Agricultural building, at Madison. They are also supplying 70,000 for the Jamesville Carnegie Library and 25,000 for the Neenah Carnegie Library. They recently secured an order also for $30,000 yards of paving brick for Milwaukee streets.

The W. G. Taylor Company put in 92,000 red brick for the engine rooms of the Allis-Chalmers Works and 34,000 enameled brick for interior work of the new plant in the Menomonee valley of the Milwaukee Gas Light Company.

Recent very heavy storms flooded some of the districts south of the city and did damage to various properties, including a number of the brick yards located in that vicinity.

Mr. G. J. Schwarz, of Ricketson & Schwarz and secretary of the Wisconsin Clayworkers' Association, was one of the delegation of Milwaukee merchants which recently made a tour of the southern part of the State, and was one of the particularly popular members who contributed greatly to the pleasure of the excursionists. So popular was he that he came in for a special verse in a song sung by a volunteer sextette, and first sprung at La Crosse, which is a large buyer of all products made in Milwaukee. Brick men who have had the good fortune to meet and know Mr. Schwarz will appreciate the lines, which are as follows:

A man we have in our crowd
Can turn a pretty trick;
He's small and slight, as we all know,
But when we break up in a row,
'Twas Schwarz dat trun de brick,
'Twas Schwarz dat trun de brick.
'Twas Swarthy Schwarz dat trun de brick.

OIL BRIQUETTES.

The French government has begun to experiment with oil briquettes as fuel for warships. The advantages over coal are claimed to be, that it burns without odor or smoke, that it weighs only half as much as coal, and is a saving of space and man-killing labor. According to the United States Consul at St. Etienne, these briquettes are composed of 97 per cent. of petroleum and 3 per cent. of hydro-carbon. It produces no slag, and gives but from 2 to 3 per cent. of residue. It can be wetted with impunity and consumes without explosion or sparks. The average heating power is from 1,200 to 1,400 calorics, and the briquettes can be used in any fire box or grate for domestic purposes. The manufacture is simple, and requires but little machinery. What is known as a mixed briquette is half coal and half petroleum; these cost less, but are a disadvantage from the fact that the density is greater, and the heating power is less. A steamship carrying an 8,000-ton supply of coal would require only 3,500 tons of mixed briquettes, and only 2,000 tons of the pure petroleum kind. American oil is preferred in the manufacture of these French briquettes. The selling price of these briquettes in France is $1.54 for 220 pounds. It seems to be but a question of time and a cheap and easy accessibility of supplies, when fuel oil, eiher in a liquid or concrete form, will be extensively used on ocean-going ships. The fuel question is a serious item in expense. The Lucania, of the Cunard line, for instance, consumes 3,000 tons of coal in a single trans-Atlantic voyage. This is fed to 100 furnaces, and the hands employed in the stoke-holds number 150 of stokers, trimmers, etc. These men are taxed to the limit of endurance, and their term of usefulness and life is proverbially short. The temperature of the stoke-holds is endurable only for a few hours at a time, and when one reflects on the fact that such an ocean greyhound as the Lucania has a gross tonnage of 12,950, and two sets of triple-expansion engines are employed with a 30,000 indicated horse power, the stress on labor is plainly incessant and exhaustive. By the substitution of liquid fuel for coal, the number of stokers required would be greatly reduced, as there would practically be nothing more to do than to watch the burners to see that they did not become choked up. Again, the loading of coal on such a ship as the Lucania—now taking three days—would occupy but a few hours in taking all necessary fuel oil on board. In the matter of speed, now a rivalry between the leading steamship companies, that could be increased by the substitution of oil for coal. What this use of oil would mean, according to the editor of the *Petroleum Journal*, a famous Russian expert, taking the Cunard and White Star lines running between the United Kingdom and the United States as practical examples, their joint consumption of coal, now 600,000 tons a year, fuel oil would reduce the total to 300,000 tons. From this standpoint of economy, the use of oil in the near future is destined to be extensive, if not universal, in steamship lines.—*Exchange.*

A NEW DEPARTURE FOR SOAP MANUFACTURERS.

Ground has been broken for the establishment of the pottery works of the Larkin Soap Company at Hayes place and Seneca street, Buffalo, N. Y. The primary object of the establishment of the plant is to manufacture articles given as premiums to patrons of the Larkin Soap Company. The works will be equipped with every known modern improvement and will furnish work to a large number of persons.

BUSY SOUTHERN PLANT.

The Coaldale (Ala.) Paving Brick Company has begun shipment of 2,000,000 of its No. 1 paving brick to Meridian, Miss. This plant is turning out paving brick, and contracts are at hand for the full running capacity of the new plant. We are glad to know Treasurer Sibley is busy, for that means he is out of mischief.

THE CLAY-WORKER

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NINETEENTH YEAR OF PUBLICATION.

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

27 Monument Place.] T. A. RANDALL & CO., Indianapolis.

XXXVIII. JULY, 1902. No. 1.

CURRENT COMMENT.

The vast development and improvement in every branch of clayworking during the past score of years is a just subject for pride to every American citizen, and of joy to those identified personally with the work.

* * *

The time is nearing twenty years since the first Clay-Worker appeared and ever since then it has continually and earnestly sought to raise the standard in every branch of ceramics,to elevate and dignify the position of the worker, encourage and support and make widely known every improvement in special machinery, and at the same time to justify the proud position it occupied as the recognized and official organ of our great brickmaking industries.

* * *

A something has come to us this month that has brought out these reminiscences: "The wheels of the gods grind slowly," but they are very sure and, after we had nearly forgotten it in the stress and effort of modern work, the beautiful diploma arrived which certifies the award to us of the GRAND PRIX—the Grand Prize—at the Universal Exposition at Paris in 1900, where the Clay-Worker exhibited by T. A. Randalll & Co., received this honor, in company with other publishers with whom it is an honor to be classed, as the reader will observe when scanning the list on the diploma, a miniature replica of which is shown on page 13. The Clay-Worker is the only American technical paper of its kind thus distinguished, as it was the only one to be honored at the Columbian World's Fair in 1893. We confess we are proud of this; proud for ourselves, for our contributors, our readers and our advertisers. All have worked together to make the Clay-Worker what it is to-day and all have an equal share in the glory.

* * *

Honor and recognition of a pleasing character has come to our neighbor and co-worker, C. G. Elliott, C. E., editor of the *Drainage Journal,* who has been called by the Government to act as expert in drainage investigation for the Department of Agriculture at Washington, D. C. The selection of Mr. Elliott for this work reflects much credit upon the Government officials, for Mr. Elliott is peculiarly well qualified to perform the work. He will have charge of drainage investigation in connection with all Government work pertaining to the irrigation of Government lands, etc. It will be his duty to answer all inquiries and give advice upon the subject of drainage of farm and public lands. This is a new position made necessary by the great number of inquiries for information coming to the Department of Agriculture and as well by the call for drainage investigations in the irrigated terirtory of the country. Mr. Elliott's headquarters will be at Washington during the winter and in the saddle during the summer, when he will be actively at work in various parts of the country.

Mr. Elliott graduated from the School of Civil Engineering, University of Illinois in 1877, and was given the degree of C. E. at the same institution in 1892. He was elected a member of the American Society of Civil Engineers in 1890. He made the surveys and plans for the Red River Valley drainage in Minnesota as well as a number of other large public and private drainage. He is the author of "Practical Farm Drainage," and has prepared a number of bulletins on farm drainage for the Department of Agriculture. For the present Mr. Elliott will continue the direction of the *Drainage Journal.*

WHY STAFF, WHY NOT TERRA COTTA?

Staff is a modeling composition, consisting of calcareous materials held together with glue and the cheapest available cowhair or fibrous stuff. By means of staff a temporary, make-shift, imitation of stone statuary is produced for the decoration of exposition buildings that are only intended to last a few months, or the erection of triumphal arches that have to be pulled down again after an existence a little more brief than the popularity of the heroes they celebrate. It would be unreasonable to ask for marble stauary, even for a great exposition, but staff is so perishable that it sometimes does not last till the close and a Venus with a wisp of cocoa-nut fiber sticking out of her hip, or a Vulcan with a cow-hair nose, jars upon the least esthetic feeling. Some of these works in staff are really beautiful and it must be a matter for regret that fine modeling should be put into such perishable material as to be almost like writing on the sand of the seashore, lost forever, instead of gladdening the eyes of future generations. The modeling might just as well be done in clay. The drying of the clay would be no more difficult than that of the staff, if the right proportion of calcine (grog) were used. The only increased trouble and expense would be for burning, but then we would have what we so lack in our public places, things of beauty, enduring longer than stone itself.

ABOUT FIRE TRAPS.

Extending civilization has its centers and the centers are our great cities. In these centers the regulations necessary for the moral and physical well-being of the people often interfere with the liberty of the individual. One of those interferences is the prohibition to erect timber dwellings within certain limits. This regulation is an excellent one, for without it our cities would be filled with frame dwellings. The man who builds thinks, too often, only of what seems to be his immediate interest, quite regardless of the greatest good of the greatest number, of the risk that future dwellers or the neighbors may run of a horrible death; in fact, he is innocent of any altruistic weakness. A frame building can be erected for a little less than brick, so he uses timber. The laws that forbid this are excellent, but they do not go far enough. It is not enough to say that the outer walls must be of brick if we allow the whole inside to be packed with dry, inflammable wood partitions, floors, closets, wainscots, stairs. Every day, in some part of our country, victims to man's greed or stupidity are offered up on the altar of fire. The laws should prohibit the employment of such a dangerous abundance of combustible material, especially in apartment houses, or any building above two stories in height. It has been proved that every part of a building commonly made of wood can be replaced by some form of clay product—even doors and window frames. Without going to extremes there is room and need for further regulations as to the building materials for internal construction and our law-makers ought to be educated to the knowledge that the only material good for this purpose is burned clay.

TRADE RIVALRY.

Real war has practically ceased for the present over all the earth. The Philippine insurrection is officially declared to be subdued and the, more or less, deadly operations among the South American, so-called, republics are chronic conditions, which do not count, but trade war, between nations and individuals, proceeds more vigorously than ever. In Germany the fight is still hot and strong between makers of certain types of machines used in some branches of our manufactures. They bombard each other with suits and counter suits, continuations and changes of venue, while proclamations, in the shape of full page advertisements every few days, are frequent and forceful. In the same country too the makers of lime-sand bricks are engaging in a merry war and all the implements of fight, from patents to vituperation, are lavishly employed. The form of sand brick in question, unlike the sand brick of the schemes with which we have been afflicted from time to time, is a success. Sand bricks, or their equivalent, have been made in Germany from time immemorial. The old home of this industry is along the historic river Rhine. The sand there is disintegrated pumice stone, for the whole Rhine region is volcanic. This sand is mixed with a proportion of lime, molded into bricks and set out, on an open air yard, but under cover, to dry and harden. This takes months, as much as a year, sometimes more. By the modern method the bricks are hard and ready for use in less than twenty-four hours. This has proved a success, with the natural result that there is a struggle for possession of the monopoly. The molded bricks, made of ordinary sand and lime, instead of being set out to slowly harden in the air, are put on cars and run into a big boiler-like chamber, when this is filled it is closed, steam tight, the bricks are kept under steam pressure a certain number of hours, whereupon they are ready for the market.

TRADE LITERATURE.

The American Blower Co., Detroit, Mich., have favored us with a copy of their Sectional Catalogue, No. 140, which treats of Disc Ventilating Fans. The book is profusely illustrated and contains much valuable information on heating and ventilating. Write for a copy, mentioning the Clay-Worker.

The Chisholm, Boyd & White Co., Chicago, have out a miniature edition of their beautiful catalogue, which was briefly reviewed in the June Clay-Worker. The pocket edition is a gem. Typographically, it is similar to the original. The cuts of the various Boyd presses, some of which are pictured on pages 4, 5 and 6 of this magazine, though small, are really handsome, and the little book will prove of much interest to every press brick manufacturer. A copy can be had for asking.

The Boss System of burning brick is fully illustrated and described in a handsome little book of 30 pages, in which progressive brick-makers ought to take a very active interest. The book explains that the Boss system may be applied to ordinary up-draft kilns, and results in a great saving of fuel and an improved product. A larger per cent. of hard brick and fewer broken brick and clinkers are obtained in burning by the Boss process than by old methods. Those interested can learn all about it by writing for a copy of the book. Address John C. Boss, Elkhart, Ind.

"Land Drainage Profit" is the title of a valuable book issued by the *Drainage Journal.* It is bound in paper covers and will prove a valuable aid to those engaged in preaching the gospel of tile drainage. Tile manufacturers would do well to put a copy in the hands of the progressive farmers in their immediate vicinity. Those who desire to use it in this way can obtain a sample copy gratis by addressing the *Drainage Journal,* Indianapolis, Ind.

The Parker-Russell Mining & Mfg. Co., St. Louis, Mo., are sending out a cute little folder accompanied by a miniature locomotive boiler tile. The latter is intended to be used as a paper weight. It is one of the neatest and most appropriate ad. novelties imaginable. The folder is diminutive but pretty and briefly sets forth the fact that the Parker-Russell Mining and Mfg. Co. make a specialty of locomotive arch tile and fire brick of all shapes and sizes for boiler settings, etc., and invites the recipient to become one of their customers before the World's Fair in St. Louis in 1904.

We are Indebted to the Illinois Hydraulic Press Brick Co., St. Louis, for something new in the form of a brick. It is a combination paper-weight and match-safe. It is a full-sized buff brick, and in order that it may be used on the desk or table with safety, rubber feet are fastened on the under side, while in the top a space an inch in depth is hollowed out that it may serve as a receptacle for matches. There is no need for sandpaper where these match-safes are used. It is an odd conceit and a good ad.

The Atlas Car & Mfg. Co., Cleveland, Ohio, have out an immense poster upon which is pictured dump cars, rack cars and turn tables of all kinds and sizes, suitable for brickyard use. Evidently there is nothing in the way of steel cars, portable rails, switches, etc., that brick-makers may need that the A. C. & M. Co. cannot furnish. The poster will make an admirable brickyard office decoration, and can be had for the asking.

The Jeffrey Mfg. Co., Columbus, Ohio, are mailing to their friends the programme for the seventeenth annual outing of their employés which was held Saturday, July 12th, at Idlewild Park, Newark, Ohio. Three special trains were run for the accomodation of the Jeffrey employes, who number nearly a thousand. The day's programme included athletic contests of all sorts, the winners being awarded prizes furnished by the company. The ladies were not forgotten in the latter features, thread and needle races and other similar events being included for their benefit. There were theatre parties and music and dancing galore. This annual outing has grown to be a permanent feature, and the employes always look forward to the event with great pleasure. It is a good scheme, and one which every manufacturer might adopt advantageously.

The genial face of our friend, W. A. Eudaly, Cincinnati, Ohio, adorns the cover-page of the July number of the *Ohio Sunday School Worker.* Mr. Eudaly was recently elected President of the Ohio State Sunday School Association, a position which he is eminently fitted to fill on account of his earnest work for many years in International and State Sunday School cause.

Mr. Robert Elliott, President of the Standard Dry Kiln Co., Indianapolis, is again at his post of duty and says the demand for Standard dryers, dryer cars, etc., continues good. Their trade is exceptionally heavy for midsummer. Mr. Elliott is so seldom away from his office that perhaps it is well to explain that in June he took a well earned vacation and with his better half visited the Pacific Coast, making the pilgrimage to San Francisco with the Shriners. From his cheerful appearance, the trip was pleasant and beneficial. The diet of Camel's milk proved just what he needed.

A LIBRARY OF HUMOR AND INFORMATION.

ANOTHER work has come to our hands which we are glad to be able to recommend heartily and unqualifiedly to all who read. It contains an almost incredible amount of information and amusement, and that in a most palatable form. The reading is as pleasant to the mind as is eating one's favorite dish or drinking one's favorite wine to the palate, while mentally it is as beneficial as taking the most nauseous drugs would be to the body. Since "Modern Eloquence" came to our hands we have every night studiously disregarded the warning hands of the timepiece, and have cheerfully sacrificed our beauty sleep on the altar of mental improvement. So superlatively interesting are all the ten volumes of this set of books that, having decided to stop reading, one is always tempted to read a little longer.

—Profit and Amusement.—

Rarely, if ever, has it been our good fortune to find so much instruction and so much amusement combined. Many of the speeches contained in these volumes are, for good, bright humor, equal to any entertainment on the boards, and, together with the fun, one always gets some information. Every page scintillates with wit or wisdom, or both. And the final effect is not merely to increase one's knowledge, but to broaden the mind. For, whereas many speeches to which one is compelled to listen are full of the misleading nonsense indulged in by the bigoted, those before us, having been delivered by men who had reputations to lose, are marked by commendable moderation and are stamped with the seal of knowledge.

—Synopsis of Contents.—

"Modern Eloquence" may be added to the list of those works published in this city which are a credit to Philadelphia. What is "Modern Eloquence?" A library of famous after-dinner speeches, classic and popular lectures, the best occasional addresses, anecdotes and illustrations. The editor-in-chief is Thomas B. Reed, whose collaborators include Justin McCarthy, M. P., Rossiter Johnson and Albert Ellery Bergh. The work is elaborately indexed and profusely illustrated. A large number of the most distinguished speakers of this country and Great Britain have selected their own best speeches for this library. These speakers include President McKinley, Hon. Whitelaw Reid, Hon. William Jennings Bryan, Dr. Henry Van Dyke, Henry M. Stanley, Dr. Newell Dwight Hillis, Joseph Jefferson, Sir Henry Irving, Secretary of the Navy John D. Long, President of Yale Arthur T. Hadley, Dr. David Starr Jordan and others of equal note.

THOMAS B. REED,
Ex-Speaker of the National House of Representatives, Editor of "Modern Eloquence"

—Scope of "Modern Eloquence."—

The purpose of this library has been to collect and publish, in enduring form, the ablest and most representative oratory of modern times, but nothing has been included which is not possessed both of real literary value and of wide and true popular interest. The library contains:

Volumes I, II, III—After-dinner speeches delivered by the foremost men of the English-speaking world in the century just closed.

Volumes IV, V, VI—Famous lectures delivered to large audiences by great thinkers and leading writers.

Volumes VII, VIII, IX—Addresses made upon special occasions which called for the height of effort and ability. These are called "Occasional Addresses."

Volume X—Stories, anecdotes, reminiscences and repartee of banquet hall and legislative forum, followed by indices to the complete work. The library containes no portions, no mutilated orations or lectures. Speeches and lectures have been found worthy of admittance in their entirety or they have been omitted.

No experiments have been tried. Whatever is in this library is of proved value and interest. Speeches which have been flashed across a continent, lectures which have been repeated over and over again to never-tiring audiences, "occasional" addresses which have made famous the man, the time and the place—these are brought together in convenient form.

—After-Dinner Speeches.—

It is impossible to summarize in a few words the scope of the three volumes of "After-dinner Speeches." They cover a great variety of subjects, by the ablest speakers. Here will be found the best humor, the keenest wit, the finest thought and the clearest presentation of topics. At the same time the very nature of the occasion militates against dry or lengthy speeches; they must be bright, clever and entertaining. More than one hundred speakers are included, men like Depew, Choate or Porter being represented by several speeches each. Mark Twain, the friend of everybody and everybody's friend, is well represented by six after-dinner speeches. His most famous lecture is also included. His after-dinner speech, "New England Weather," accounted his most humorous effort, and his speech, "The Babies," delivered on the occasion of an honorary banquet to General Grant, in Chicago, wired almost in its entirety all over the United States, and the next morning was read by millions of people, are both included.

With the foregoing are to be found the wittiest sayings of the wittiest men of the nineteenth century.

Since every speaker represented here spoke on a subject of wide interest, and must needs do so in order to hold his audience, it follows that nearly every matter of permanent interest to English-speaking peoples has been treated by a thinker or a statesman whose word carries weight, and bears the stamp of authority.

It should be noted, also, that many of these subjects have been treated both historically and contemporaneously—that is, matters of moment have been referred to by some speakers while they were yet pending and by others when they had become part and parcel of the past. Hence a doubly valuable perspective is afforded.

—Original and Broad.—

This work is sole occupant of a new field. Although the speeches, orations and lectures brought together are not all new in themselves, yet, as here given to the public, they are literally treasure-trove. They constitute an important body of nineteenth-century literature heretofore inaccessible and hidden in widely scattered places.

For some curious reason which becomes more obscure the longer it is considered, previous collections of oratory have consisted almost exclusively of political harangues. Of these there is scarcely one of note that has not been published continuously since the day of its origin, so that whoever remains ignorant of Burke on "The American Colonies," or Webster on "The Union," cannot say that it was for lack of their publication.

—General Oratory.—

The curious fact, however, lies not in the insistence upon political oratory, but in the neglect in such collections of other oratory, however able. This neglected oratory is of the widest range of searching power and extraordinary interest. Moreover, unlike political oratory, it is always either instructive or amusing, or both. Lectures by such men as Charles Dickens, George William Curtis and Mark Twain have been delivered to large audiences, perhaps hundreds of times. If gross stupidity is not to be imputed to their audiences, the lectures must have been genuine masterpieces of platform oratory.

Again a Disraeli or a Choate, in the inspiring after-dinner hours, will deliver an impromptu (which frequently means carefully prepared) speech that straightway becomes the sensation of the hour. Protesting artlessness, and with charming spontaneity, they will, under cover of wit, define the policy of a nation or the sentiment of a people.

"I am not at liberty," said Mr. Choate to the Associated Chambers of Commerce of London in 1889, "to discuss British commerce; my general instructions from my government are not to speak about political questions, and only on extraordinary festal occasions."

Following this naive introduction, Mr. Choate discussed at length and brilliantly the political relations of Great Britain and America.

—Mutilated or Lost.—

These delightful after-dinner speeches and lectures, famous in their time, have become fugitive for lack of proper preservative means. One of the ablest writers of this generation, and probably one of the most successful of American lecturers, has stated that, so far as he knew, there was no copy or adequate record of his best lecture. The newspaper reports of it were merely disjointed skeletons. He had so often repeated the lecture that he thought at the time he should never forget a single phrase. Later he found that he had actually forgotten beyond recall, not merely one phrase, but the entire lecture.

—A Big Undertaking.—

To obtain the speeches and lectures that make up this library, the editors and publishers must have put forth efforts not easily credited. Material in profusion was readily to be found; political speeches also were at hand in thousands. It became apparent that collections of forensics were already sufficiently numerous. For this reason, and because of the remarkable literary value and wide human interest of many addresses and after-dinner speeches, it was determined to deal mainly with them.

The extent of the editorial work may be inferred when it is known that the greatest libraries all over the country were ransacked by trained assistants. Special representatives had to be engaged to delve into records and files. Many librarians gave generous assistance. The same course was pursued in England, under the guidance of Hon. Justin McCarthy.

—The Sifting Process.—

Until the present collection was made, a single volume of the speeches of Hon. Chauncey M. Depew constituted the sole assemblage of after-dinner speeches available to the public. Partial and haphazard collections were indeed to be found, but only as part of the proceedings of associations or societies, and published in the form of records.

Obviously there was a gap in the literature of the world. In the preparation of the first three volumes of the present work, more than 3,000 after-dinner speeches were examined, and only the best admitted. Those that are included represent a final sifting—"the survival of the fittest"—in a contest of wit, common sense and the power to entertain. As units, they represent, also, most diverse interests and points of view, while collectively they stand for the modern and cosmopolitan world of affairs.

—Value of the Lecture.—

A good lecture develops gradually. In final form it frequently bears but scant resemblance to its early self. As it is repeated, crude and obscure expressions are replaced by forceful and luminous ones. The logical connections are welded, and the whole assumes symmetry. The varied receptions of its component parts by numerous audiences wear away the corners, as a pebble is rounded in a running brook.

A lecture monopolizes for weeks or months the author's time and thought. It is taken up recurrently with new and lengthened perspectives, and it comes to stand, as few literary productions do, for its creator. It is made the complete exponent and perfect expression of the man who utters it, yet the expression must be absolutely intelligible. That pardonable fault of obscurity in the author writing in his study for the edification of a select few, becomes the unpardonable sin in the lecturer. If he cannot command an unwarped and unmistakable use of his mother tongue, he is speedily deprived of his profession. Moreover, he must interest his audience, for it has paid to hear him. He must interest it deeply, or he will not soon have another. He must therefore be an adept in the art of putting much sense in little space, of being aphoristic without vagueness, and wise, hut without sententiousness.

In a book, the public will endure, though not graciously, a mass of truthful even though unenlivened sentiment. In a lecture, clearness is the saving grace.

Among other authors whose literary and biographical lectures are included in these volumes, may be mentioned William M. Thackeray, Henry Ward Beecher, Sir Henry Irving and Charles Dickens.

The Departments of History, Travel and Science may be only mentioned here, though they have received due consideration in the work. Among the prominent men who have lectured on these subjects, and whose lectures are included, are Goldwin Smith, Henry M. Stanley and Louis Agassiz.

—In Lighter Vein.—

The stories and anecdotes collected have been told by men to whom the world yields a just tribute of honor and respect. They are the stories told by the Congressman and the merchant, the clergyman and the physician, the banker and the diplomat—in fact, by men of all callings. Each story, to gain admittance to this library, had to run the gauntlet of critical editorial inspection several times.

The result is a collection of story and anecdote not before printed, in which are represented some of the brightest and brainiest, as well as most entertaining, men of the nineteenth century.

This is the department to which the busy man will turn with feelings of relief, in the few moments he has allowed himself for the preparation of a toast or speech. Here he will find those happy expressions, those unhackneyed bright things, and those little quips with which he may "set off" his remarks. In suggestion and in inspiration, for such a time, this volume is invaluable.

—Splendid Indexing.—

To the subject of an index, the editors have given the close attention which such an important feature demands. They have prepared an analytical index with a special view to three things—simplicity, accuracy and comprehensiveness.

It has been found that a number of indices relating to various parts of the same speech were confusing rather than helpful. For this reason attention has been concentrated upon one general index (with frequent sub-headings) which embodies in alphabetical order every name and subject contained in the entire work, together with many leading topics that might be chosen for study. In this way it becomes an index and a concordance. Each general title, as "Art," "Science," or "Literature," will be found to include references to every after-dinner speech, address, lecture or anecdote bearing on that particular topic.

The value of this arrangement to students and prospective speakers must be obvious. They are enabled at a glance to obtain a cyclopaedic grasp of the whole subject. Where further study along a certain line is desired, minute and exhaustive cross-references are available. In fact, it is possible in a few moments for a reader to take any given subject, person or event, and trace through the entire 4,500 pages of the work, not only everything that has been said regarding the subject, person or event, but when, by whom and the occasion.

—For Public Speakers.—

An important use subserved by this work is the help which it affords persons desiring to acquire the art of public speaking. Models for political speeches exist in profusion, but very few persons are ever called upon to make political speeches—least of all, set political speeches. On the other hand, many people have occasion to respond to toasts, or to write addresses and lectures. This library presents nearly every variety of good pattern for these classes of oratory.

Finally, good stories are public property—when found. Many an inexperienced banquet chairman, toastmaster or honored guest, dreading the approaching event, and casting helplessly about him for witticisms, will find solace for his fears in the stories here collected.

—The Illustrations.—

One of the many striking features of this library is the illustrations, which are printed by hand from the engravers' original plates on genuine Japanese vellum. Great attention has been paid to the selection and reproduction of these. They are executed in photogravure full-page size. There are seventy-five of them. They are direct "positive" reproductions from original sources in each case, without the usual intermediate steps of one to three "negatives," in each of which some detail is lost.

—Effective Lectures.—

There is a lecture in Volume V of "Modern Eloquence," which was attentively listened to by over 9,000,000 people in the United States and Great Britain. It was delivered by John B. Gough, and in Mr. Gough's library, after he died, was found a book containing the names and addresses of 140,000 men, women and children who, by his own personal effort and the forcefulness of this lecture, had been induced to sign the pledge. Henry W. Grady, the idol of the South, did more, it is said, than any other one man to abolish sectional animosity and cultivate true brotherly regard between the brave and hospitable people of the South, and their strenuous Northern brothers. Mr. Grady's after-dinner speech, "The Race Problem," delivered before the Merchants' Association in Boston, in 1889, electrified his hearers and was discussed over the length and breadth of this country. Aside from his masterful treatment of that gigantic problem, "The Race Question," his speech is a masterpiece of purest English.

—A Splendid Library.—

With "Modern Eloquence" on one's bookshelf one can at any time spend a few minutes or several hours in the society of the brightest wits, the most polished gentlemen and cultured scholars, the leading statesmen and the most forceful intellects of the past century. One can hear sound opinions on the leading questions of the time, can strengthen one's own judgment, cultivate one's mind and can derive inestimable profit from breathing an invigorating atmosphere, the mental ozone of which is composed of thought and knowledge in equal parts. The most splendid tributes to the American nation, as well as the keenest criticism of our faults and foibles, are to be found in speeches of men who are too patriotic to be insular. Wise men are too sensible to flatter unceasingly, and occasionally punctuate their praises by holding up a mirror. You will often find your own reflection in the pages of "Modern Eloquence." It should profit you. Both individually and nationally we need the searching criticism of candid friends, lest we forget that we are not the only people who think highly of themselves. Broader, saner views result from such gentle reminders, and they are thickly scattered through the pages of "Modern Eloquence." No one could read, mark, learn and inwardly digest the work in question without being in the truest sense of the phrase an educated man. "Modern Eloquence" would be a splendid addition to any library; it is a splendid library in itself.

"Modern Eloquence" is issued in bindings varying from the severely simple to the most ornate, so as to suit the pockets of all—from the poorly paid worker to the multi-millionaire.—John D. Morris & Co., Chestnut street.

Written for The Clay-Worker.

SUMMER'S SWEETEST MUSIC.

You can talk about the music of the spheres,
You can dwell upon sweet nature at her best;
You can sing of sweet primroses
And your violets and posies,
And the sounds of Spring that lull us all to rest.

You can revel in the songs of bobolinks,
And the woodbirds sounding dreamy from the shade;
You can glory in the night song
Of the bogs, that sounds all night long,
With a tune that beats the best band ever played.

For these are sounds that show the Winter's past,
And the heart of God's own Summer moves the plain;
But the sound that strikes me sweeter—
Makes Spring's harmony completer—
Is the mudyard grinding out its grist again.

Oh! There's nothing like the music of the mud,
When the heart and soul of labor strikes the chord;
When the stalwart striker strips,
Gladly forward summer trips;
Then begins the real Hosanna to the Lord.

—THE DREAMER.

Written for The Clay-Worker.

THE GLORIOUS FOURTH.

Hurrah! Hooray! For a Holiday!
For a jamboree and the dash to pay!
For a free, mad scoot and a gay, glad track,
And enough of the fragments to carry us back.
Hurrah! we say. Come out of the clay,
And whoop 'er up for this glorious day—
When the whole darn world goes mad with joy,
From the parson down to the water boy;
While the cannons peal and the bugles blow
Like the roar of the battles of years ago.

Hey, drop them brick! And you that pick!
Take life and get out of that mud dam quick.
By the great Jeemi, if the passers-by
Would stand ye insultin' the Fourth of July—
That great free show, with its whoop and blow,
That the old Tads gave to us years ago,
To loose our gear and whoop and cheer
Like a hell-bent bedlam once a year.

The old Tads gave us this day, they say,
When they chased the Britishers far away,
And they made it plain so that all could see
That God made men, and He made 'em free.
And none were better and none was best,
But the poorest brother was good's the rest;
And they bared their breasts to the brunt of war,
To stamp on this country that righteous law;
And they died in the din by their roof tree's glow
For freedom and liberty years ago.

Just raise a song—make it loud and long;
Take a howl for a tune and scream it strong—
Let the horns join in and the big bombs din,
'Till Satan forgets who invented sin;
And the timid flee and the wild beasts see
What a frightful sight are these men made free.
Now ring wild bells, increase wild yells,
Put shame to the sounds of a hundred hells,
'Till the medleys go in their ebb and flow
Like the roar of the battles of years ago.

The old Tads never knew joy like this.
They were slow of gait and of solemn phiz,
But I've heard say as how they made noise
Full big as this, but it wan't with toys,
And I think if they was alive to-day
They'd be makin' noise in the same old way;
And one new rule they'd be pullin' down,
Thet a man ain't free cause his skin is brown,
Or his tongue ain't plain or he wears odd clothes,
And don't drawl religion through his nose.
And they'd weep to say that they see the day
That Freedom was murdered in Africa.

We are free, boys, free! Have a drink with me;
Here's a good full hod and a soaking spree.
Who cares who's weak, white, fat and sleek,
Our country is prospering week on week.
Who cares who dies if as time flies
We see only happiness through our eyes?
Who cares whose cause, whose God-made laws,
Are crushed by the force of a tyrant's jaws?
Hurrah! we say; we are out of the clay
On a jamboree, and the dash to pay;
On a free, mad scoot, on a gay, glad track,
And enough of the fragments to carry us back;
And the whole darn world goes mad with joy,
From the parson down to the water boy,
While the cannons peal and the bugles blow
Like the roar of the battles of years ago.

—THE DREAMER.

TABLE OF CONTENTS.

Stability in Architectural Decoration........... 17
Brickmaking in London....... 17
Light and Heat................ 18
The Clay Worker Honored.... 19
A Canal Turns Swamp Land to Rich Prairie Fields For Indiana's Governor............ 20
The Buckeye Capital A Great Brick Market................ 20
Much Rain In Maine.......... 21
Louisville Fire Brick Works.. 22
Common Sense In Paving Brick......................... 23
By The Light of the Kiln Fire. 24
Latter-Day Developments in American Pottery........... 25
Combination of Fire Clay Manufacturers................ 27
Obituary—
J. B. Johnson................. 28
Thomas Richeson............ 28
The East Liverpool Brick Manufacturing Co........... 28
The Fernholtz Brick Machinery Co......................... 30
The National China Co........ 34
Buttonhole Talks.............. 35
The German Cement Industry To-Day....................... 37
Portland Cement............... 38
Legal Decision of Interest To Business Men................ 40
Patent Suit Decision.......... 43
Boston's Brick Architecture... 54
A Library of Humor and Information......................... 58
Foreign Scrapings............. 54

CORRESPONDENCE:

Buffalo Brick and Building News.......................... 29
Pittsburg and Western Pennsylvania Clay Industries.... 36
Cost of Product................ 37
Pottery News.................. 39
St. Louis Brick and Building News.......................... 40
The New York Brick Market. 41
Detroit Brick and Building Notes......................... 42
Brick-Yard Tribulations-Reply To Mr. Bivings............... 42
National Capital News........ 43
A Good Place for Workmen.. 52
Sad News from Cleveland...... 52
A Profitable Investment....... 52
Change in the Pittsburg District........................... 52
Chicago News.................. 53
Milwaukee Brick and Building News.......................... 55
Pacific Coast News............ 62

EDITORIAL:

Current Comment.............. 56
Why Staff, Why Not Terra Cotta?........................ 56
About Fire Traps.............. 56
Trade Rivalry................. 57
Trade Literature.............. 57
Editorial Notes and Clippings. 64

MISCELLANY:

Brick Company Reclaims Coal Mines by Draining........... 19
The Gentle Art of Contracting. 53
A New Departure for Soap Manufacturers............... 55
Busy Southern Plant.......... 55

Index to Advertisements on Front Inside Cover Page.

WANTED, FOR SALE, ETC.

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ALBERT CARTER, Cooper, Tex.

WANTED—Second-hand wet pan for tempering clay. Must be in good condition. Capacity 30,000 per day. Common size. Address
7 1 dm MINA, care Clay-Worker.

WANTED—Superintendent for a new brick plant. An experienced man of good habits can get a permanent position with good salary. Address STAPLETON,
7 1 d Care Clay-Worker.

FOR SALE—One Bonnot Co. automatic side-cut table complete; one Kells & Sons No. 2 augur machine, with end-cut table, and 100 double deck cars, Bonnot Co. make. Address
GEO. H. CLIPPERT & BRO. BRICK CO.,
7 1 d? 1920 Michigan Ave., Detroit, Mich.

FOR SALE—Steam brick plant, in Indiana city of 10,000; only plant in city; sales for all the brick; good shipping point. Capacity of machine 30,000. Rack and pallet yard. Will sell for less than land is worth. A great opportunity for some one. Address
7 1 cm E. F., care Clay-Worker.

WANTED—A position as manager of either dry press or stiff mud brick plant. Am familiar with both Raymond and Fernholtz brick machines; can handle any kind of labor. Also good references. Address
EXPERIENCES, care Clay-Worker.

FOR SALE.

One 30-h.-p. Mansfield, good as new.

One 30-h.-p. boiler and stack, grate bars and all boiler trimmings; both for $225.

A great number of lathe pallets at 1½c each.

One good brick and tile mill and crusher, with all dies and tables, for $100.

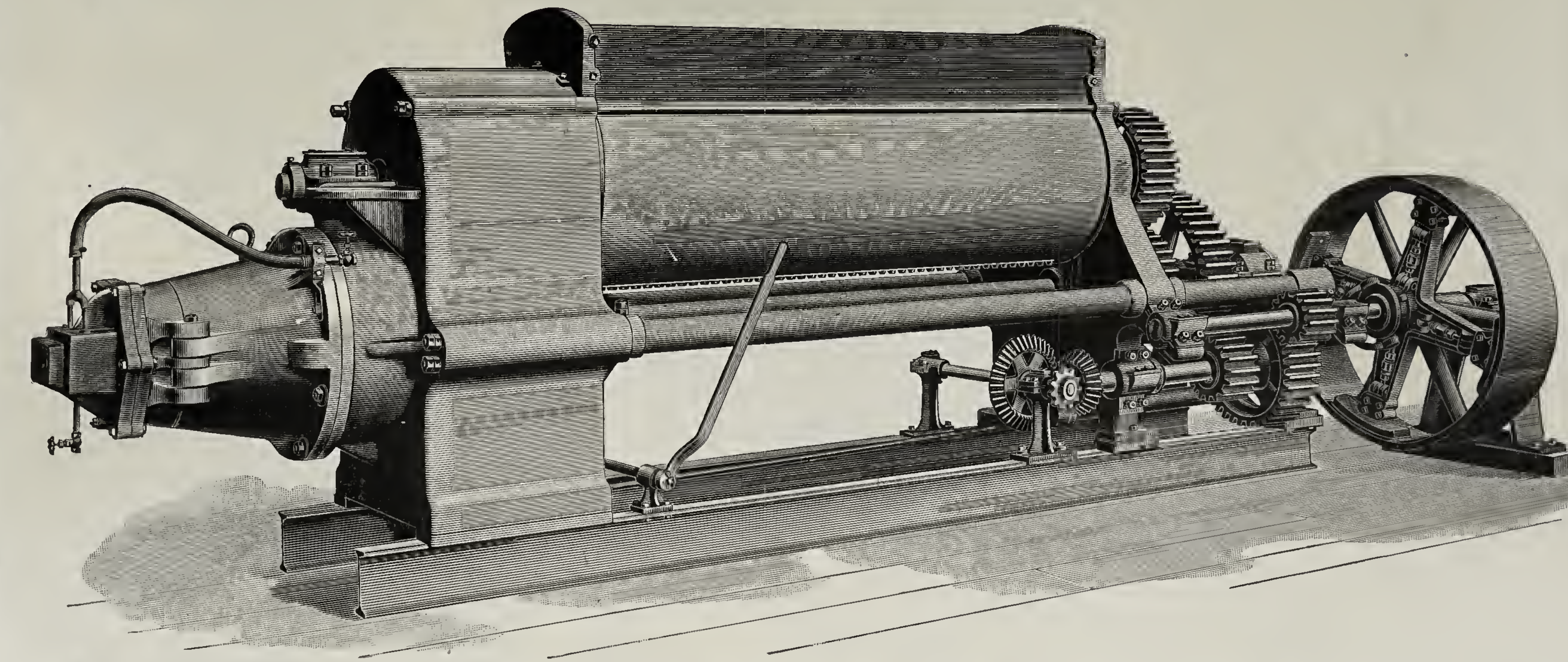
Also belts, pulleys and shafting.

Address J. J. SABIN,
7 1 2p Shelby, O.

(Continued on page 68.)

THE HEAVY BRICK MACHINERY

Is made by Raymond. It is not as Cheap as some others, but it lasts. It has Staying Qualities. You Avoid Expensive Break Downs, and Incidentally Break ups by using it.



WE DON'T MAKE all the Brick Machinery sold in the U. S., but those who use it say it is the best. We have every reason to believe this is true because that is just what we try to make. We can attribute the unprecedented demand for our machinery to no other reason than the fact that it is strong and heavy and satisfies the trade. Users of our machinery are our friends because they get good value for their money.

The C. W. Raymond Co.

DAYTON, OHIO, U. S. A.

NEW YORK OFFICE: 39 and 41 Cortlandt Street.

Written for The Clay-Worker:

PACIFIC COAST NEWS.

SEVERAL BUILDING undertakings of large size in and about San Francisco are now interesting the brick and terra cotta men here. An actual start has now been made on the big structure so long contemplated on the old Baldwin Hotel site, and one or two of the big hotel buildings have been started. Excavating for brick and stone business blocks on Mission street still continues. In suburban matters the big features of the month are the beginning of work on the fine new buildings of the California State University, at Berkeley, and the letting of contracts for preliminary work on the terminals of the new ferry system between San Francisco and Emeryville. The trade also has its eyes on the developments at Eastyard or Point Richmond, the terminus of the Santa Fe Railway Company, on the east shore of San Francisco bay. The latest movement at that place is the extension of the Southern Pacific Railroad Company's lines into the new town. Building there is very active, and since the opening of the year the tendency has been to build more substantial houses. Several brickyards have been located in the vicinity and they are doing a thriving business.

The Craycroft Brick Company, at Eastyard, Cal., is experiencing some difficulty in securing a proper quality of clay for their work. A large number recently made cracked quite badly in drying. Samples of the clay have, however, been shipped to Fresno, and it has been found that by pressing a most excellent quality of brick can be manufactured from the material at hand. The Craycroft Company has, therefore, decided to order a hydraulic plant for making pressed brick.

The City Council of Los Angeles, Cal., has called a bond election for September 17, to vote upon the issuing of bonds as follows: One million dollars for the construction of an outfall sewer to the ocean, $500,000 for the construction of other sewers, and $680,000 for the construction of school buildings, etc.

The Idaho Vitrified Brick and Pipe Company, of Boise, Idaho, has made a contract with the C. W. Raymond Company, of Dayton, O., for a brickmaking plant. This plant complete will cost $40,000, and will be modern in all its details; in short, it will be one of the best plants that could be erected for brickmaking. The company also has an excellent method for making, drying and burning the bricks. The capacity of the plant will be 30,000 bricks per day, when in full working order, and will make common building brick, repressed front brick, fire brick, vitrified paving brick, sidewalk brick and tile. The machinery will be shipped about July 15, and the plant will be in full running order about the end of August, if present plans are not interfered with in any way. C. W. Raymond, president of the Dayton company, said, in talking of the prospects of the company, that he was much pleased with the clays found on the lands of the company, and that as far as it was possible to form a judgment, very superior brick would be produced. The clays were as good, he said, as the best found anywhere, and there was no reason why the brick made should not be very superior. He was also satisfied that a very excellent vitrified brick could be made there. The company has purchased the Eubanks tract, near Boise, at the head of Harrison boulevard, and the plant will be erected there. Other banks of clay have been secured two miles back in the mountains, from which the material for mixtures will be secured.

The scarcity of brick has to a certain extent delayed building in Salem, Ore., during the past few weeks, but A. A. Burton, a brick manufacturer, is now burning a kiln containing 225,000, which will relieve this situation somewhat. The weather this year has been decidedly unfavorable for manufacturing brick, but with the indications of coming good weather the brickyard will be run to its fullest capacity until the end of the season.

Arrangements are being made to rebuild the plant of the Arizona Clay Manufacturing Company at Benson, Ariz., which was destroyed by fire about six week ago. The loss amounted to some $40,000, with an insurance of $10,000.

The employes of the four brickyards of Boise, Idaho, struck on June 11 for an increase in wages, which amounts to 50 cents a day for each man. Heretofore the brick molders have been getting from $3.50 to $4 a day, and their demand was for from $4 to $4.50. The off-bearers asked for $2.50 instead of $2, and the wages of the kiln burners and laborers were from $1.50 to $2, and the uniform increase of 50 cents a day was asked for. The brickyard employes formed a union recently for the special purpose of raising wages, claiming that the wages in Boise were much lower than elsewhere. The men were out but a few hours, the manufacturers, with one exception, agreeing to the demands of the men. The raise in wages will not effect the price of common brick, which will remain as before, $8.50 per 1,000, delivered to any part of the city, all the yards having agreed to the $8.50 schedule.

The men engaged in working on a well of Colonel Williams', near Aztec, San Juan county, New Mexico, report having found a five-foot vein of genuine fire clay.

The Pleasant Grove (Utah) Compressed Brick Works is now running with a force of twelve men. It is the intention of the owners to run all summer. They have at present 80,000 in the kiln burning and 90,000 in the shed drying, the capacity being 20,000 per day.

The Kern County Brick and Contract Company, at Kern City, reports a good increase in orders, and, as a result, has started another brick machine. The capacity of the yard, with the additional machine running, is 70,000 brick per day.

The American Fire Brick Company has been incorporated at Spokane, Wash., with a capital of $10,000, by Spokane and Pennsylvania parties, for the purpose of manufacturing fire brick, coke ovens, sewer pipe, chimneys, etc. Work will be commenced immediately on the construction of a brick and lime kiln at Mica, Wash.

A company has been organized at Porterville, Cal., to engage in the manufacture of brick. Land has been leased east of the town for a yard and 250,000 brick will be burned at once.

A new enterprise has been started at Douglas, Ariz., known as the Fronteras Brick Company. The company has already burned one kiln, and is now preparing to burn another of 500,000 brick. The brick are reported to be first-class building brick, and the company intends to supply the brick demand in Douglas.

SUNSET.

HE GOT ANOTHER.

Willie—"Papa, if I was twins would you buy the other boy a banana, too?"

Papa—"Certainly, my son."

Willie—"Well, papa, you surely ain't going to cheat me out of another banana just because I'm all in one piece?"—Judge.

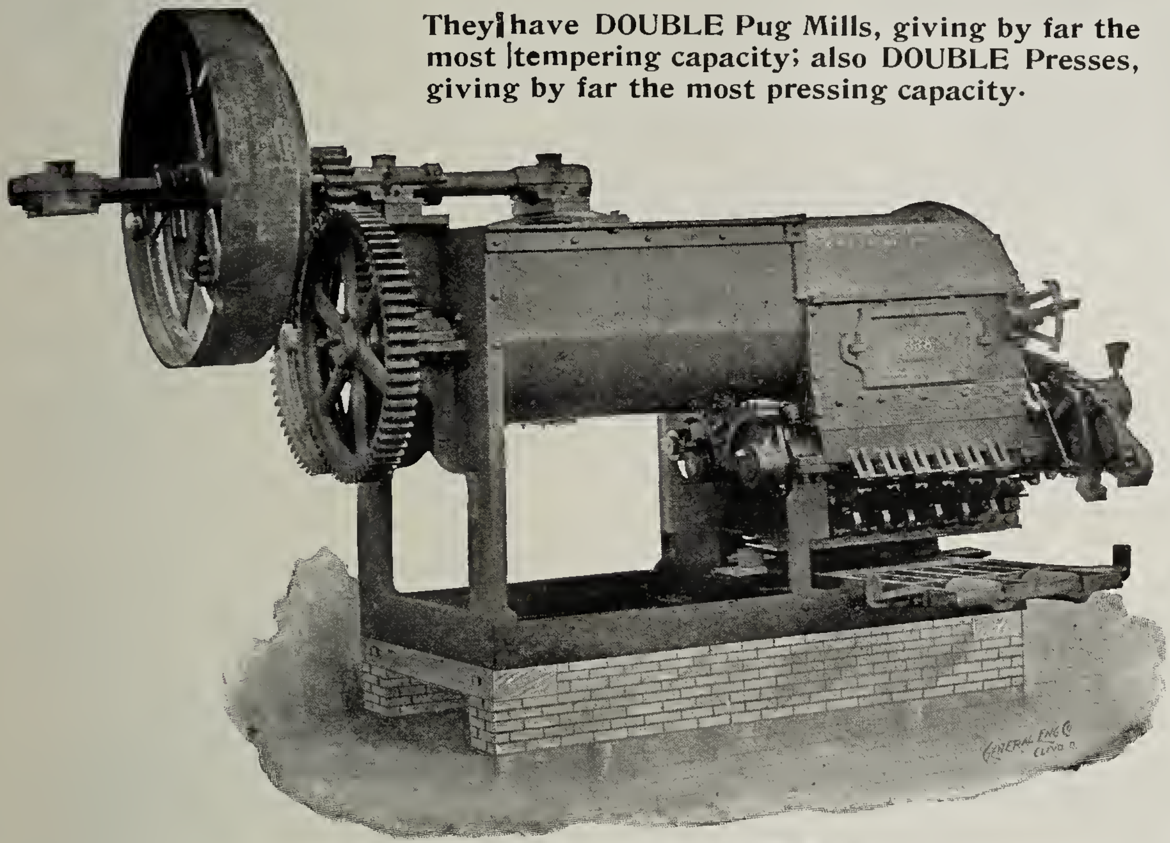
LIGHT HOUSES

Do not have to hire bands or fire cannon to call attention to their shining—**THEY JUST SHINE.**

Thus it is with the two "soft-mud" machines we manufacture (one horizontal and one upright). **Each** is at the head of its respective class, and the number of each in use, (note the figures) **tells the whole story.**

Over 125 "MONARCH" BRICK MACHINES in use.

They have DOUBLE Pug Mills, giving by far the most tempering capacity; also DOUBLE Presses, giving by far the most pressing capacity.



READ THIS.

A Fresh one Every Month.

◆ ◆ ◆

ASHTABULA, O., Oct. 5, 1901.
The Wellington Machine Co.,
Wellington, Ohio.

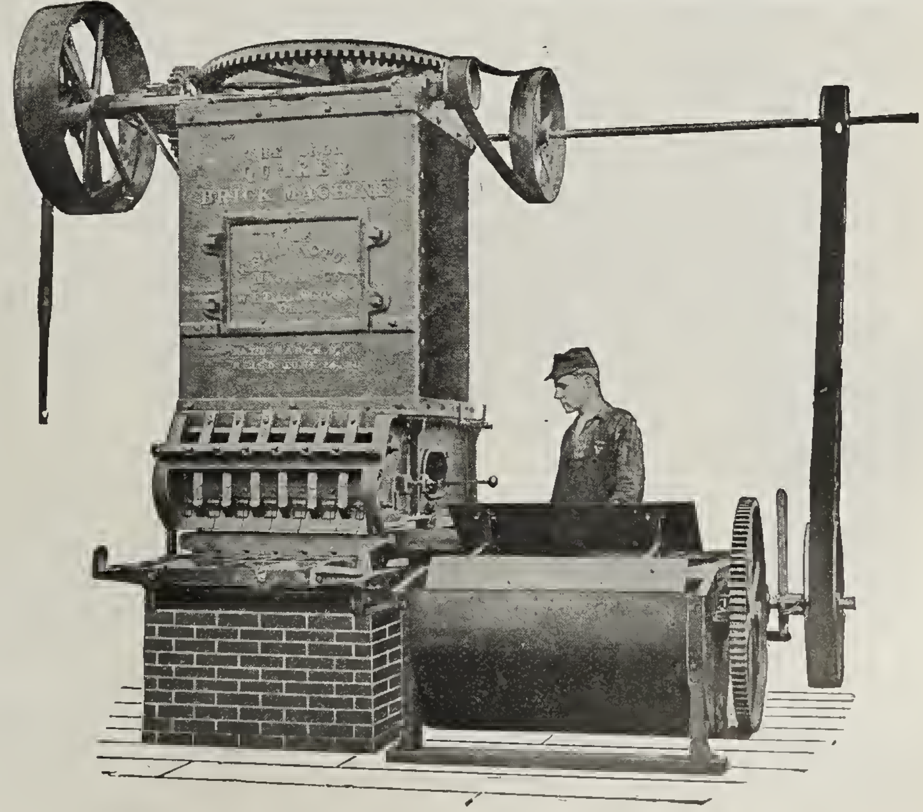
Gentlemen — This is the fourth year that I have used the ten-year old "Monarch" Machine, and it has made about 1,500,000 each year since I came into possession of it. The past year it has worked better than any of the four previous years, and has given very good service.

Yours very respectfully.
C. W. SIMONDS.

OVER 500 "QUAKERS" in use, both Horse and Steam Power, now made entirely of Iron and Steel.

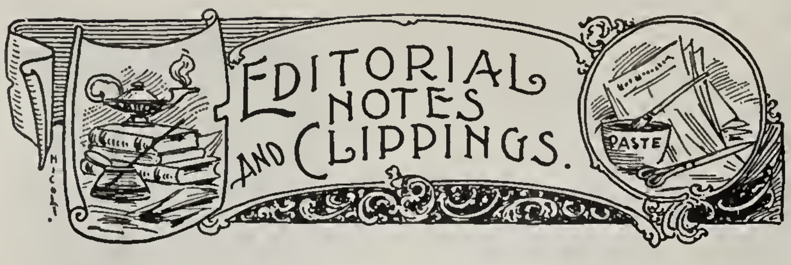
OUR MOULD-SANDER is the BEST, SIMPLEST AND CHEAPEST.

WITH our ROLLER-BEARING BRICK BARROWS you can wheel 20 per cent. more load and do it as easily. Order one subject to approval.



ALL OTHER SUPPLIES. **Send for Catalogue.**

The Wellington Machine Co.,
WELLINGTON, OHIO.



EDITORIAL NOTES AND CLIPPINGS

B. F. Kramer will establish a pressed brick plant at Charleston, S. C.

J. B. Raines and others have started a brick and tile plant at Orange, Cal.

W. A. Lander, of Moscow, Idaho, will establish a brickyard at Troy, Idaho.

Charles Conklin has purchased the brick plant of Charles Smith, at Middletown, Ohio.

The Callery Junction (Pa.) Brick Co. has been incorporated with $25,000 capital stock.

Joseph Harry's brick plant, at Fairfield, Ill., was slightly damaged by fire recently.

George Adams is at the head of a movement to organize the Jasper Brick Co., of Jasper, Tex.

W. L. Lafferty, of Galesburg, Ill., contemplates establishing a brick plant at London Mills, Ill.

L. R. Carroll is making arrangements to manufacture bricks at White Ash mine, Donnybrook, N. D.

Julius Gobeaux writes that a company is being organized to manufacture brick at Everett, Wash.

The Keeling & Ridge Co., of Pittsburg, Pa., will establish an immense brick works at Derry Station, Pa.

Cheyenne, Wyo., wants a brickyard and the Board of Trade has taken steps toward prospecting for clay.

The works of the Minnesota Clay Co., at Coon Creek, Minn., was badly wrecked by a severe storm recently.

Mt. Ayr, Iowa, will, in all probability, have a new brick plant. F. A. Barchus and F. A. White are interested.

The Teacheys Brick and Tile Co., of Teacheys N. C., has been incorporated by John McMillan, Sr., and others.

Dunn's brick yard, at Lake Charles, La., was entirely destroyed by fire July 5. The loss is estimated at $15,000.

Chas. Barr and S. S. Boots have purchased ground at Greenfield, Ind., on which they will erect a brick plant.

The Nanticoke Brick Co. is the name of a new concern recently organized to manufacture brick at Union, N. Y.

The plant of the New England Brick Co., at Greenfield, Mass., was damaged to the extent of $700 by fire Julv 5.

George W. Sharp is at the head of a company that has been organized to manufacture brick at Wilmington, Del.

The Kloess Brick Co. has been incorporated with $70,000 by Wm. and J. J. Kloess and J. J. Kohl at Belleville, Ill.

John T. Huetter is building a new brickyard at Post Falls, Idaho, that will have a daily capacity of 30,000 brick.

C. H. Bowlby, A. B. Reese and H. L. Hoge, have purchased the plant of the West Waynesburg Brick Co., at Waynesburg, Pa.

The Malvern Brick and Tile Works, Perla, Ark., advise us that they are in the market for a dryer and some brickyard supplies.

In a recent letter M. E. Grigory, proprietor of the Brick, Terra Cotta & Tile Co., Corning, N. Y., says their brick business is "rushing."

H. O. Keener, J. H. Landis, S. C. Peters and Frank Nisley are interested in a new brick plant which is being built at Royalton, Pa.

The Eau Claire (Wis.) Vitrified Brick Company, capital stock $250,000, was incorporated by George T. Thompson, James Patrick and C. T. Bundy. The company will manufacture paving brick, fire brick, building brick, fire proofing, building blocks and sewer pipe. The lands owned by the company covers about 800 acres.

J. A. Steinberger and G. W. Marriott, of Chenoa, Ill., have moved to Rockwell City, Iowa, where they will establish a brick and tile plant.

G. M. Foley, of Red Wing, has purchased the brickyard of J. R. Richards at Bemidji, Minn. He will enlarge the plant, putting in new machinery, etc.

A fire in the dryer of the Ogden Brick Co.'s plant, at Binghampton, N. Y., caused a small loss June 22. The loss was entirely covered by insurance.

The plant of the Indiana Brick Co., at Alexandria, Ind., was partly destroyed by fire July 6. The loss is estimated at $10,000, partly covered by insurance.

The Dow Brickyard, at Columbus, Ohio, owned by the Capital City Brick Co., was damaged to the extent of $400 by flames which started in the dry kiln.

The plant of the Acme Brick Co., at Marietta, Ohio, was almost completely demolished by a terrific wind and rain storm which swept over that section June 25th.

The Landon (Miss.) Brick and Tile Co., has been incorporated by L. N. Dantzler, Jr., J. W. Bozeman and H. W. Wilson. The capital stock is $20,000, all paid in.

The Woodsen Brick Mfg. Co. is the name of a new concern recently incorporated by L. H. Woodsen, R. B. Minnie, H. C. Brown, J. T. Marshall and others of Carrollton, Mo.

The Alpha Paving Co., Ltd., Toronto, Can., has been granted articles of incorporation. R. C. Thorneloe, E. A. Burton, R. C. LeVesconte, W. J. O'Neal and F. J. Buller are interested.

Articles of incorporation have been filed by the Neches Brick Co., Beaumont, Tex. The incorporators are T. M. Pittman, W. H. Hook and Edward J. McCullen. Capital stock $25,000.

Damage to the extent of $7,000 was caused by fire at the plant of the New Iberia (La.) Pressed Brick Works. The company carried no insurance. The burned portion will be rebuilt at once.

John H. Hall, of the firm of Hall & Spahr, brick manufacturers of Maysville, Ky., was stricken with apoplexy followed by paralysis June 30 and died a few days later. A widow and three children survive him.

The Johnson Brick Co. has been organized by Andrew Johnson, I. A. Lane and J. W. Richardson, of Morristown, Tenn. Ground will be broken at once and an immense brick plant be pushed to completion as rapidly as possibly.

E. M. Pike, Chenoa, Ill., writes he has closed a contract to erect the kilns for the large plant of the Idaho Vitrified Brick & Pipe Co., Boise City, Idaho. He is at present building four large kilns for C. C. Spahr & Co., Emigsville, Pa.

McClelland Leonard has purchased the old brick plant at Uniontown, Pa. New buildings will be erected, modern machinery installed and an up-to-date brickyard operated on the site of the old one. Lewis Williams will have charge.

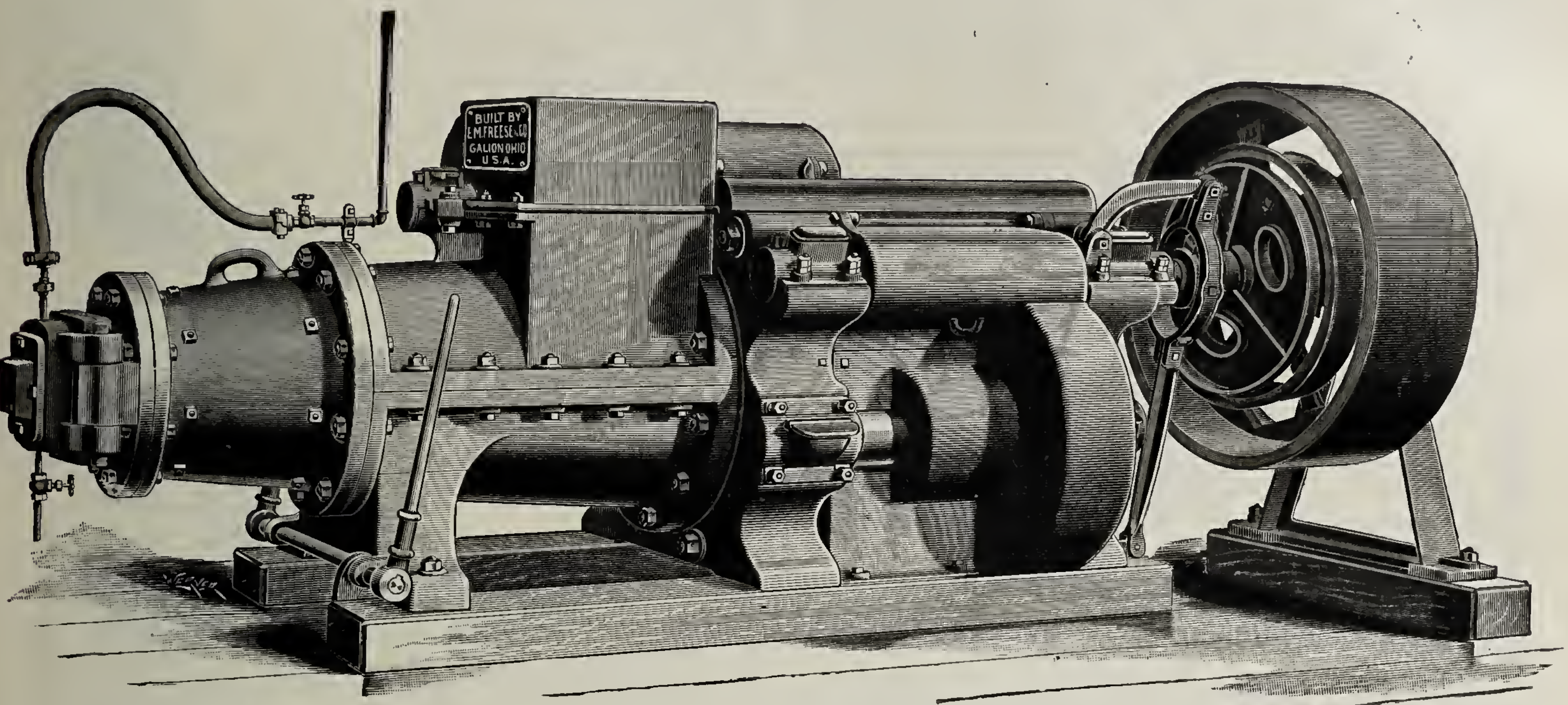
August Frank, foreman at Hall's brickyard, Springwells, Detroit, Mich., was caught between two cars which were being loaded with brick and so badly injured that he died in a short time. Mr. Frank was forty-two years old and leaves a wife and eight children.

The Hobart Brick and Tile Company, at Hobart, Kiowa county, Okla., has been chartered for a period of twenty years with a capital stock of $10,000. The directors are J. W. Stokes, J. G. Lesper, W. J. Ryan, J. A. Cosner, J. D. Appleby, A. J. Dunlap and R. M. Carr, all of Hobart.

In a recent communication J. C. Steele & Sons, Statesville, N. C., say: "We are glad to report that trade continues excellent, regardless of the fact that the season is far advanced. Within the last week or two we have made shipments of brick machin-

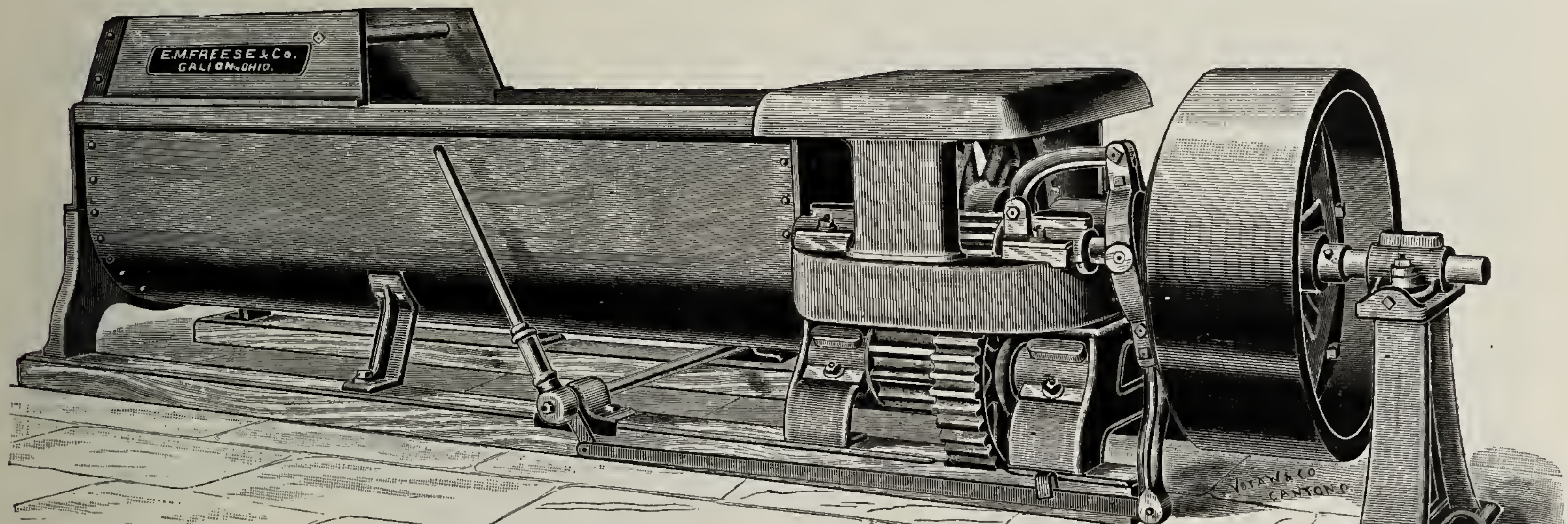
[CONTINUED ON PAGE 66.]

Our Mammoth Brick Machine



THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug-Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.

THESE PUG-MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitted for making a fine quality of brick.

E. M. FREESE & CO., = = Galion, Ohio.

Mention The Clay-Worker.

EDITORIAL NOTES AND CLIPPINGS—Continued.

ery to Lula, Ga., Taylorsville, Miss., Delhi, La., and Ostrander, N. J., and within the last four days have contracted to equip large plants at Vass, N. C., Alexandria, La., Ponchatoula, La., and Beaumont, Texas."

The Scranton (Pa.) Fire Brick Co. has purchased the Ithaca Brick Co.'s plant at Nina, N. Y. The capacity of the plant will be doubled and Mr. George Cook will be continued as superintendent, while M. J. Stone will be general manager.

W. H. Shimer, an employe at Dan'l Zehnder's brickyard, Easton, Pa., was caught in a cave-in at the clay bank and so seriously injured that he died within a short time after being taken out. He was twenty-four years old and unmarried.

Newton Perkins Fire Brick Company, Albany, N. Y., has been incorporated to manufacture fire brick and other clay products; capital, $100,000. Directors—J. D. Miller, Wallingford, Vt.; Clarence B. Flint, Albany; Arthur W. Perkins, Rutland Vt.

F. E. Hook, Hudson, Mich., writes that he is being very successful in introducing his paints and Pneumatic Coating Machine to the brickmakers of the country. Among recent sales is an outfit to the Los Angeles (Cal.) Pressed Brick and Terra Cotta Co., and one to the Western Brick Co., Danville, Ill.

The Frankford Brick Works, Bridge and Dittman street, Philadelphia, Pa., was destroyed by fire June 29, causing a loss of $12,000, on which there was no insurance. A lot of new machinery had lately been installed, all of which was rendered useless. The plant was owned by James Kelly & Co., and will probably be rebuilt at once.

J. W. Morrison and I. C. Jones, of Minneapolis, Minn., have organized a company to be known as the Minneapolis Terra Cotta & Brick Co. to manufacture brick and terra cotta at Grantsburg, Wis. The clay has been tested by clay experts in Minnesota, Illinois and Iowa, and they have all agreed that it is of superior quality and makes brick of good color.

The J. D. Mock & Son Brick Manufacturing Company, of Muncie, Ind., has granted its employes a voluntary increase in wages, by which the men will be able to make about 10 cents a day more than in the past. They are paid by the thousand and have been making about $1.60 per day. Under the new condition of things the men will receive about $1.70 a day.

In renewing their subscription to the Clay-Worker, D. Buchanan, Superintendent of the Superior China Clay Co., Chippewa Falls, Wis., says: "We are running our works to their capacity, turning out annually about 5,000 tons of the purest and best China clay that is produced any place in the world. Our clay is very plastic and practically free from iron."

The Catskill, N. Y. papers state that it is rumored that John D. Rockefeller, the Standard Oil magnate, is negotiating for the purchase of the Eastern Paving Brick Co. The company recently went into the hands of a receiver and since then the plant has been idle the better part of the time. It is to be hoped the rumor is true and that Mr. Rockefeller will turn his attention to brickmaking.

The Leavenworth (Kans.) Paving Brick Co. has been reorganized. It is now known as the Pittsburg Vitrified Paving and Building Brick Co. A bond issue of $200,000 has been made. Robert Nesch is president of the new company and David D. Hoag is secretary. It is said some new Pittsburg, Kan., capital has been taken into the company. Robert Nesch has been president of the old company since about a year ago.

The plant of the Stoneware Pipe Co., at East Alton, Ill., was completely destroyed by fire July 2. The fire started from an explosion. A night crew was at work in the plant when the flood of water from Woodriver and adjacent territory began rushing in around the tile works. A duct leading from the big smoke stack to kiln No. 4 was rapidly filled with water and the kiln was red hot at the time and was filled with stoneware. When the water reached the kiln the amount of steam immediately generated by the red hot kiln caused a terrific explosion which startled all the employes and set the interior woodwork of the plant afire in a few seconds. The water was several feet deep about the plant and the men could do nothing toward extinguishing the fire. The total loss is estimated at about $45,000, most of which was covered by insurance. Mr. J. W. Koch, of Alton, is president of the Stoneware Pipe Company and Mr. F. W. Joesting, secretary-treasurer. The plant is to be rebuilt at once.

The Thew Automatic Shovel Co., Lorrain, Ohio, advise us that their clay-working trade is very satisfactory. They have recently installed their single-truck steam shovel, adapted for operation by one man, at the plants of the Potomac Brick Co., Addison, Va., the Keller Brick Co., Cuyahoga Falls, Ohio, G. H. Clippert & Sons Co., Detroit, Mich., the Baltimore Brick Co, Baltimore, Md., and the Minnesota Clay Co., Coon Creek, Minn.

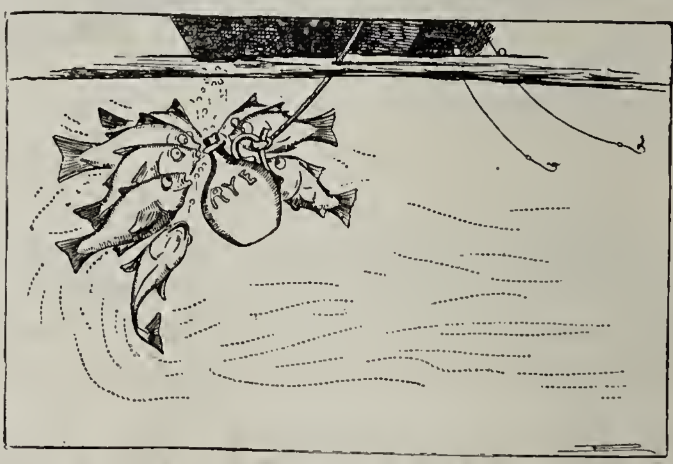
An evil fate seems to have settled over the brickyard of B. W. Bennett, at Muncie, Ind., in the last few months. Last winter the whole plant was destroyed by fire and when the work of rebuilding it had just been completed, a second fire damaged the plant several hundred dollars. The last of Mr. Bennett's misfortunes came last month when one of the large brick sheds collapsed, causing a loss of $100, to say nothing of the time it will take to reconstruct it. The plant is crowded with orders.

In renewing his subscription, Mr. John Hardin, 56th St. and Cottage Grove Ave., Chicago, Ill., writes that in addition to his brick and sewer pipe lines, he has added a department of plumbing supplies to his trade equipment, and is now carrying a complete line of iron pipe, steam valves, and all sort of plumbing goods, and will be pleased to quote price for anything of this kind to any of the readers of the Clay-Worker who may be in the market for material of this sort. He has a new catalogue which will be mailed to any of our readers who will favor him with their address.

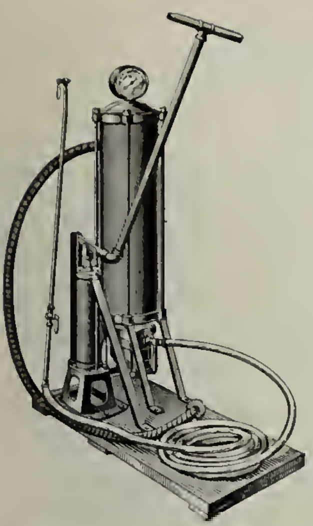
A charter has been granted to Messrs. D. Armstrong, John N. Benson, Frederick Wehner, Timothy Griffith and D. A. Benson, of Frostburg, Md., to organize a corporation to mine fireclay and manufacture firebrick under the name of Big Savage Firebrick Company, capital, $100,000. The Company has a lease from the Borden Mining Company of 200 acres of clay land, and besides the right to mine fireclay and make firebrick, enjoy the privilege also of mining coal for their own use. The capacity of the plant will be 20,000 daily, and employ in mining and manufacturing departments about 100 hands. Work preliminary to active operations will be begun at once, and the company hopes to ship brick before the year is out.

THE DRINK HABIT CURED.

Home treatment for $15. A cure guaranteed or your money refunded by Dickey's liquor cure, nerve strengthener, blood purifier, manhood restorer, all in one. We make it, we sell it; we guarantee it to cure any case of the drink habit on earth. We send it to any address in the United States upon receipt of $15 and guarantee a cure or refund your money. Best bank-reference given. Our business strictly confidential. Address DICKEY REMEDY CO., or P. O. Box 44, Shelby, Ind. 7 3 cm



And the fishermen wondered why they didn't get a bite.—Life.



WHITEWASH YOUR KILNS AND BUILDINGS.

Hook's "Best" Pneumatic Coating Machine.

SAVES TIME AND MONEY.	80 per cent of the labor saved. Whitens durably and quickly. Closes every crevice. Fills a long-felt want.

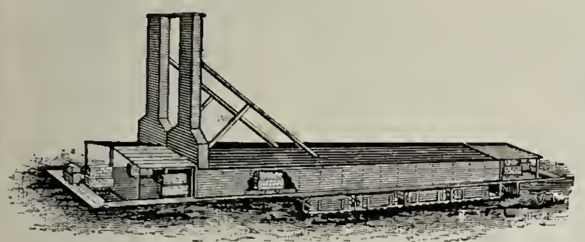
THE PURINGTON PAVING BRICK CO. SAY:

"We have been using one of your "Best" Pneumatic Coating Machines for some time and find it a great labor-saving device and recommend it to any one that has painting to do. *It is especially adapted to whitewashing the inside of the kilns, being a benefit not only for making the kilns lighter but also for closing up small openings.*"

Our 24-page catalogue tells the tale. We shall appreciate your enquiry for it.

F. E. HOOK, 16 to 32 Hook Bldg., **Hudson, Mich., U. S. A.**

BARRON DRYER CO., Patentee and Builder of



Chicago Iron Clad Dryer

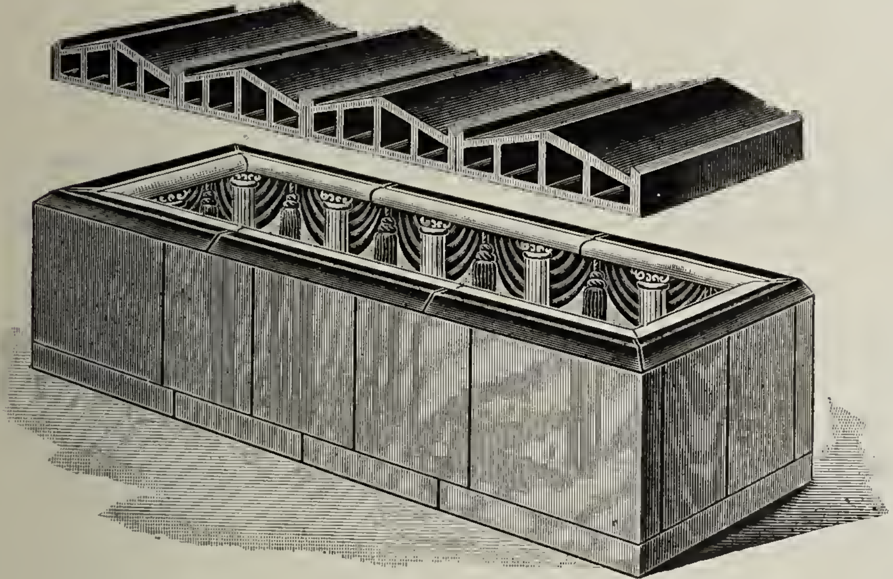
AND

Barron's Tender Clay Dryer.

These dryers are the results of a quarter century of experience in drying by steam heat, are more economical to install, and will dry brick at half the cost of any other known process. Results fully guaranteed.

BARRON DRYER CO, 630 Temple Court Bldg. CHICAGO, ILL.

SOMETHING NEW IN CLAY.



Are You Looking for a Money-Winner?

YOU HAVE FOUND IT IN

The Kaufman Burial Vault.

It is a vault made from clay on your ordinary brick or tile machine, and burned in your ordinary kiln.

ITS OBJECT—To supersede the cheap pine box, the expensive stone or steel vaults now in use, and to furnish a sealed resting place for the dead. The price of the vault places it within the reach of all, and its beauty and neatness removes half the terror of interment. It is as lasting as the hills and as free from decay as the pyramids. This is not an experiment, but a well-tried and assured success.

OUR OBJECT—To interest good manufacturers in our business with a view of disposing of territory not already occupied.

Why will you wear your life out making tile or brick at a small profit when, with the same effort, you can make big money in a few years making the Kaufman Burial Vault?

We are thoroughly protected by patent. For further particulars address

KAUFMAN BURIAL VAULT CO., London, Ohio.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than $1.00.

WANTED—Situation as brick burner. Permanent location desired. Best of references as to habits, ability, etc. Address
7 1 d STARK, care Clay-Worker.

FOR SALE—$165 will buy five-mold Talcot brick machine; capacity, 40,000 per day; never been used much; with four spring trucks. Address
SAM ROSEBERY,
7 1 cm Slatington, Pa.

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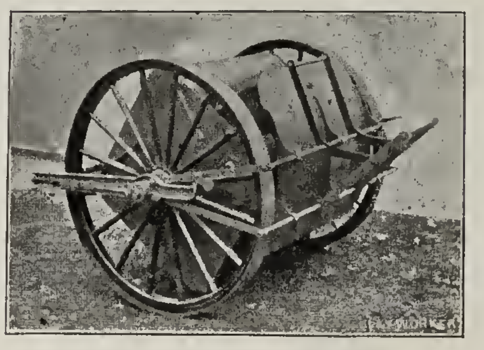

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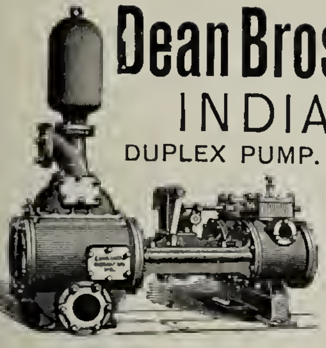

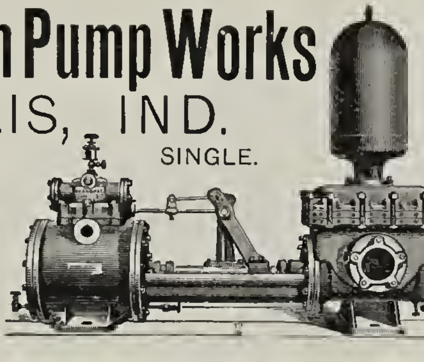

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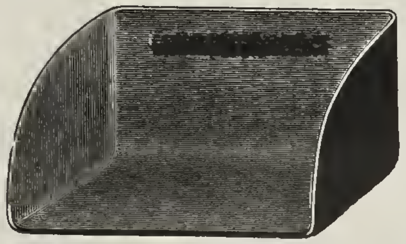

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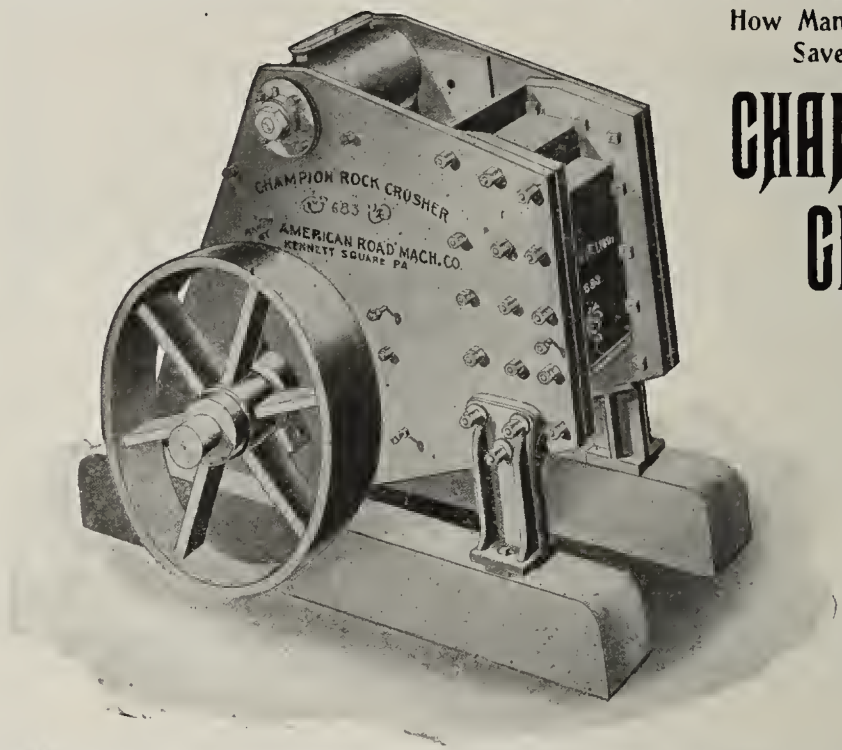

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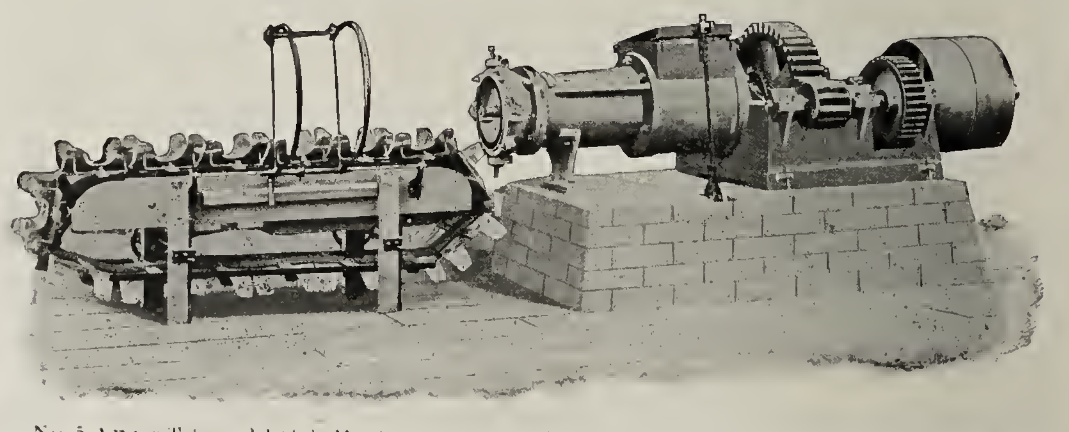

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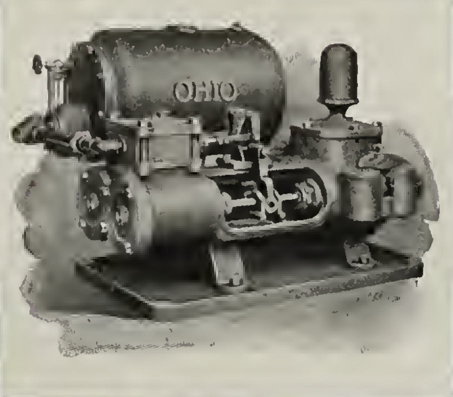

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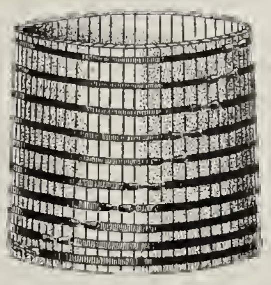

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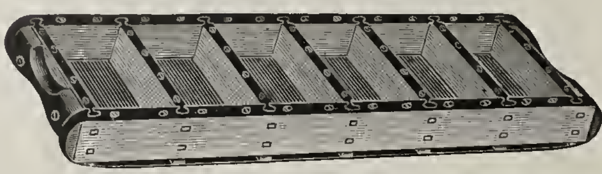

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Arranged to suit all locations. These kilns can be seen burning Roofing Tile, Dry Pressed, Facing, Paving and Common Building Brick.

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A more Successful Kiln for Burning Paving Brick will be hard to find than the one at the Works of the Eastern Paving Brick Company, Catskill, N. Y. For Further Particulars Address,

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Clayworkers:—

Do not experiment, but take the old reliable, that has long since established itself as doing honest work. It will burn anything from vitrified pavers, to the finest pottery ware, uniformly, and economically. More than 1,200 in use, in three countries.

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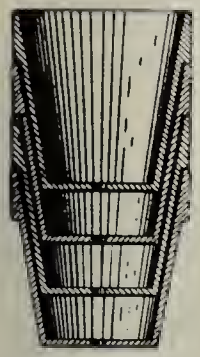

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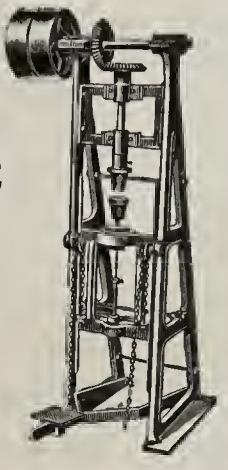

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For Brick, Terra Cotta, Sand, Cement, Etc.

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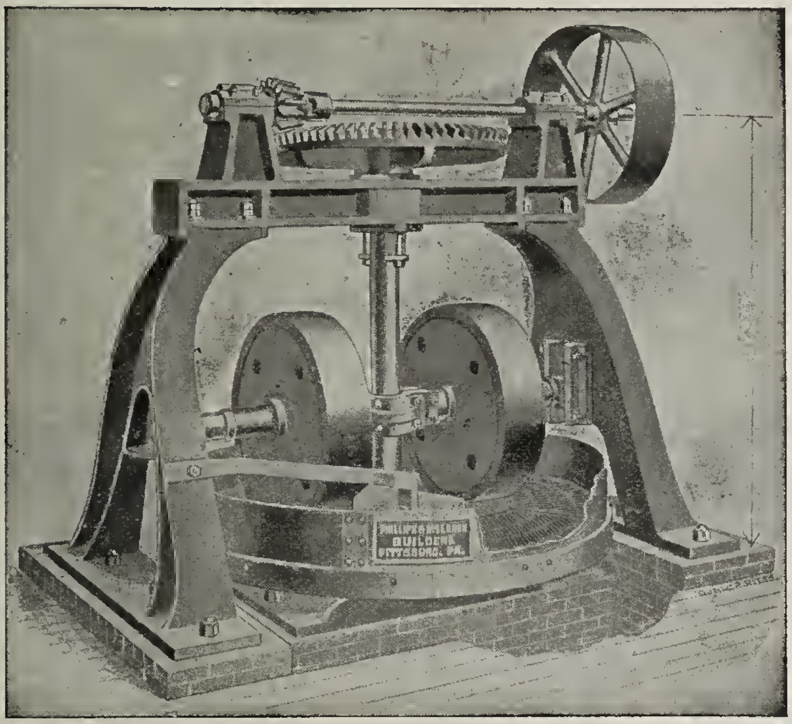

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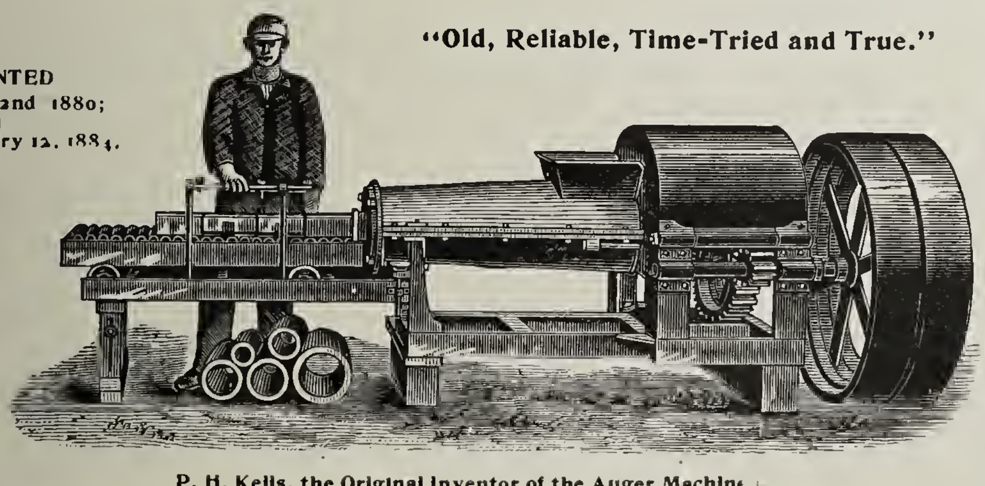

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We have made an improvement on our No. 1 Machine by which we can make tile from 3 inches up to 12 inches and on our No. 2 Machine we can make tile from 2½ up to 10 inches.
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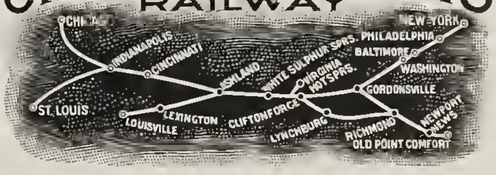

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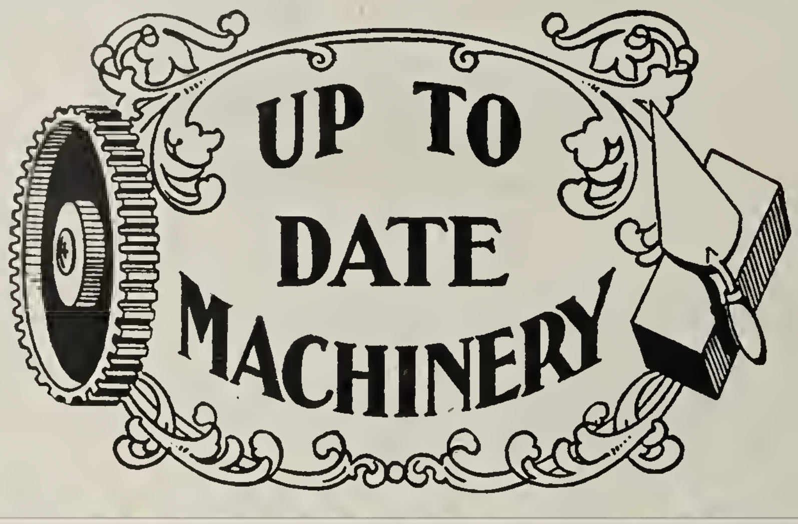

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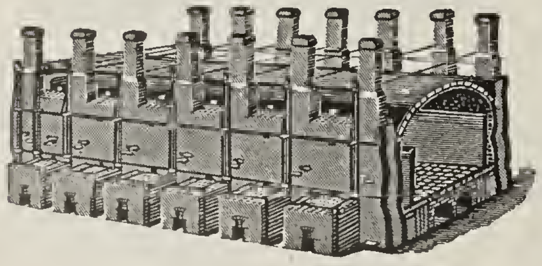

PATENTED JUNE 1896.

Streator, Ill., October 3, 1900.
M. M. BUSHONG, Esq.,
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Dear Sir:—Answering yours of September the 27th, we have been using one of the Bushong Down Draft Kilns the past fifteen months and are well pleased with it. We get a larger percentage of No. 1 pavers with a little less fuel than any other kiln on the yard.

Yours truly,
THE BARR CLAY CO.,
Per C. C. Barr, Treas.

BURNS any kind of fuel.
USES less fuel than any other Kiln.
RESULTS are uniform.
NO damaged wares.
SAVES time and labor.

USED by some of the largest plants.
NO experiment.
IT'S success has been proven.
FULL control of drafts.
ONLY Kiln built that has Double Draft.
REDUCES burning time 24 to 48 hours.
MOST economical in construction.

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THE DUNN CONTINUOUS BRICK KILN.

Burns 8000 brick with one ton of coal.
Requires only two men to operate it.
Is in full operation daily.
Absolutely the most successful kiln of its class ever offered American Brickmakers.

Write for Description and full Information.

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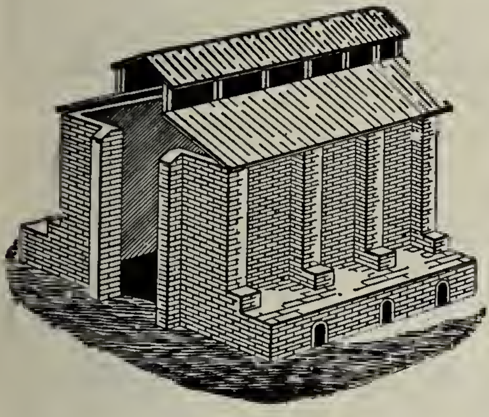
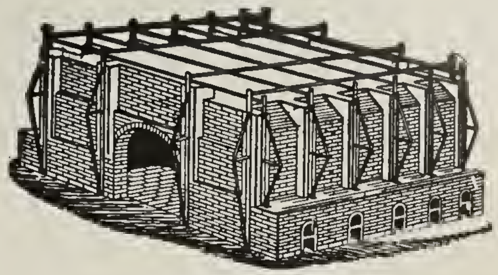


Up-Draft Kiln.

LOUIS H. REPPELL'S

IMPROVED-KILNS

For Burning all Kinds of Wares.



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Having had years of practical experience in the management and actual burning of all kinds of kilns, claim it to be THE BEST Up-Draft KILN IN THE MARKET.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns.

For further particulars and full explanation, address

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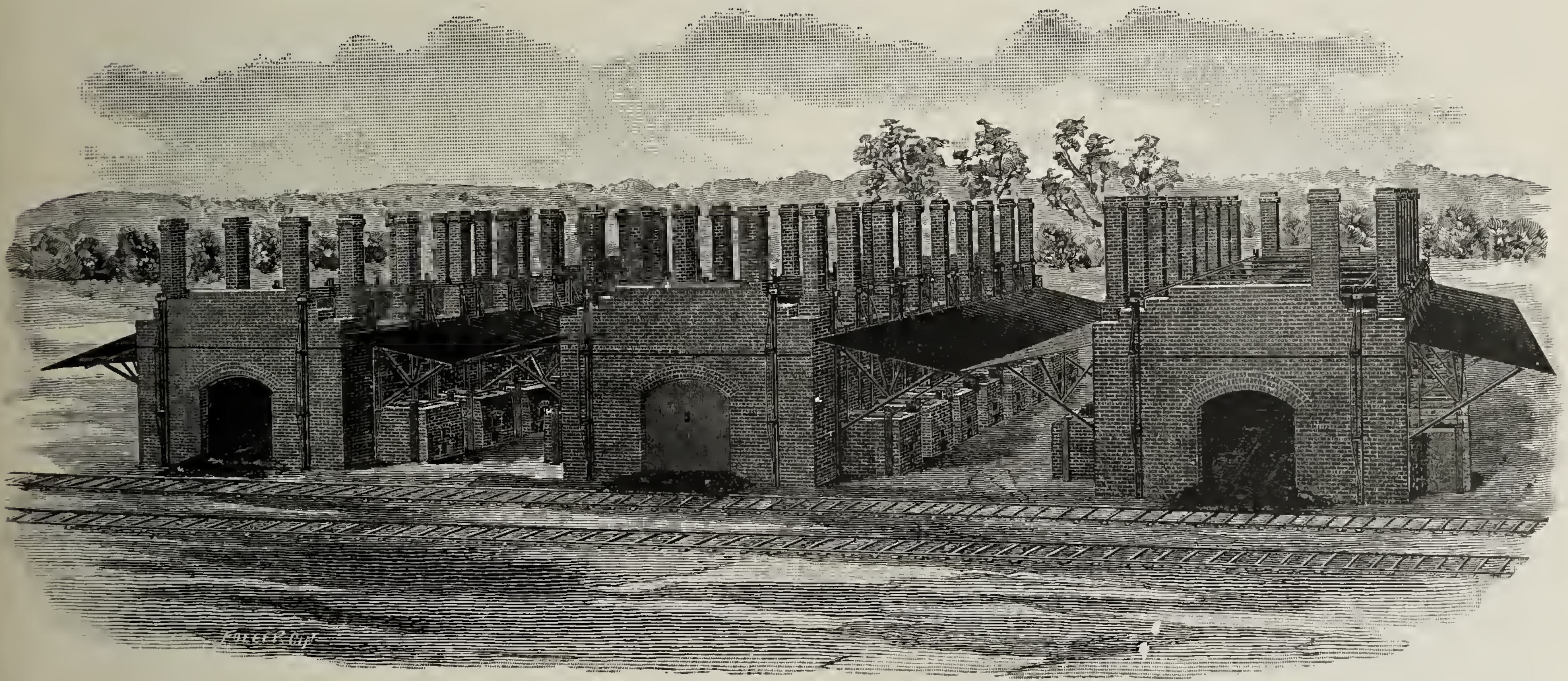
The EUDALY DOWN DRAFT KILNS.

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM.



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

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The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

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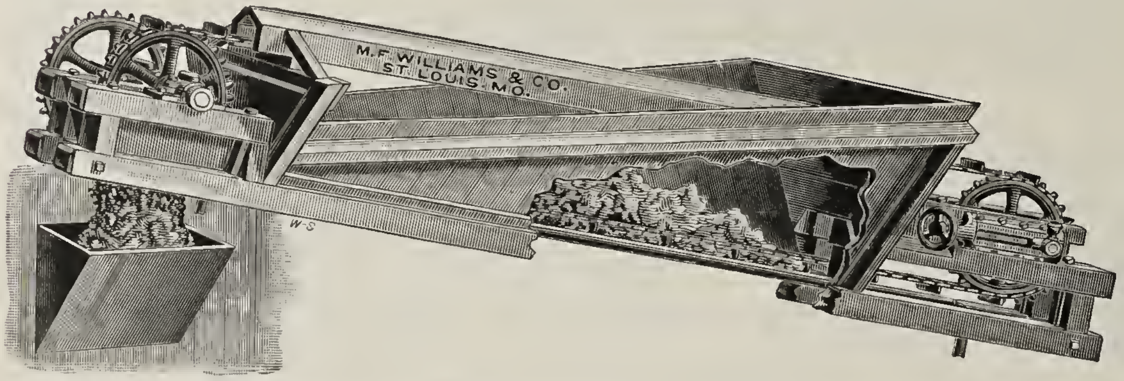

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Read This---It Will Repay You.

The Simplest. The Least Expensive. The Best

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The practical man will see at a glance the advantage which this system has over any other, new or old. It is equally as efficient in large or small yards. One man can take 25,000 to 40,000 green brick from the machine and place them upon the hacks to dry, and the same amount from the hacks to the kilns, and place them in easy position for the setters to handle them. It has been thoroughly tested. It costs less than one-half the money to equip a yard with my system than any other efficient system. Drying capacity unexcelled. By using my complete system 100,000 brick can be hacked in a space 25' x 160'. If you are using any of the old systems of open air drying such as the rack and pallet system for instance, the change can be effected with very little expense.

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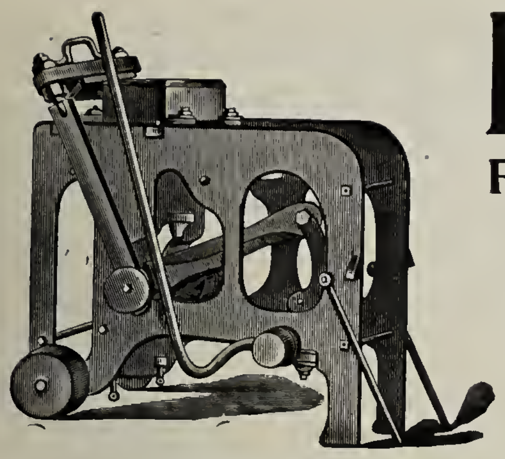

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PHILADELPHIA BRICK MACHINE WORKS

Fire and Red Brick Presses all sizes.

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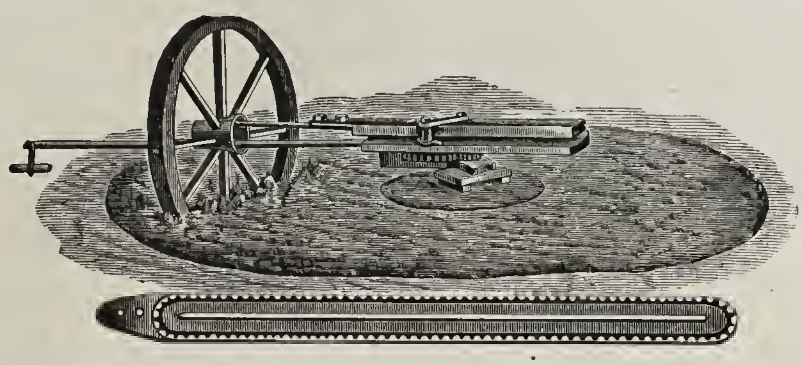

These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

The Standard Brick Machines,

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These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

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We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

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MODEL "G," 2½ YD

Is the most economical appliance for excavating clay.

Never strikes, and is therefore more reliable than hand labor.

Will work in all kinds of weather, insuring regular supply of material.

More thoroughly mixes the different stratas than is possible to do by hand.

Will prove a paying investment in any yard where the material is taken from a face.

For many years we have supplied Steam Shovels for Brick Yards, and our machines are in successful use in the yards of many of the largest and most succcessful brick manufacturers of the country. We build machines having dipper capacities from ¾ cubic yard up to 4½ cubic yards, and can supply them with friction feed on boom or with independent engine feed.

If interested write us for illustrated catalog.

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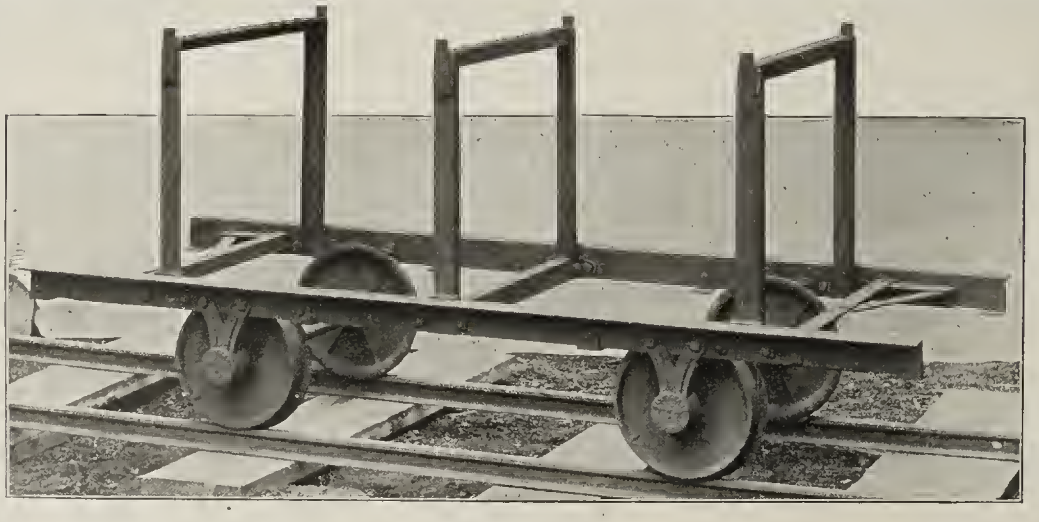

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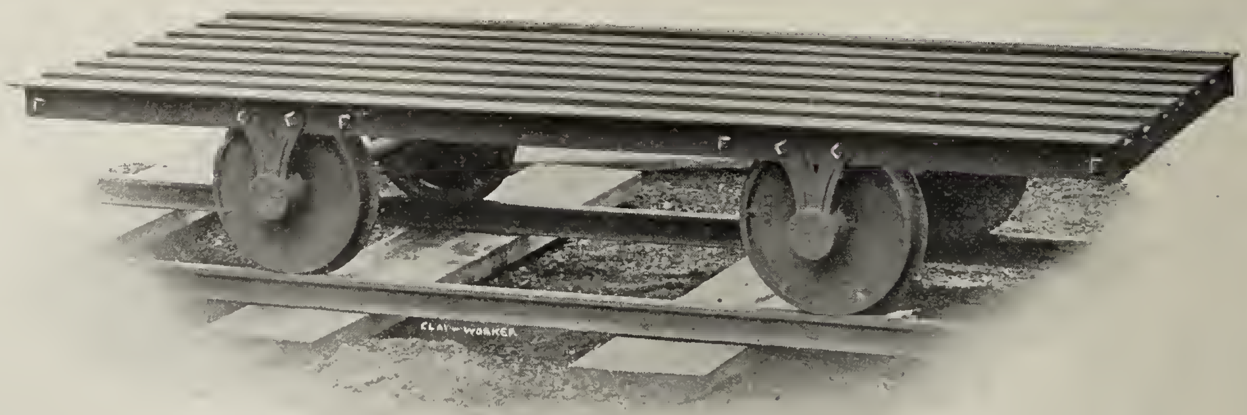

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FLAT CAR.
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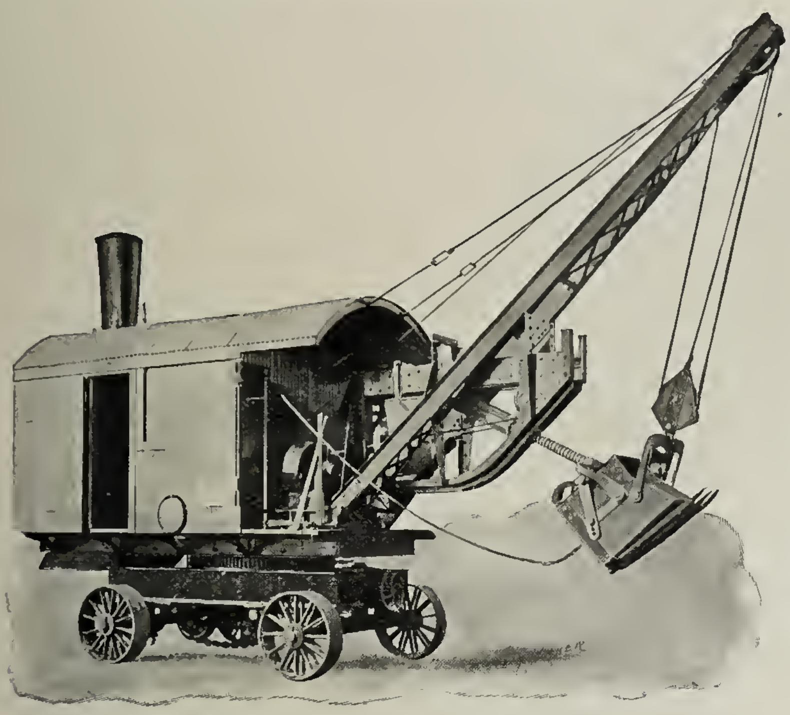
Handle Your Clay With One Man and The Thew Steam Shovel.



The Thew Improved No. 1 Shovel.

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Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

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Made in all sizes.
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Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 150.000 brick per day.

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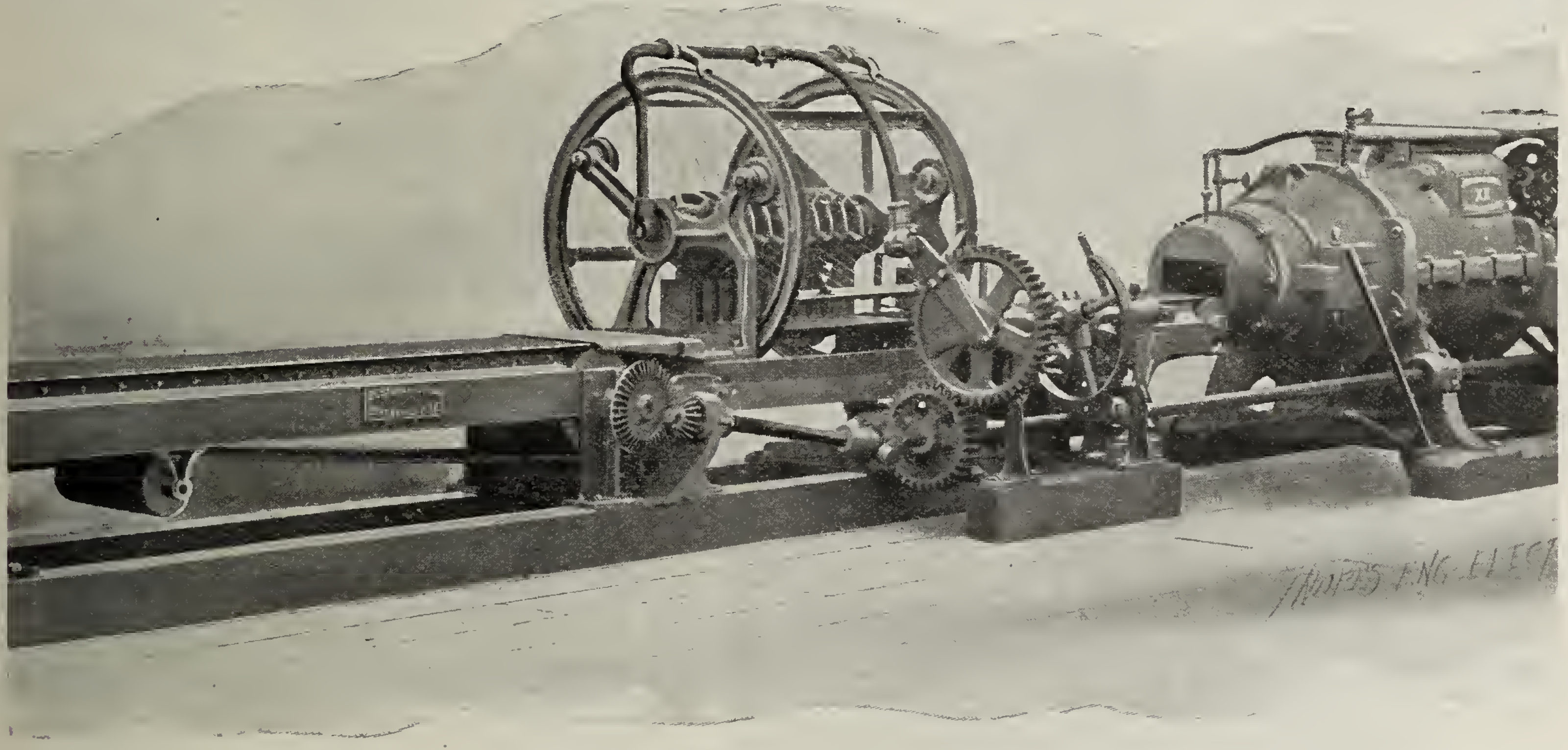

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BRICK MACHINES.—Three sizes, capacities ranging from 12,000 to 50,000 per day. Complete equipments for the most economical yards. All kinds of brickyard supplies. Write for Catalogue and Prices.

J. C. STEELE & SONS, Manufacturers "NEW SOUTH" Brick Machinery,
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Is One of the Best Investments Ever Made at Our Plant.

CHRISTY FIRE CLAY CO.
ST. LOUIS.

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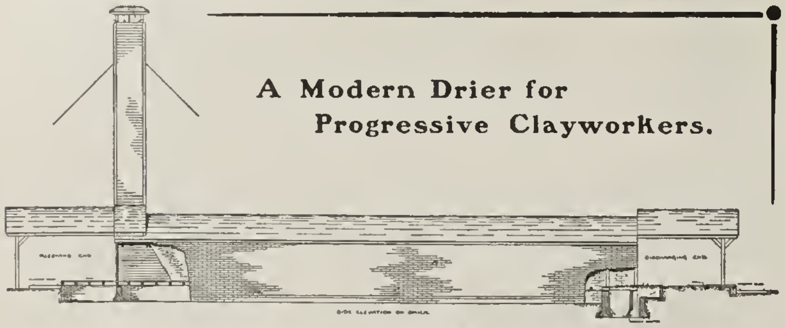
GENTLEMEN—We take pleasure in giving you the result of our experience with the Tunnel Drier System recently purchased from you. We find that the use of exhaust steam during the day time with about 40 lbs. pressure of live steam at night, dries our product thoroughly in 48 hours, and in view of the fact that our former system required an average of 120 hours, you can readily imagine that we are very much gratified. The economy of labor, saving of fuel, and increase of capacity resulting from the installation of your system, make the expenditure one of the best investments we have ever made at our plant. Yours truly,

W. C. MORRIS, V. P. & G. M.



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C. H. BEALE, Mangr. Southern States, MONTGOMERY, ALA.
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Is free from complicated Features. If you want IMPROVED METHODS, put in the modern up-to-date

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Our Steel Roller Bearing Cars are Unequalled.
Let us send you a circular, it will interest you.
Our guarantee protects from all chances.

The National Dry Kiln Co.,
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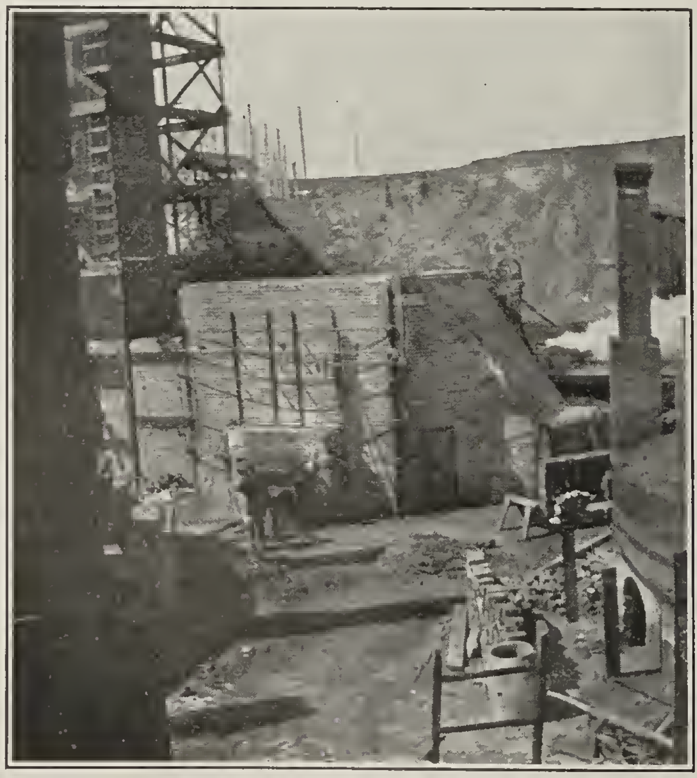

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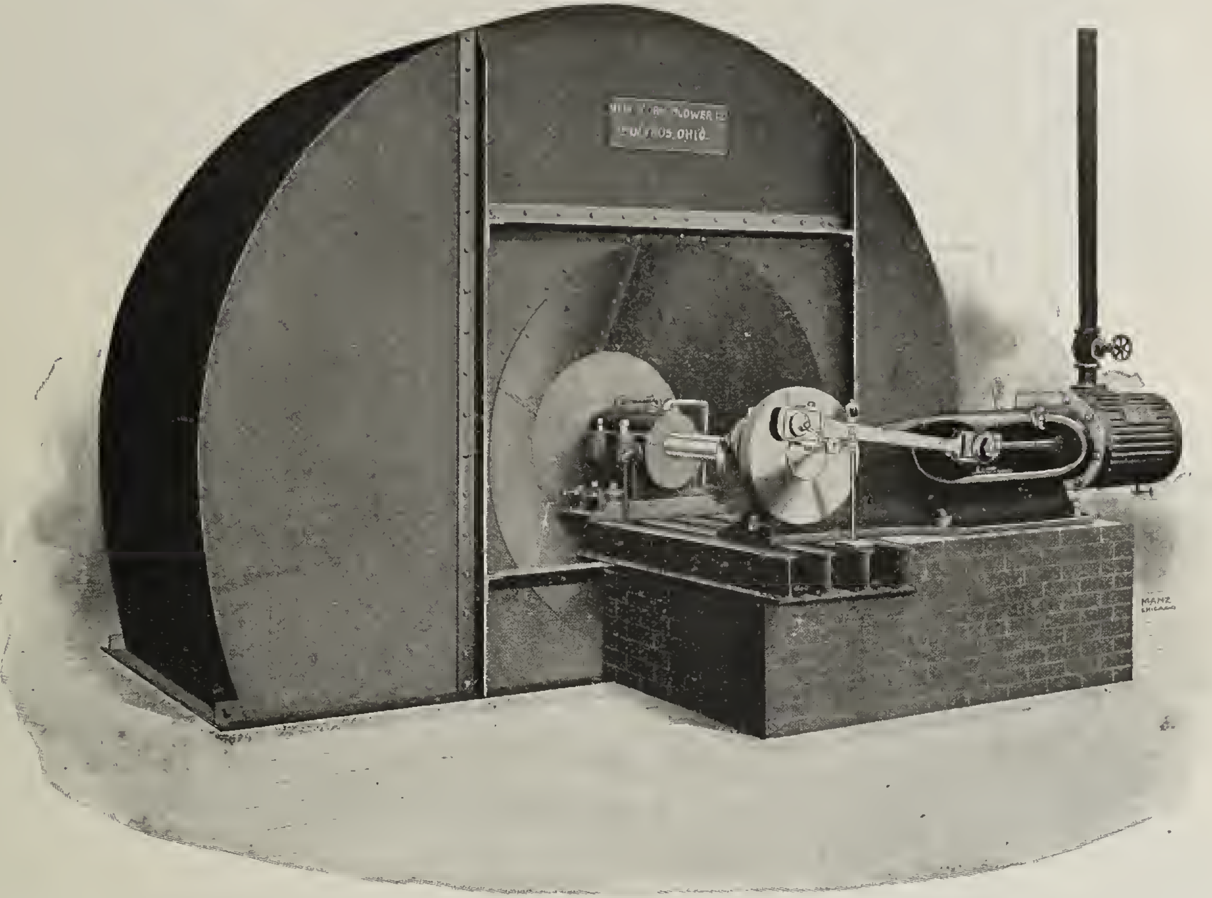
Our Dryer is superior to others by reason of improved methods, low cost of construction and economy of operation. If you're interested in dryers write for particulars. Ours will prove a good investment.

We also manufacture Conveyors, Exhausters, Heaters, Fans, Engines and Mechanical Draft Apparatus.



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**Brick Manufacturing Expert,
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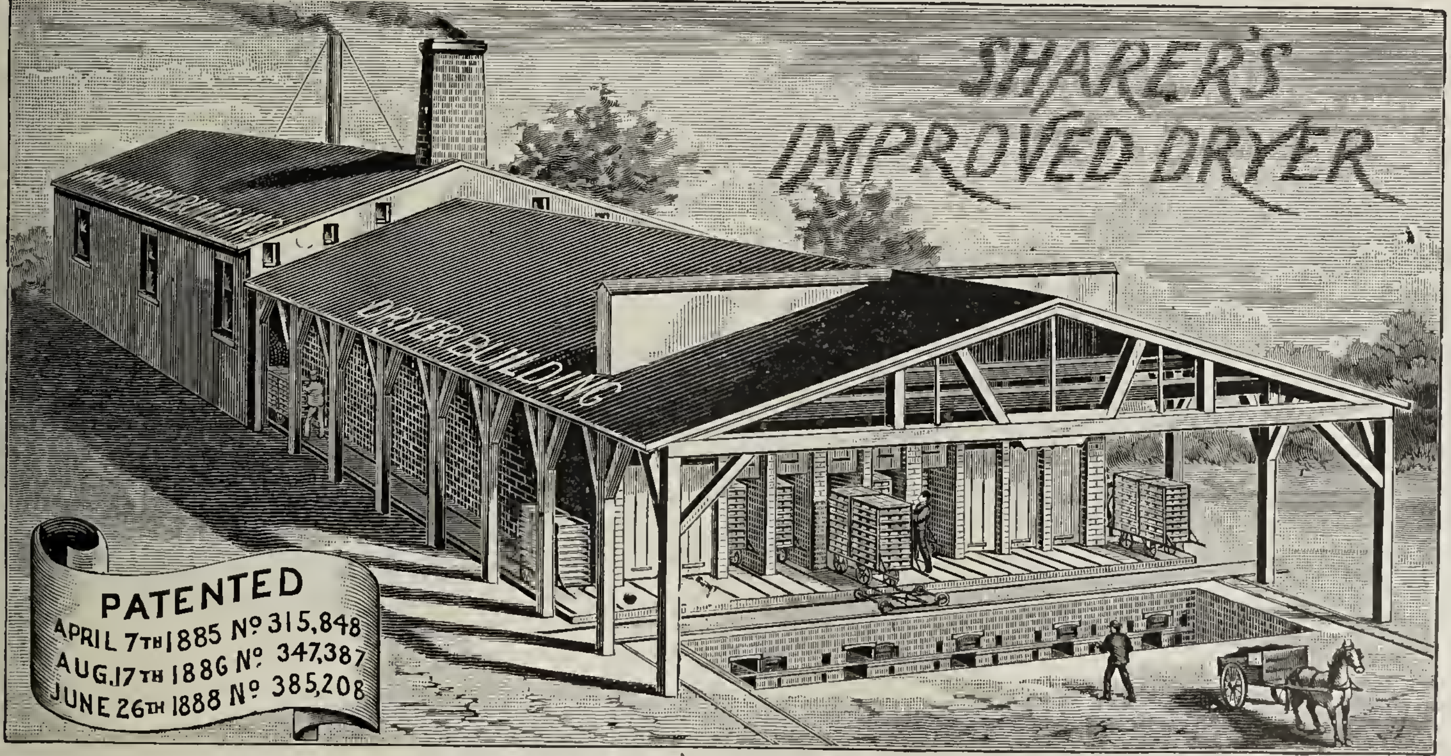
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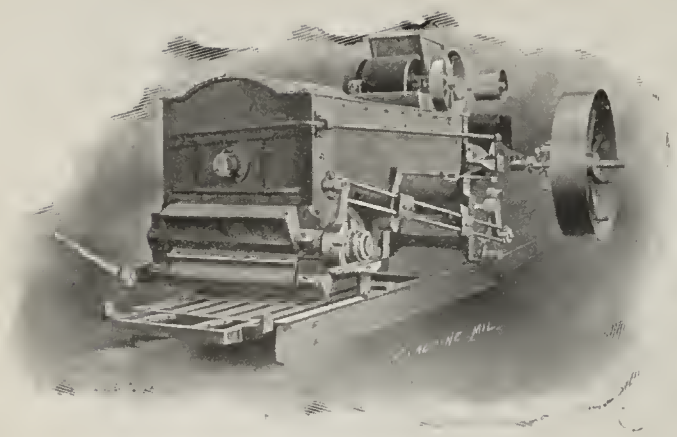
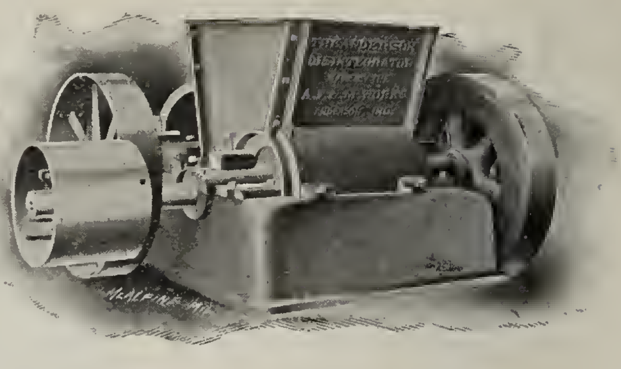


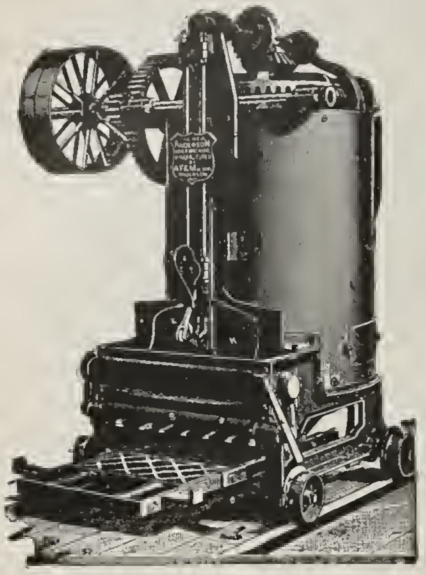
Horizontal Anderson Brick Machine.

DON'T PURCHASE UNTIL YOU WRITE US.

We can save you money.



Best Disintegrator on the Market.



Steel and Iron Upright Stock Brick Machine.

MANUFACTURERS OF . . .

New Departure Tile Machine,

The only machine for making Tile from 3 to 24-inch Diameter.

Pug Mills, Molds, Trucks and Barrows,
And all Brickyard Supplies.

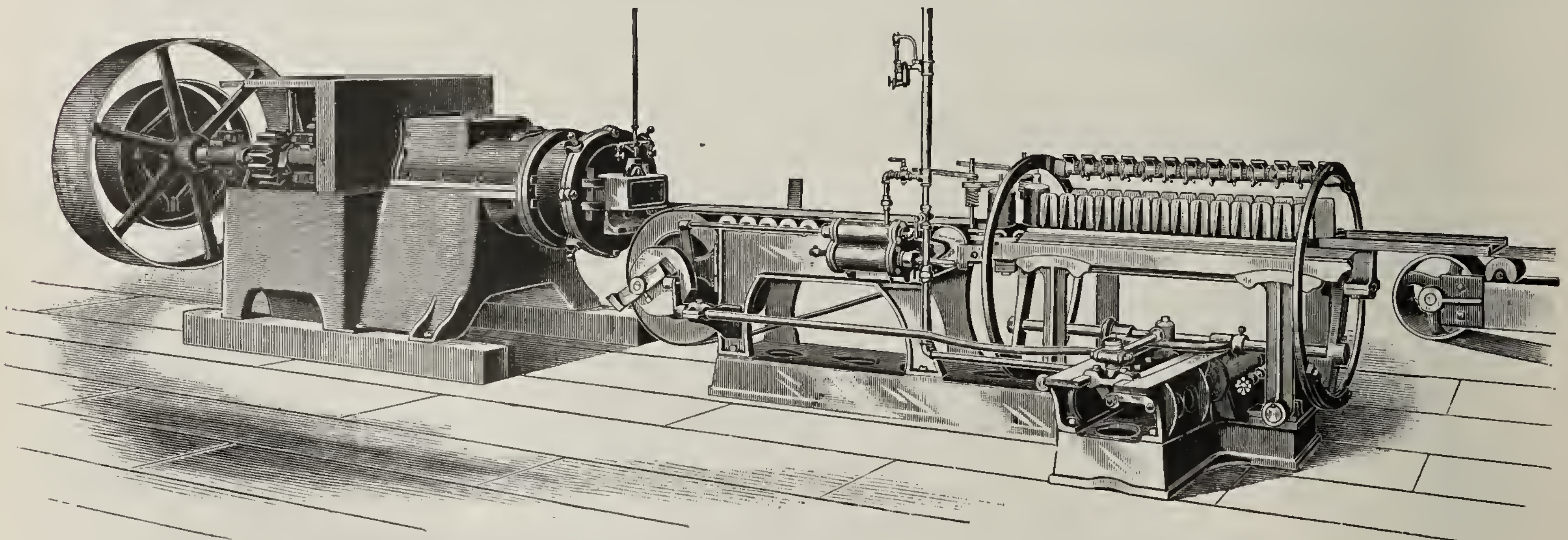
1899 Horse Power Machine.

The Anderson Foundry and Machine Works,
—Anderson, Ind.

NOT BETTER THAN THE BEST!

But Better Than the Rest!

AND THE PRICE IS RIGHT!



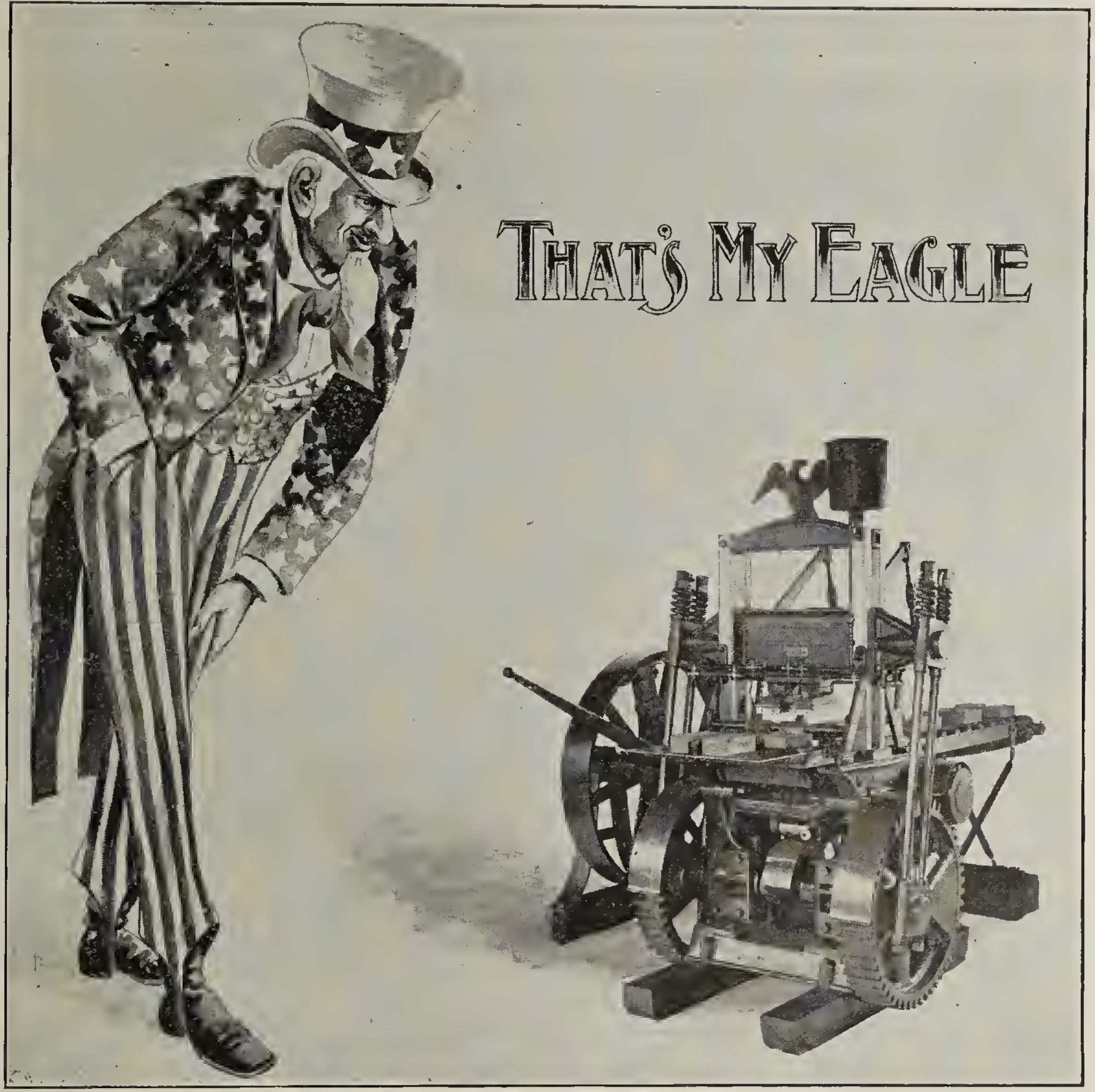
LEADER No. 25, With Side Cut Die and Automatic Cutter.

LEADER MANUFACTURING COMPANY, = Decatur, Ill.

Mention The Clay-Worker.

UNCLE SAM is proud of the Eagle. So are we. So are all the clayworkers who have bought Eagles. Why is it? People are never proud of a poor thing or a disappointing investment. They all like the Eagle because it is a fulfiller of guarantees, because it stands for quality, because it's a willing worker, because it saves its cost in repair bills, because when the whistle blows it's ready and able to run, and is willing and able to run overtime, or all the time, without complaint. If you're going to buy a repress and are willing to buy on a business basis of economy, you'll be safe in investigating the record of the Eagle. We'll send you facts and figures for the asking, and a list of users. Wire or write.

BUILT RIGHT RUN RIGHT
THE AMERICAN CLAY WORKING MACHINERY CO
BUCYRUS, O. U.S.A.



BUILT RIGHT RUN RIGHT
THE AMERICAN CLAY WORKING MACHINERY CO
BUCYRUS, O. U.S.A.

We also build the only complete line of clayworking machinery in the various processes. Every machine a winner because it's **"Built Right and Runs Right."**

The American Clay-Working Machinery Company,

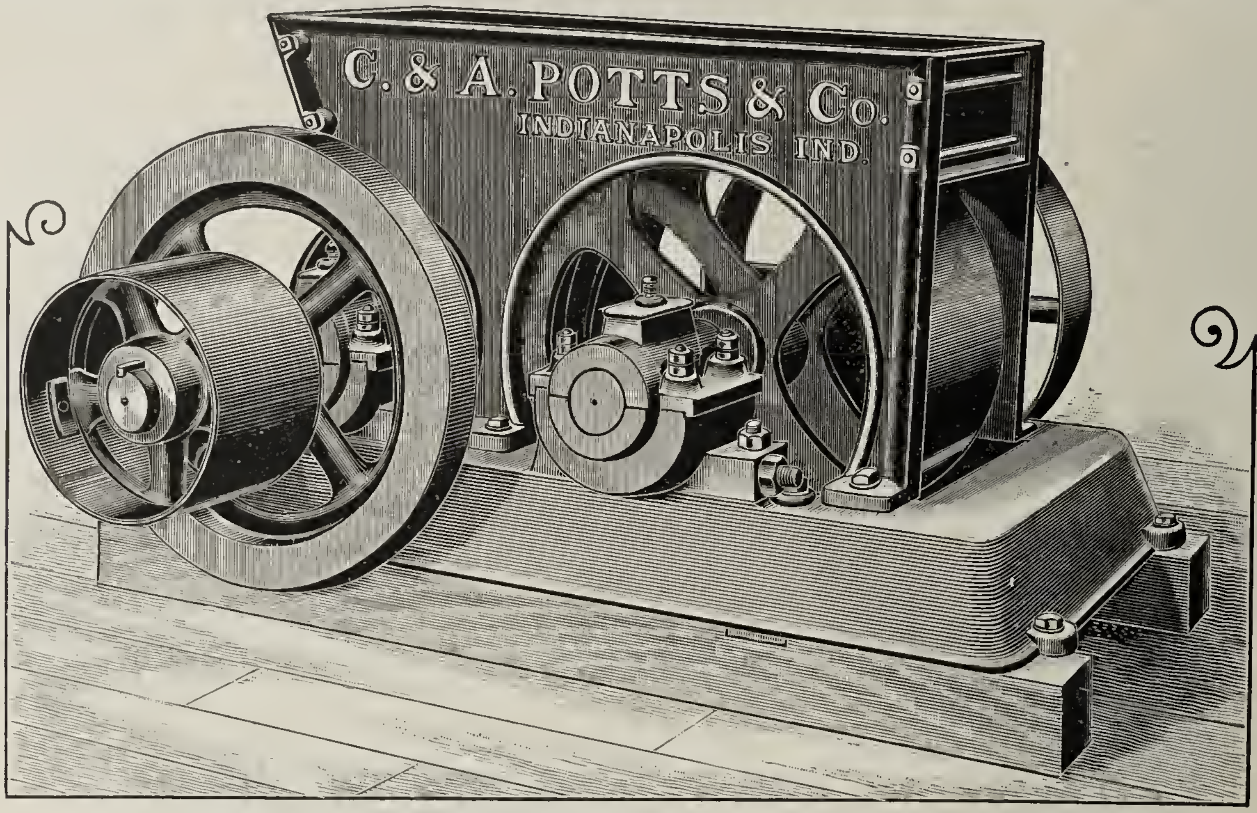
Bucyrus, Ohio, U. S. A.

New York Office,
39-41 Cortlandt St.
Chicago Office,
Merchants' Loan and Trust Bldg.
European Office,
3 Gore St., Picadilly, Manchester, Eng.

See Ad. on Page 94.

Potts Disintegrators

Are used in all parts of the United States and Europe. They are acknowledged by the trade in general to be the only Reliable Machine ever made for the work.


C. & A. POTTS & Co.
INDIANAPOLIS IND.

(Patented.) **Style "P"** Four Sizes, Capacity 20 to 150 M Brick per day.

It grinds any kind of clay. Does not Choke or Clog from wet, sticky or hard, dry clays. Grinds the clay, leaving it in a loose, open condition so it will take water readily, and can be thoroughly tempered.

These Disintegrators grind the small stone, and separate the large ones.

There is no piece of machinery made which will make a greater improvement in the quality of your Brick or Tile.

Remember that a good thing, and one in general demand, soon has competitors, so with the Potts Disintegrator, which is the only machine made having **ADJUSTABLE SECURED STEEL CUTTING BARS**, all other Disintegrators have the lugs, or bars cast to the cutting roll (an underhand way competitors have taken to avoid our patents) these cast bars wear off in a week or two, with no way to replace them, only by purchasing a new roll. When some agent is trying to sell you one of these inferior machines, his only recommendation is that it is cheaper than the Potts.

Stop, Then, and figure what three new rolls for one of these machines will cost per year. You will purchase a Potts Disintegrator we know. THEY ARE THE BEST.

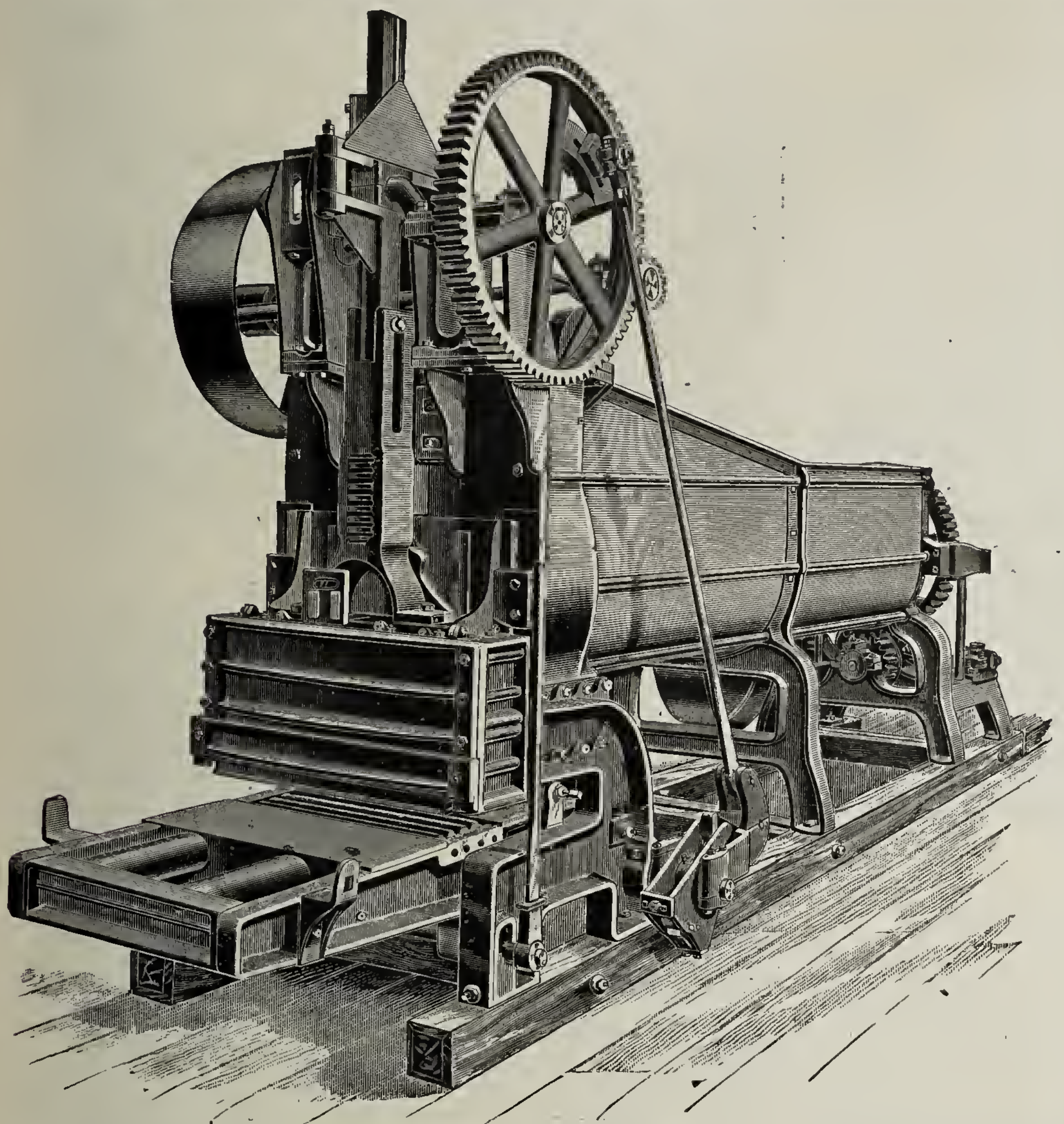
C. & A. POTTS & CO.,

Mention the CLAY-WORKER

Indianapolis, Ind.

THE POTTS Horizontal Stock Brick Machine.

THE LEADING MACHINE OF AMERICA.



**More
Machines
Sold
This
Past
Season,
Than
In
Any
Two
Former
Years.**

What We Claim: It is the Largest, Heaviest and Best Constructed. It has Double the Tempering Capacity of any Machine made, It will work the clays as stiff as it is possible to slip it from the moulds or strike the moulds, at the same time fill a six-brick mould perfectly with brick which will have CLEAN, SHARP CORNERS, SMOOTH SURFACES, and are STRAIGHT and SQUARE when burned.

All Shafts are made of the best grade of STEEL. STEEL GEAR—All surface joints planed, insuring good solid bearings.

There is no one to dispute, and prove his claim, that this is not the best Machine on the market today.

We guarantee all we claim with a guarantee which is good, no verbal promises.

Write for Prices and Terms.

C. & A. POTTS & CO., - Indianapolis, Ind.

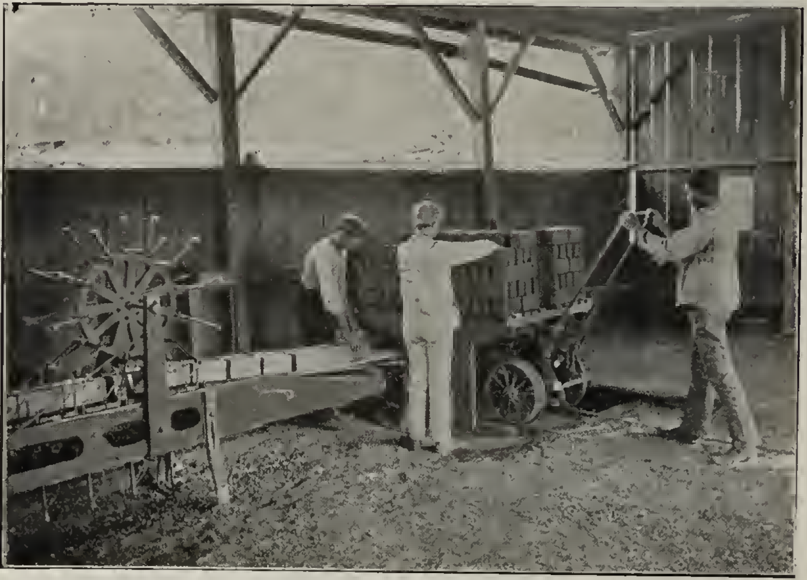
A PERFECT CAR SYSTEM

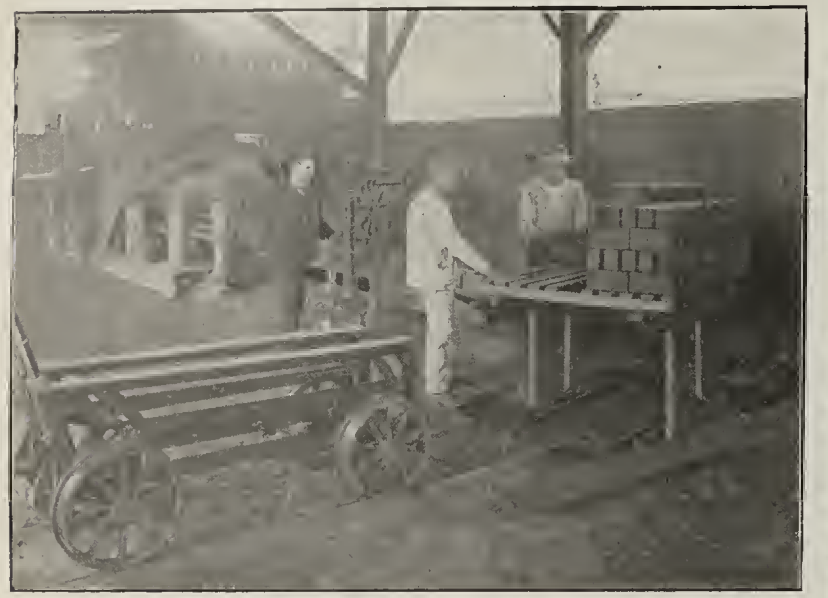
For Either Soft or Stiff Mud.

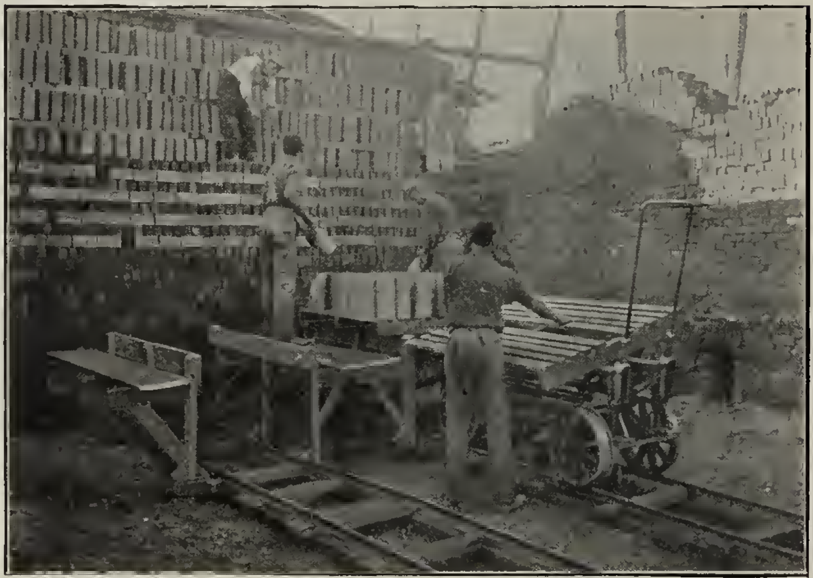
With only TWO CARS

One man will handle 40 M brick per day.

No Fan to Run. No Boiler to Steam.
No Pipes to Burst. No Fireman to Pay.
No Dryer. No Fuel.







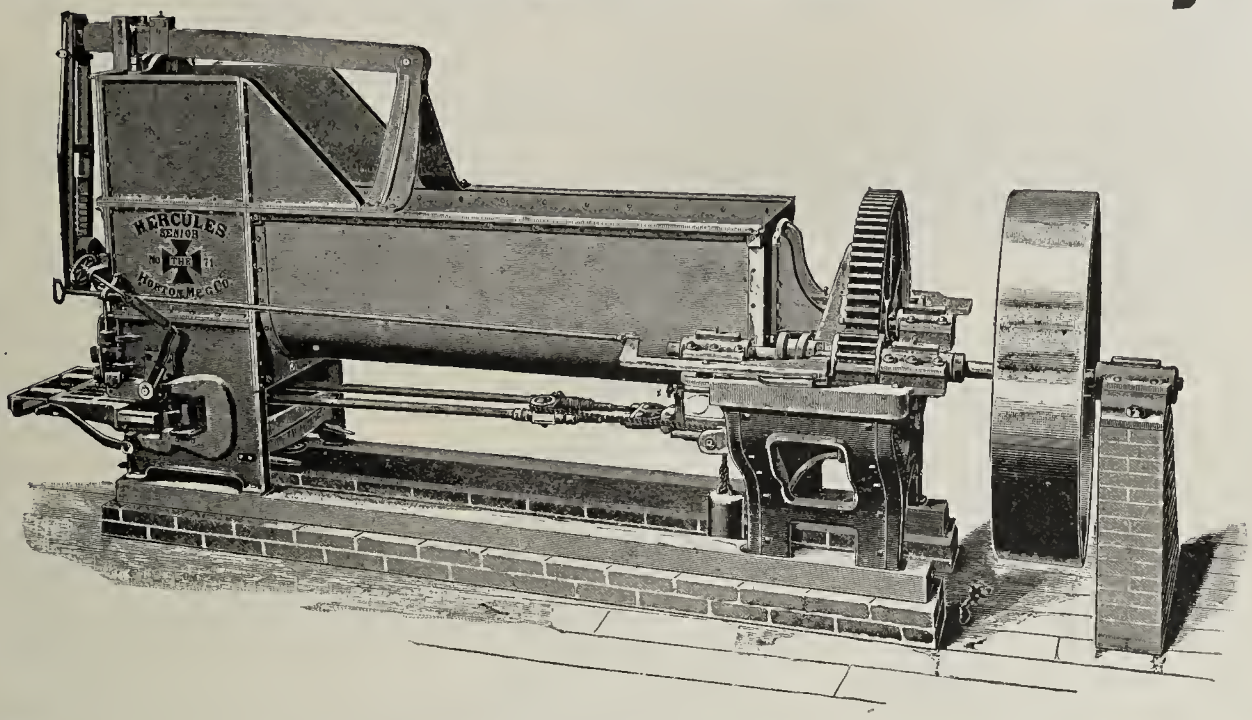
We Guarantee This to be the cheapest, best and only out-door car system ever offered the brick manufacturer. We guarantee to handle from the machine and put on the yard in good condition, from thirty to forty thousand green brick per day, with one man, and same amount to kiln. We guarantee our patent car and system to perform the work for which they are built, and all the workmanship and quality of material to be first class. Our Covers and Storm Curtains give absolute protection from rain and storms and also protects tender clays.

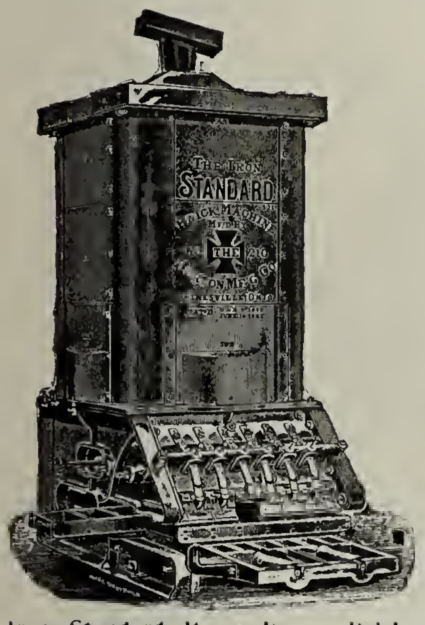
THIS SYSTEM consists of two elevating and lowering brick cars for a thirty to forty thousand capacity brick plant; these take the place of several hundred common cars. The car is made of channel steel, with movable deck, which is raised and lowered by a compound lever. From two to five hundred brick are taken from the machine and placed on a pallet, the lever lowered, raising pallet off the rests. The load is then on car, which is run on the yard to the rests along each track; the lever is again raised, thus lowering deck of car which places load on the rests.

Scotts Patent Brick Car Co.,

Write for Catalogue. Knoxville, Tenn.

The HERCULES Works the Clay Stiff.

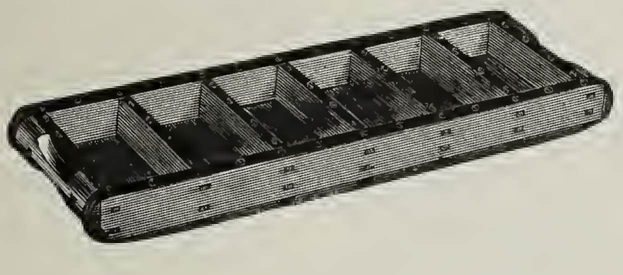


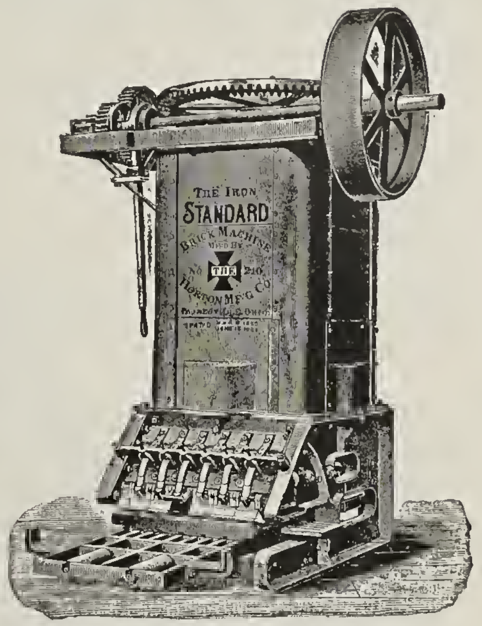


Iron Standard Horse Power Brick Machine—The Leader of all Horse Power.

MOLDS.

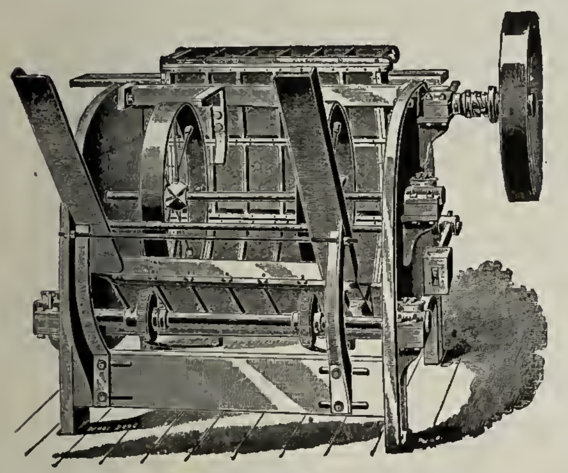
Is one of our Specialties. Either Hand, Machine or Shapes. We have a shop full of Special Machinery for the Manufacture of these as well as Trucks of all kinds, Wheelbarrows. Dump Cars, and Carts. In fact everything used on a Brickyard.





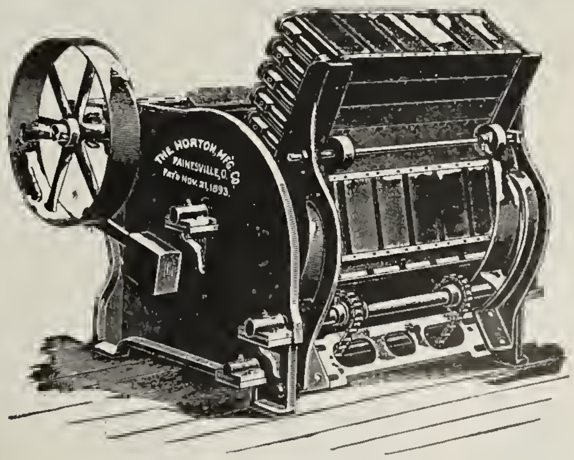
Standard Steam Power Brick Machine—Just the Machine for Medium Sized Yards.

The Mold Sanders That "Sand"



No. 1 Sander for Pallet System.

TWO STYLES.


THE HORTON MFG CO.
PAINESVILLE, O.
PAT'D NOV. 21, 1893.

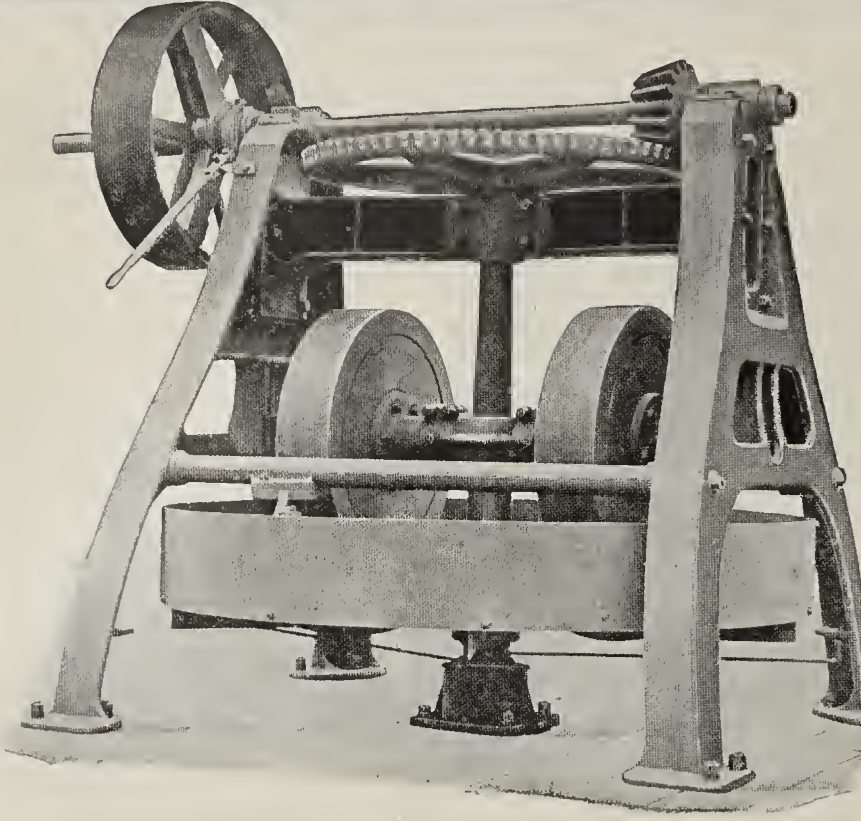
No. 2 For Open Yards.

THE HORTON MANUFACTURING CO.,

Mention The Clay-Worker.

Painesville, Ohio, U. S. A.

Modern Brick Machinery.



9-Foot Iron Frame Dry Pan.

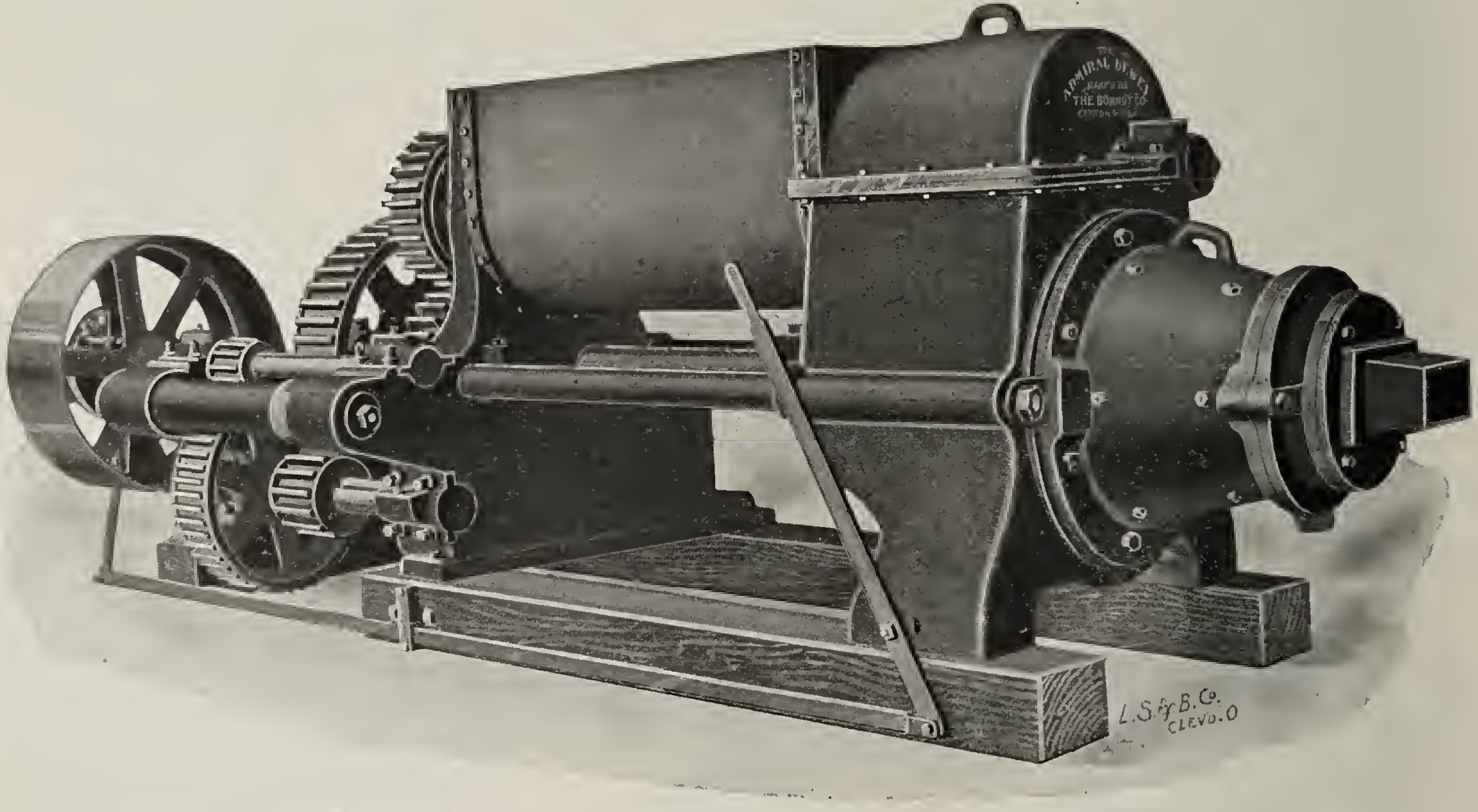
Office of
THE ROYAL BRICK COMPANY,
MANUFACTURERS OF
The Royal Block and Iron Rock Street Pavers,
Building, Fire, Sewer and Sidewalk Brick.

Canton, Ohio, January 6, 1902.
The Bonnot Company, Canton, Ohio.

Gentlemen—Our works are equipped throughout with Bonnot Machinery and we are pleased to say that it is satisfactory in every way. We have your No. 1 Brick Machine and Automatic Cutting Table and have made as many as 65 000 brick in ten hours, although you only guaranteed the machine for 50,000. The table does not give us the slightest trouble and requires very little attention.

Your represses and dry-pans are also very satisfactory and we are well pleased with the entire outfit. Very truly,

The Royal Brick Company.
Otto Geissen, Secretary.



ADMIRAL DEWEY SPECIAL COMBINED MACHINE. 100,000 DAILY CAPACITY.

Brick Machines of any capacity from 10,000 to 100,000 daily.
Automatic Side-Cut Table—Simple, Accurate and Durable.
Dry Pans, Represses, Screens, Pug Mills, Elevators, Cars, etc.

A COMPLETE LINE OF
BRICK, POTTERY and CEMENT
——MACHINERY.

The BONNOT CO.,

Write for our New
Descriptive Catalogue.

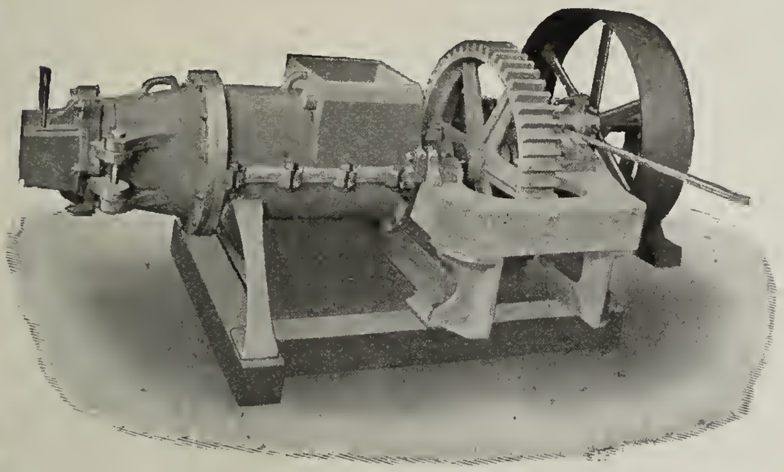
CANTON, OHIO, U. S. A.

Mention The Clay-Worker.

BRICKYARD SUPPLIES

We always have a large stock and guarantee prompt delivery.

The Henry Martin Brick Machine Mfg. Co.,
LANCASTER, PA.

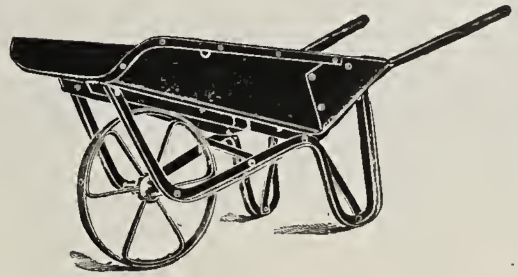


◆ ◆ ◆

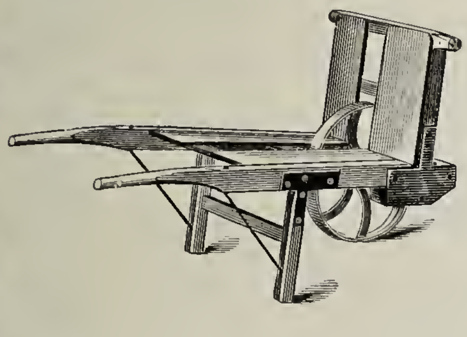
Our No. 2 Auger Machine is especially suited for drain tile, hollow brick, etc.

◆ ◆ ◆

Have you seen our new Steel Dump Barrows? They are just the thing for handling clay, sand, ashes, etc.



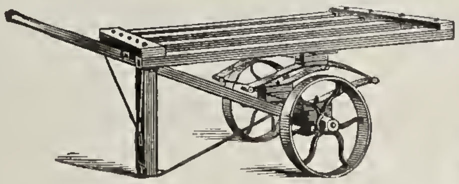
DO YOU HAVE A COPY OF OUR GENERAL CATALOGUE?



Brick plants equipped complete in every detail, including all the machinery, dryer and engine and boiler.

Send us a sample of your clay. We will examine it without charge.

We furnish everything a brickmaker needs.

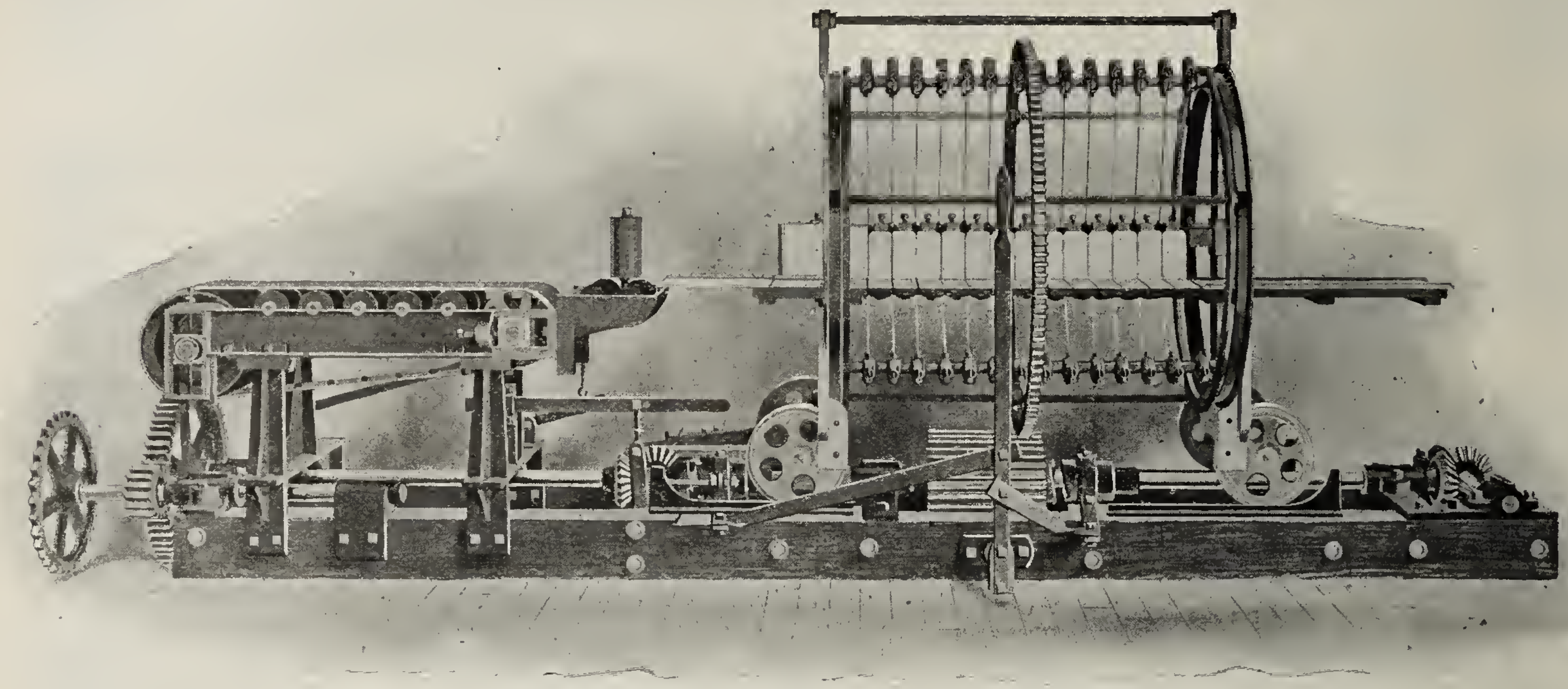


THE CUTTER THAT EXCELS

IS THE

Wonder Semi-Automatic Side Cut Brick Cutter.

Works Clay Where Others Fail.
Makes Brick Equal to Dry Press Brick.



SEMI-AUTOMATIC SIDE CUT BRICK CUTTER.

This Cutter is simplicity itself, and is a success in every particular.
Is operated with one-half the expense of an Automatic.
No feathered edges—no cracked or crooked brick.
Absolute down cut. Nothing on the market like it.
Detailed information cheerfully given. Write us.

The Wallace Mfg. Co.,

FRANKFORT, IND., U. S. A.

SOUTHERN AGENTS:
Atlanta Brick Machinery Co.,
403 Prudential Building, ATLANTA, GA.

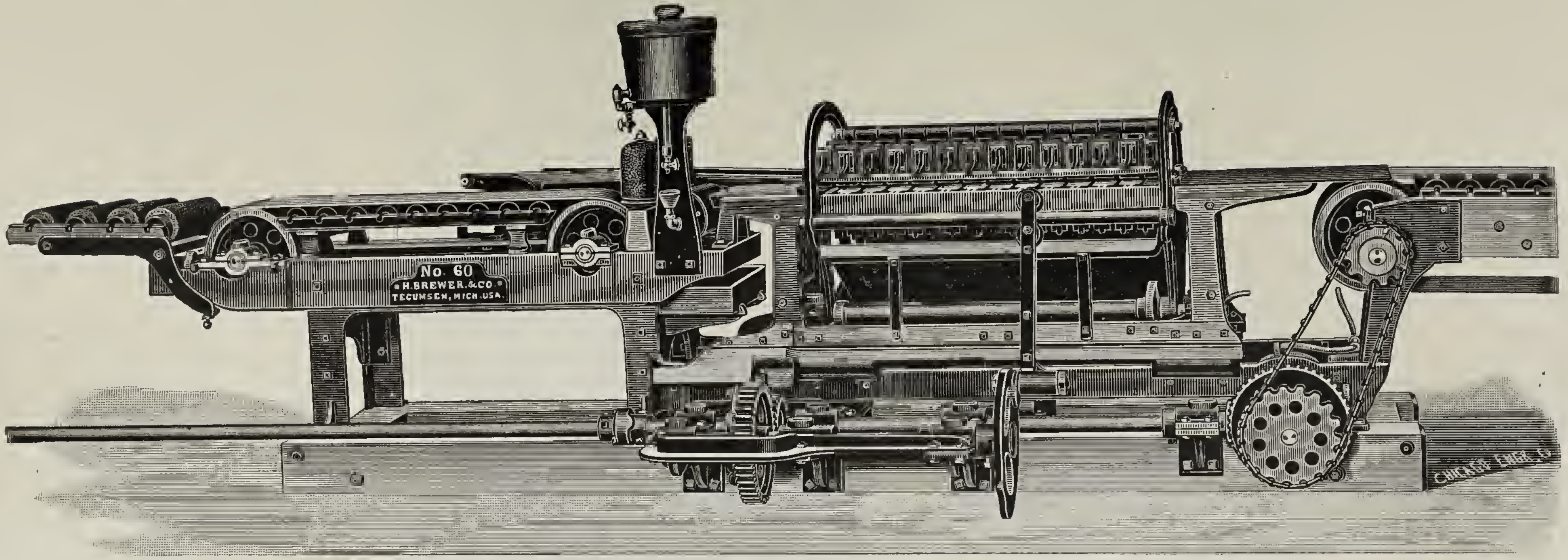
WESTERN AGENTS:
Chicago Brick Machinery Co.,
225 Dearborn Street, CHICAGO, ILL.

Mention The Clay-Worker.

ANY BRICKMAKER CAN AFFORD TO USE A

Brewer No. 60 Automatic Brick Cutter

Whether he makes 20,000 brick a day five months in the year or 80,000 every day the year around. It will save him money.



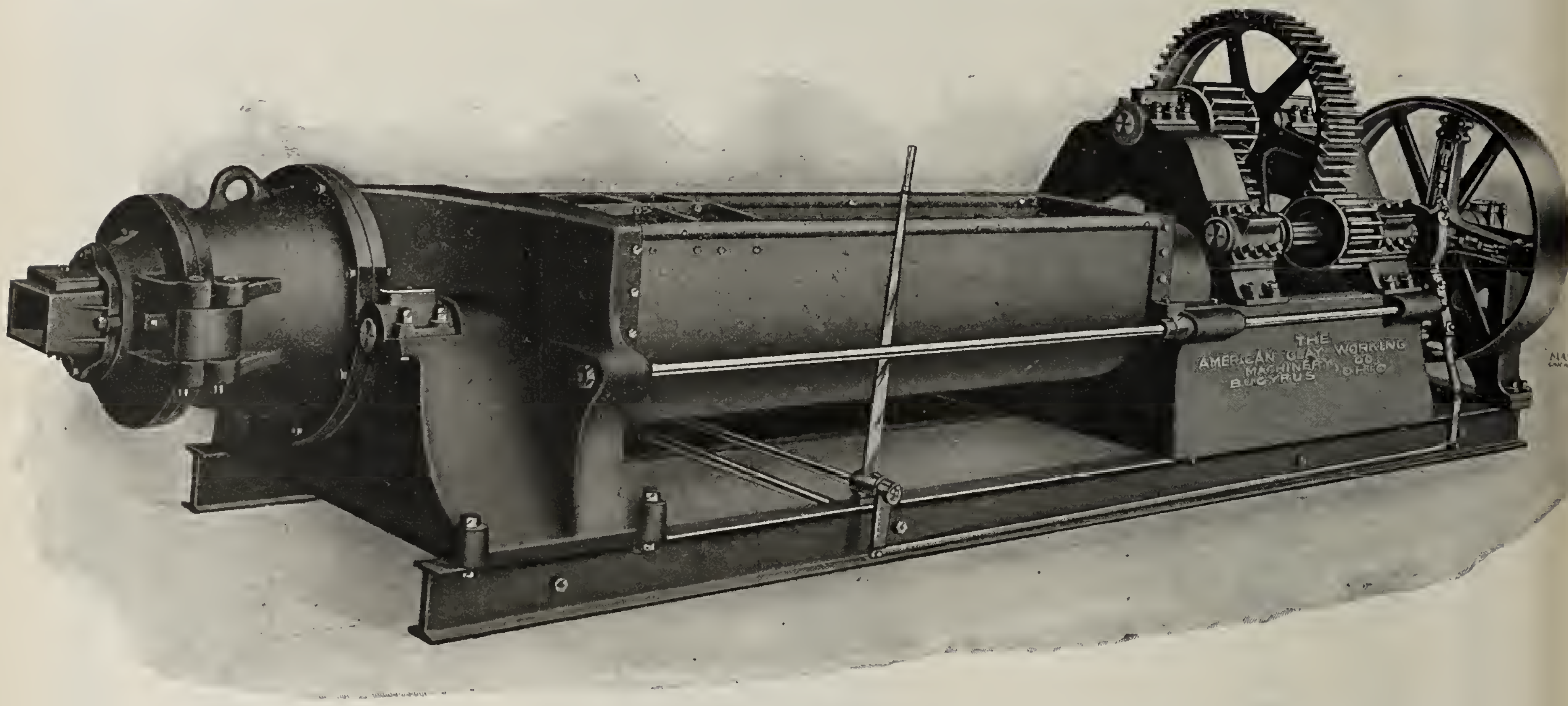
THE BREWER NO. 60

is a machine of demonstrated merit, of simple design, and perfect execution. There are plenty of them in operation, and if you wish we will tell you where to go and see them work. They are sold under guarantee of satisfaction, and the price is right.

H. BREWER & COMPANY,
Tecumseh, Michigan.

BIFURCATED MACHINE.

This new type of Combined Machine has many points of superiority. Its strength factors are away above the average. The placing of the pugging cylinder by the side of the expressing cylinder removes all objections to a combined machine. The clay is forced by pressure from the pugging cylinder into the expressing cylinder. On the old style combined machine the pugging was done above the expressing cylinder, and the clay fell by gravity through a throat to the brick machine. The clogging or barreling up of the clay caused no end of trouble. This new machine removes this serious objection. The side by side arrangement makes the machine much lower down, saving in height of the building, length of elevator, etc., and places the operator on the floor level instead of on a raised platform as formerly. This makes the machine more easy to operate and with a saving of labor. It makes better brick and insures steady operation. The machine is mounted on substantial steel I-beams, and as shown weighs 25,000 pounds. Built in three sizes. Capacity 35,000 to 100,000 brick in ten hours. It can be equipped with our automatic cutters and will work a greater variety of clays than any other combined machine on the market. The careful and honest construction of this machine insures its successful operation.



Write for complete particulars.

The American Clay-Working Machinery Company,

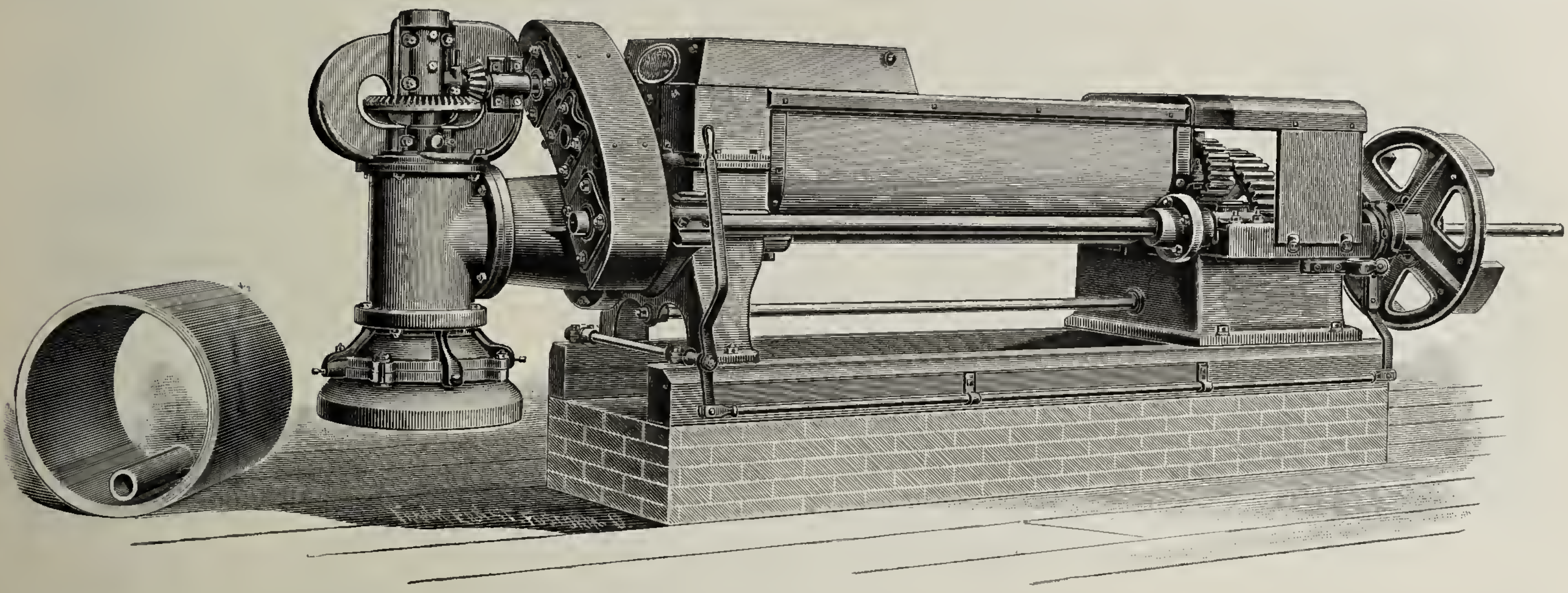
Bucyrus, Ohio, U. S. A.

New York Office,
39-41 Cortlandt St.
Chicago Office,
Merchants' Loan and Trust Bldg.
European Office,
3 Gore St., Picadilly, Manchester, Eng.

A NEW COMBINATION.

◆◆◆◆◆◆◆◆◆◆◆◆◆

INVESTIGATE IT THOROUGHLY.



Recognizing the fact that the average tilemaker does not sufficiently pug the clay he uses we have arranged our famous "Hummer Combined" Brick Machine so as to make all sizes of drain tile from 2½ inches to 24 inches.

Sizes 2½ inches to 8 inches, delivered horizontally and the larger sizes vertically. This machine, with a "Bensing" Automatic Tile Cutting Table, makes the most complete outfit for the manufacture of drain tile and hollow building blocks on the market.

We would like an opportunity to make you thoroughly acquainted with the good qualities of this Machine. A postal card from you will bring the information.

The J. D. FATE CO.,

B. E. LaDOW, Western Agent,
1210 Chamber of Commerce, Chicago, Ill.

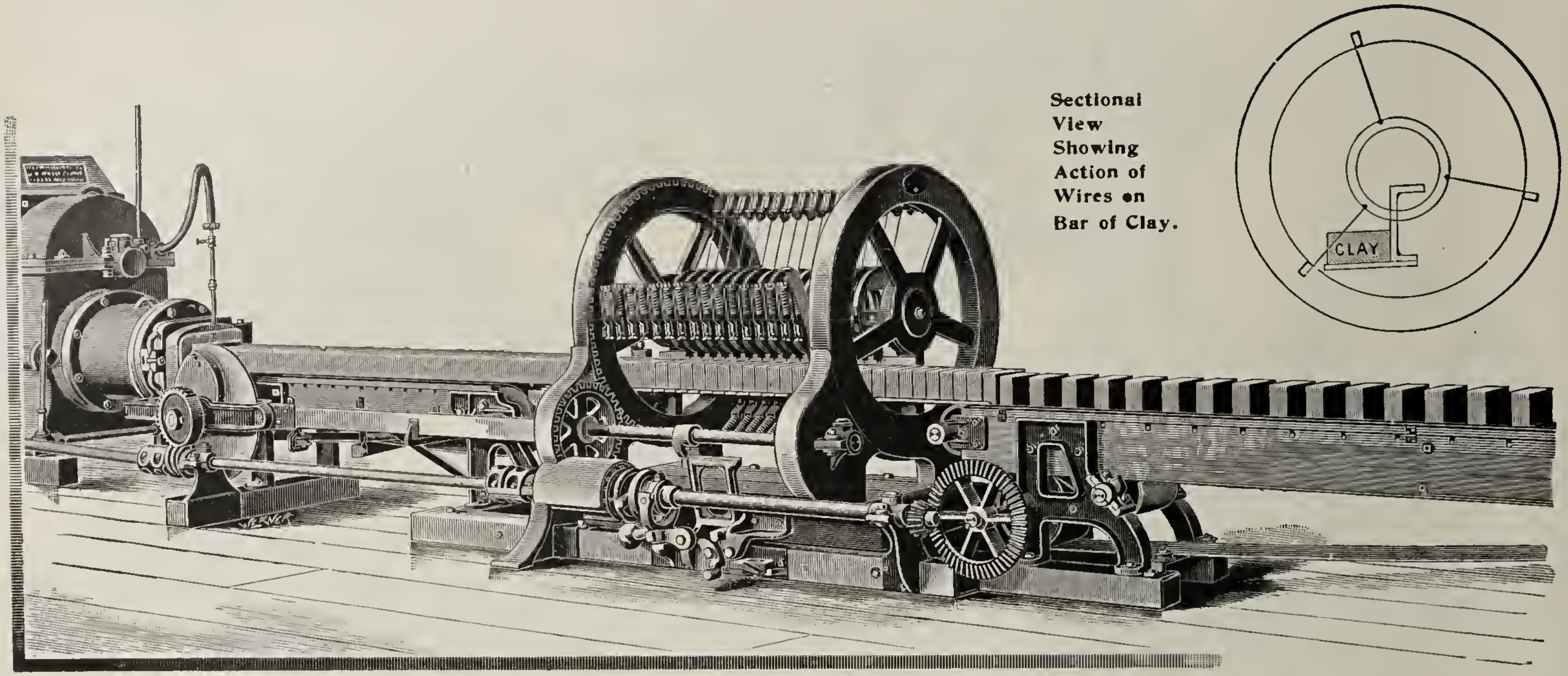
Plymouth, Ohio.

Mention The Clay-Worker.

NO OTHER

AUTOMATIC CUTTER

Is "Just as Good" as This.



Sectional View Showing Action of Wires on Bar of Clay.

ROTATING AUTOMATIC CUTTER. Patented.

Why waste time and money using Cutters which are frequently out of order and cannot be depended upon to do good work?

Why not produce brick of **finest quality** when it can be done with less expense?

A multitude of others have found it profitable to use this Apparatus.

Why should you not use it also?

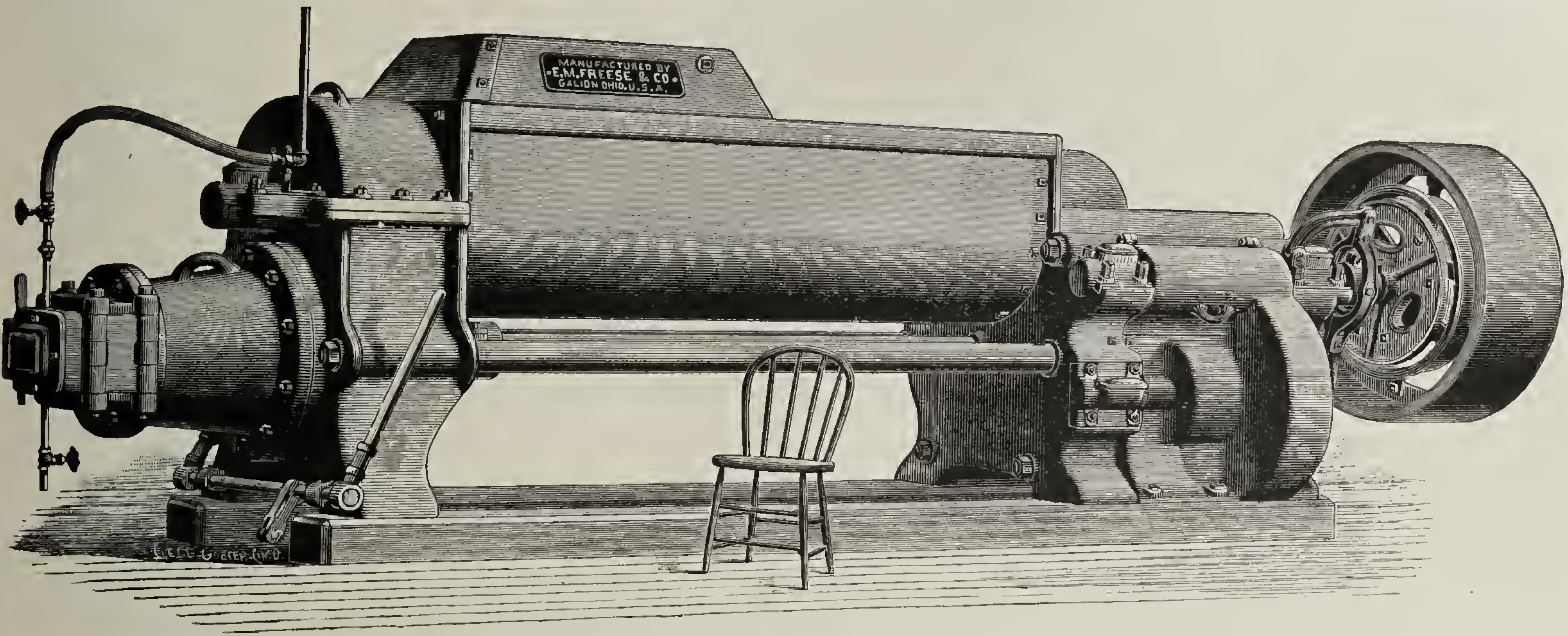
You will be satisfied with it.

We will prove this statement if you will give us opportunity.

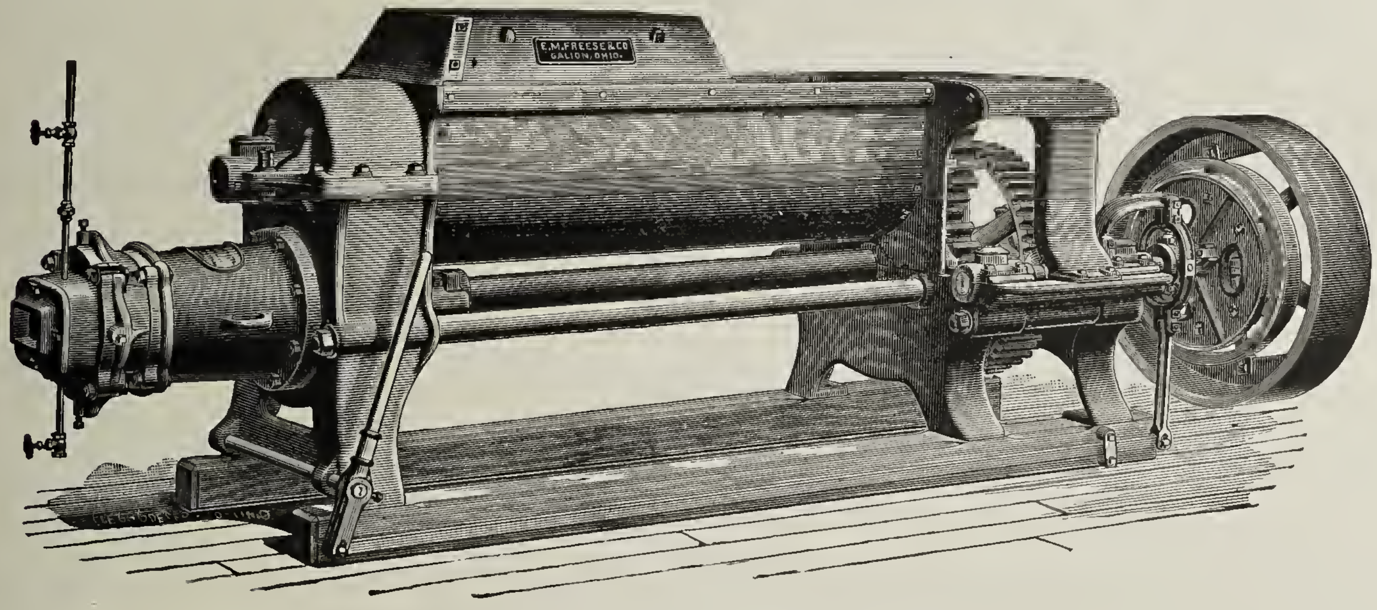
E. M. FREESE & CO.,
Galion, Ohio.

Union Brick Machines

With Pug Mill Combined.


MANUFACTURED BY
E.M.FREESE & CO.
GALION OHIO U.S.A.

UNION BRICK MACHINE. (SPECIAL SIZE.)



UNION BRICK MACHINE. (No. 1 SIZE.)

We build these Machines in five (5) sizes.

Their reputation for convenience, enconomy and satisfactory service generally is established by their use in scores of the best Brick Plants.

E. M. FREESE & CO.,
Galion, Ohio.

Mention The Clay-Worker.

SOME OF THE ARTICLES WE MAKE

Horizontal & Vertical Brick Machines

Clay Granulators,
Clay Elevators,
Clay Cars, Pug Mills,
Revolving Dump Tables,
Tempered Steel Brick Strikes,
Kiln Castings,
And other castings.

◆ ◆ ◆

Friction Winding Machines,
Friction Clutches,
Friction Clutch Pulleys,
Friction Cut-off Couplings.

◆ ◆ ◆

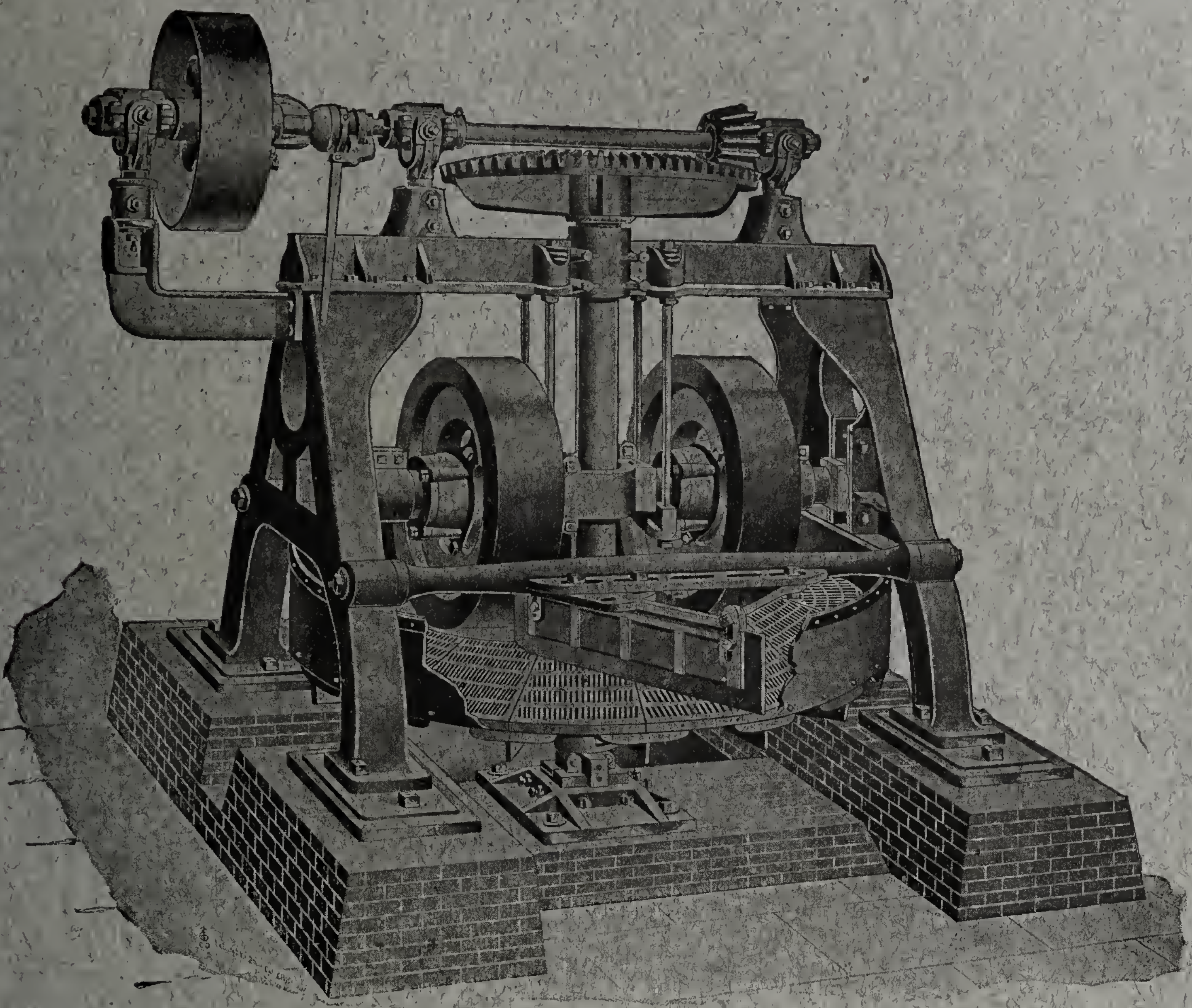
Power Freight Elevators,
Hoisting Machines,
And Some Other Things.

Have printed descriptive sheets describing many of these articles, which we will be happy to furnish, with prices on application.

It's not our aim to build the cheapest but we do try to build the best. Better Investigate Them.

The Eastern Machinery Co.,

NEW HAVEN, CONN.



The FROST DRY PAN.

The ORIGINAL and BEST Dry Pan in the market. More of these Dry Pans in use to-day than all others combined. All sizes: both Wood and Iron Frames. Used by every Prominent Brick Manufacturer. ☛ Less repairs are required for the Frost Dry Pan than any other make. This is a very important fact. High Grade Automatic and Throttling Steam Engines, Horizontal Tubular Boilers and Plain and Submerged Tube Vertical Boilers. ☛ Send for Illustrated Catalogue.

The Frost Manufacturing Co.,

WORKS:
GALESBURG, ILL.

SALES DEPARTMENT:
135 Adams St., CHICAGO, Ill.

SCIENCE
TRIUMPHANT!

Science has achieved much for the manufacturer.

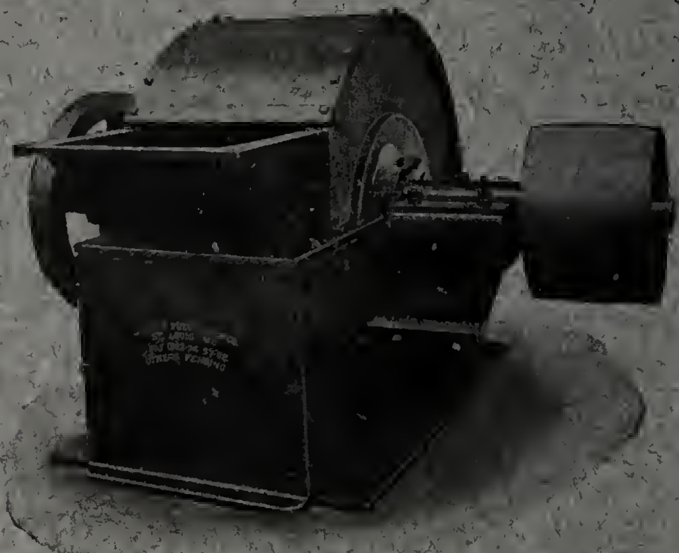
The "A B C" WASTE HEAT BRICK DRYERS can be classified with the money-saving inventions of the age. Manufacturers of brick will find in our apparatus a process of fuel saving and a system of drying that insures the highest percentage of "A-1" product.

Our catalogue will be sent upon receipt of postal request.

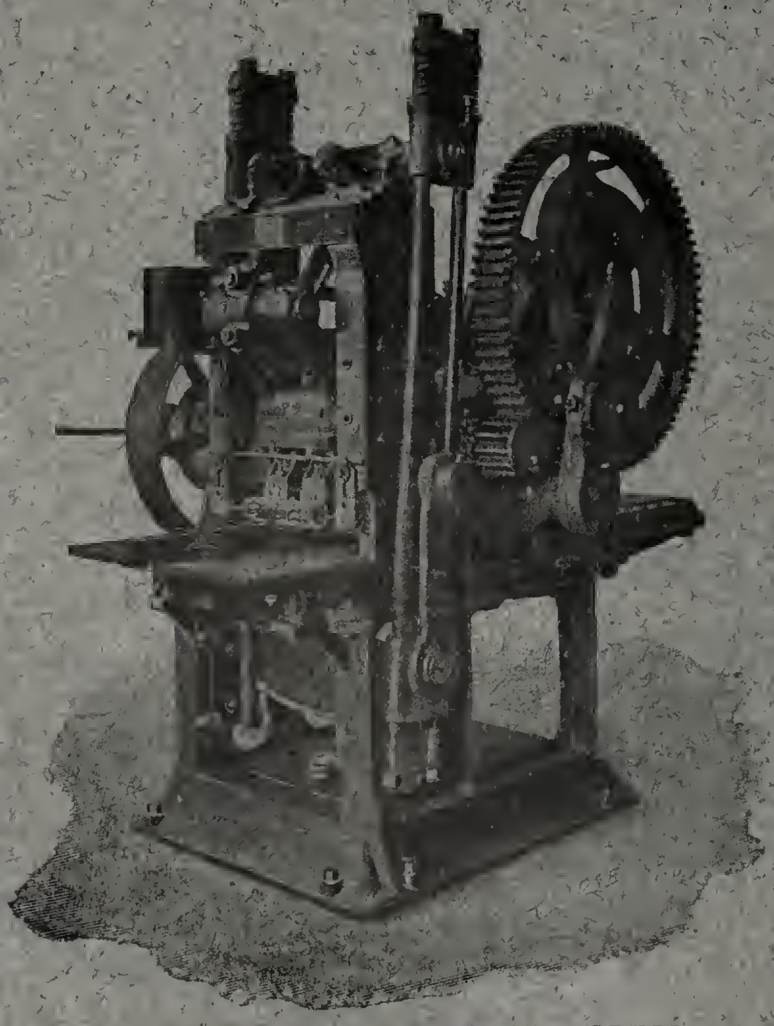
New York, Chicago, London. AMERICAN BLOWER CO., DETROIT, MICH.

L. C. LINE ADV. DET.

Schoellhorn and Albrechts'
PATENT
Pulverizers, Breakers and Disintegrators



St. Louis Pulverizer Company,
416 N. Main St.,
ST. LOUIS, MO., U. S. A.



THE RICHARDSON DOUBLE DIE REPRESS.

WE ARE PREPARED to make steel dryer cars of any design.

We would be pleased to have you examine our cars, for experience convinces us that you will find them to be just what you want.

The large number of duplicate orders we are receiving must mean something.

Also hand and steam represses,
Steam dry presses (two mould),
Sword Brick Machines.

The Ohio Ceramic
Engineering Co.,
CLEVELAND,
OHIO.

Table of Contents, Page 160.

THE CLAY WORKER
A JOURNAL DEVOTED TO ALL CLAY WORKING INTERESTS.
INCLUDING BRICK TILE TERRA-COTTA SEWER PIPE POTTERY ETC.
T. A. RANDALL & CO. PUBLISHERS.
CHANDLER SC. INDPLS.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. XXXVIII, No. 2. INDIANAPOLIS, IND., AUGUST, 1902. $2.00 a Year in Advance.

Automatic Side-Cut and End-Cut Brick Machines.

A Strong Endorsement From An Experienced Brickmaker.

* * *

Durant, Miss., May 28, '02.

To Mr. Theo. Granberry, Hazlehurst, Miss.:

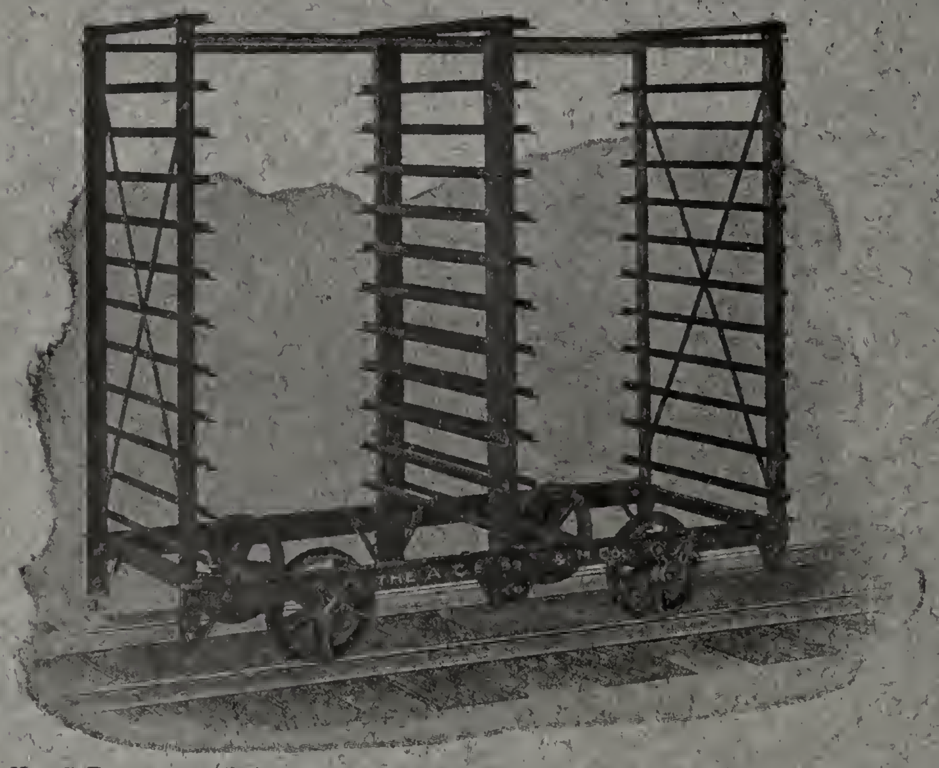
Dear Sir—The Chambers Brick Machine is the most satisfactory brick machine we have ever run, and if there is any money in the brick business it will do its part in getting it out. Yours truly, A. J. LOVE.

* * *

CHAMBERS BROTHERS COMPANY,

FIFTY-SECOND STREET, BELOW LANCASTER AVE.,
PHILADELPHIA, PA.

DAVIS BROWN, Chicago Agent,
59 West Jackson Blvd.



No. 137 Rack Car with Wright's Patent Malleable Corner and Center Upright Brackets.

We also make a full line of

Dump Cars, Turn Tables, Transfer Cars, Track Switches, Etc.

Write for Circular.

The ATLAS CAR AND MFG. CO.,
(THE ATLAS BOLT & SCREW CO. PROPRIETORS.)
Cleveland, Ohio.

CARS!

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Of every description in the World.

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INDEX TO ADVERTISERS.

Brick Machinery—Dry Press Process.

Name. Page.
Anderson Foundry and Mach. Works 110
Chicago Brick Machinery Co.. 175
Chisholm, Boyd & White Co.... 104, 105, 106, 107
Fernholtz Brick Machinery Co. The 109
Ill. Supply & Construction Co. 111
Ross-Keller Brick Machine Co 108

Brick and Tile Machinery.

American Clay-Working Mach Co., The 185, 194
Anderson Foundry and Mach. Works 110, 184
Brewer. H. & Co 191
Bonnot Co. The 192
Chambers Brothers Co 101
Chicago Brick Machinery Co... 175
Eastern Machinery Co, The.... 198
Fate & Co., The J. D 195
Freese, E. M. & Co 165, 196, 197
Henry Martin Brick Mach. Mfg Co., The 190
Hen-ley, I. W 103
Horton Mfg. Co., The 187
Ill. Supply & Construction Co. 111
Kells Foundry and Machine Co 173
Leader Mfg. Co, The 184
Madden & Co 171
Ohio Ceramic Engineering Co., The 200
Potts & Co., C. & A. 188, 189
Raymond Co., The C. W 161
Stedman Foundry and Machine Works 113
Steele & Sons, J. C 183
Wallace Mfg. Co, The 193
Wellington Machine Co, The... 163
Wiles Co., A. M. & W. H 175

Brick Kilns and Dryers.

American Blower Co, The...... 200
Barron Dryer Co 176
Bushong, M. M 178
Crown Dryer Co., The 180
Economy Dryer and Oil Burning Co 167
Eudaly, W. A 177
Haigh, H 174
Illinois Supply and Construction Co, The 111
Justice, I. M 177
Morrison & Co., R. B 174
New York Blower Co., The 181
National Dry Kiln Co, The..... 180
Phillips, S. G 168
Pike, E. M 174
Platt Triple Draft Kiln Co. 166
Reppell, L. H 177
Sharer, Geo. W 181
Standard Dry Kiln Co, The..... 116

Brick Yard Supplies.

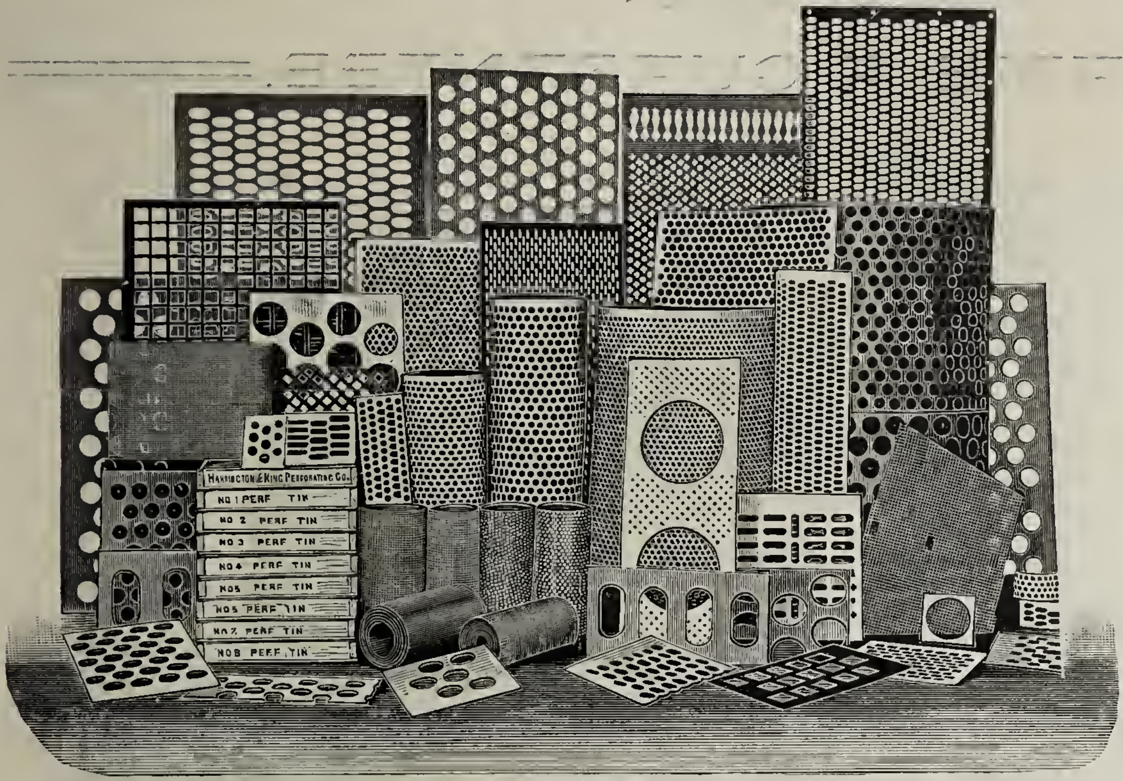
Atlas Car & Mfg. Co. 102
Arnold, D. J. C 113
Bechtel, B. E 179
Cleveland Car Co 182
Caldwell & Son Co., H. W 171
Carnell, Geo 178
Central Iron Works 167
Cox, Geo. S 174
Dunlap Mfg. Co 170
Fernholtz Brick Machinery Co., The 109
Frost Manufacturing Co 199
Gandy Belting Co., The 169
Gray, S. B 174
Harrington & King Perforating Co, The 103
Henry Martin Brick Machine Mfg. Co., The 191
Horton Mfg. Co, The 187
Jeffrey Manufacturing Co, The. 172
Kendall & Flick 171
Marion Steam Shovel Co 182
Main Belting Co 170
Mershon, Schuette, Parker & Co 168
National Musical String Co.... 175
Phillips & McLaren 173
Rockwood Mfg. Co, The 173
Smidth & Co., F. L 178
Scotts Patent Brick Car Co 186
St. Louis Pulverizer Co 200
Thew Automatic Shovel Co, The 183
Wells & Hall 170
Williams & Co., M. F 179
Williams Patent Crusher and Pulverizer Co 112

Miscellaneous.

American Ceramic Society 114
American Road Machine Co... 171
Avery Stamping Co 160
Big Four Route 173
Bloomfield Clay Co 114
Caldwell Co., W. E 172
Chesapeake & Ohio R. R 174
Clinton Metallic Paint Co...... 168
Clinton Paving and Building Brick Co., The 115
Crown Fire Clay Co., The 169
Dean Bros. Steam Pump Works 170
Evens & Howard 169
Evert & Co., H. C 172
Gabriel & Schall 171
Hook, F. E 176
Indianapolis Engraving and Electro Co 170, 172
Indiana, Decatur & Western ... 173
Indiana Paving Brick Co...... 114
Johnsonburg Vitrified Brick Co 114
Kaufman Burial Vault Co 176
Lake Erie & Western 171
McAvoy Vitrified Brick Co 115
J. L. Mead Cycle Co 172
Miller Oil and Supply Co 172
New York Brick and Paving Co 114
Ohio Steam Pump Co., The... 172
Ohio State University 170
Pennsylvania Line 174
Purington Paving Brick Co, The 115
Perrine & Son, H. C 171
Reese-Hammond Fire Brick Co 169
Richardson, W. D 170
Roessler-Hasslacher Chemical Company, The 179
Sangamo Brick Co 115
Savage Fire Brick Co 167
Terre Haute Brick and Pipe Co. 115
Vandalia Line 174
Wabash Clay Co., The 115
Ads., Small Wanted, For Sale, etc.

PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.



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CHUTE OR GRAVITY SCREENS.
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For —

PALLETS or TRAYS, CAR BOTTOMS, DRYING FLOORS, CONVEYOR BOTTOMS, SEPARATORS, Etc.

The Harrington & King Perforating Co., No. 231 North Union Street,
CHICAGO, ILL., U. S. A.

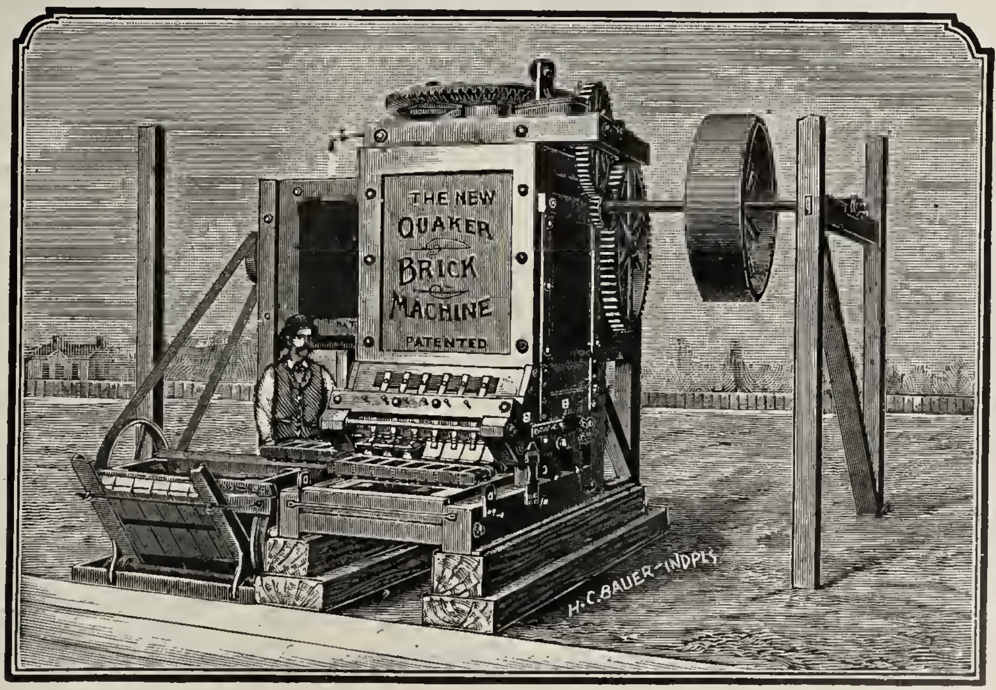
The Best for the Least Money.

Complete Combined Outfit, Consisting of the Extra Heavy Iron Quaker, Spiral Pug Mill and Mold Sanding Machines.

THIS OUTFIT is intended for fire brick, common brick, or street pavers. Its capacity is only limited by the ability to handle the product.

As will be seen, the manner of gearing has been simplified to the utmost extent, thus reducing the power required, so that a fifteen to twenty horse-power engine will run it with ease. No line or counter shafting necessary. No extra pulleys or belting.

I carry in stock a full line of first-class brickyard supplies at a very reasonable price.



No. 1 Spur Geared Style, Capacity 40,000 or More per Day.

JAMES W. HENSLEY,

Successor to
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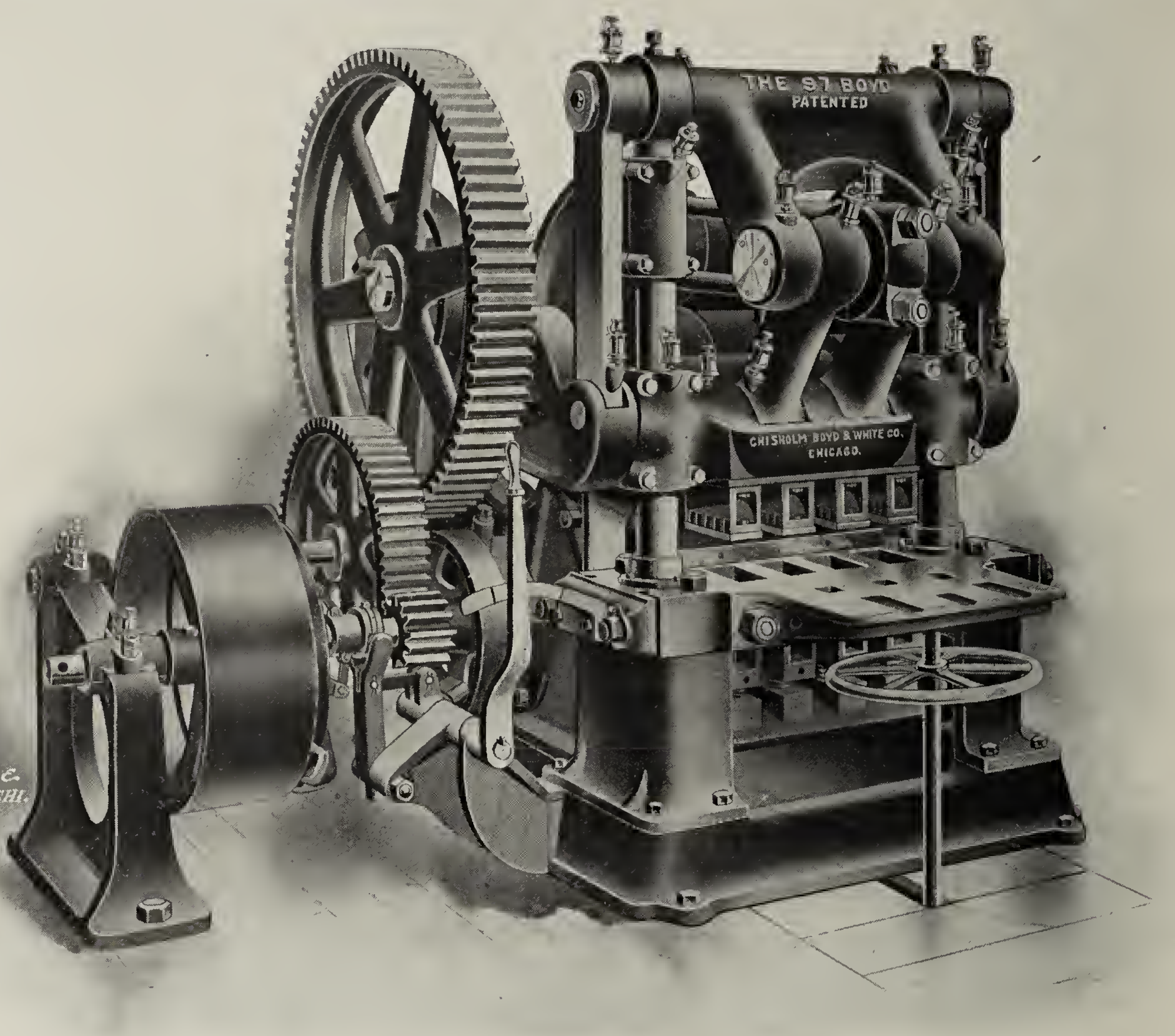
Indianapolis, Ind.

The Improved Boyd Brick Press.

The '97 Model.

IT'S NAME A GUARANTEE.



The '97 Boyd Brick Press has Enormous Strength and Great Durability: It is Compact; The Adjustments are Convenient; It Operates Quietly and Smoothly; The Workmanship and Material are of the best; The Design Ingenious, and shows the most Perfect Application of Scientific and Mechanical Principles to the Art of Brickmaking.

Sent on trial and subject to purchase after the making and burning of one or more Kilns of Brick.

Fifty Presses of this Pattern Now in Use.

Can not be broken in pressing brick. Fully Guaranteed.

Write for Descriptive Catalogue, No. 9.

CHISHOLM, BOYD & WHITE CO..

CHICAGO, U. S. A.

OFFICE AND WORKS:
57th and Wallace Streets.

Cable Address; CHISHOLM, CHICAGO.
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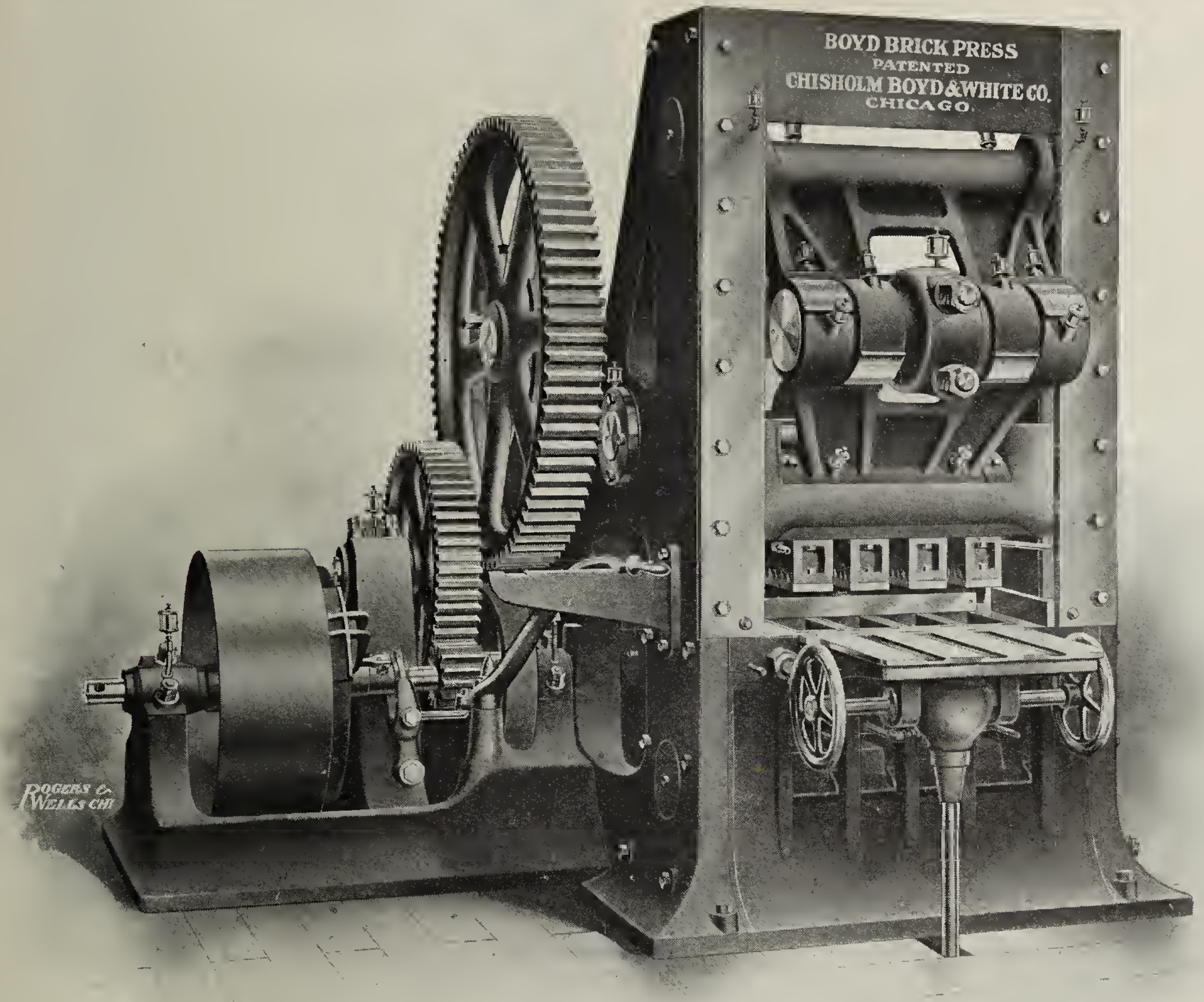
The BOYD BRICK PRESS.



The Boyd Brick Press will make Better Brick from Clay or Shale than can be made from the same material by any other press.

Especially adapted for Working Shales; and is the only Successful Machine for Making Fire Brick.

Its Record: More Boyd Presses in Actual Operation than of all other Press Brick Machines Combined.

Brick Plants of any desired capacity designed and constructed complete, Under Guarantee of Producing Satisfactory Burned Brick.

Write for General Catalogue No. 10.

CHISHOLM, BOYD & WHITE CO.,

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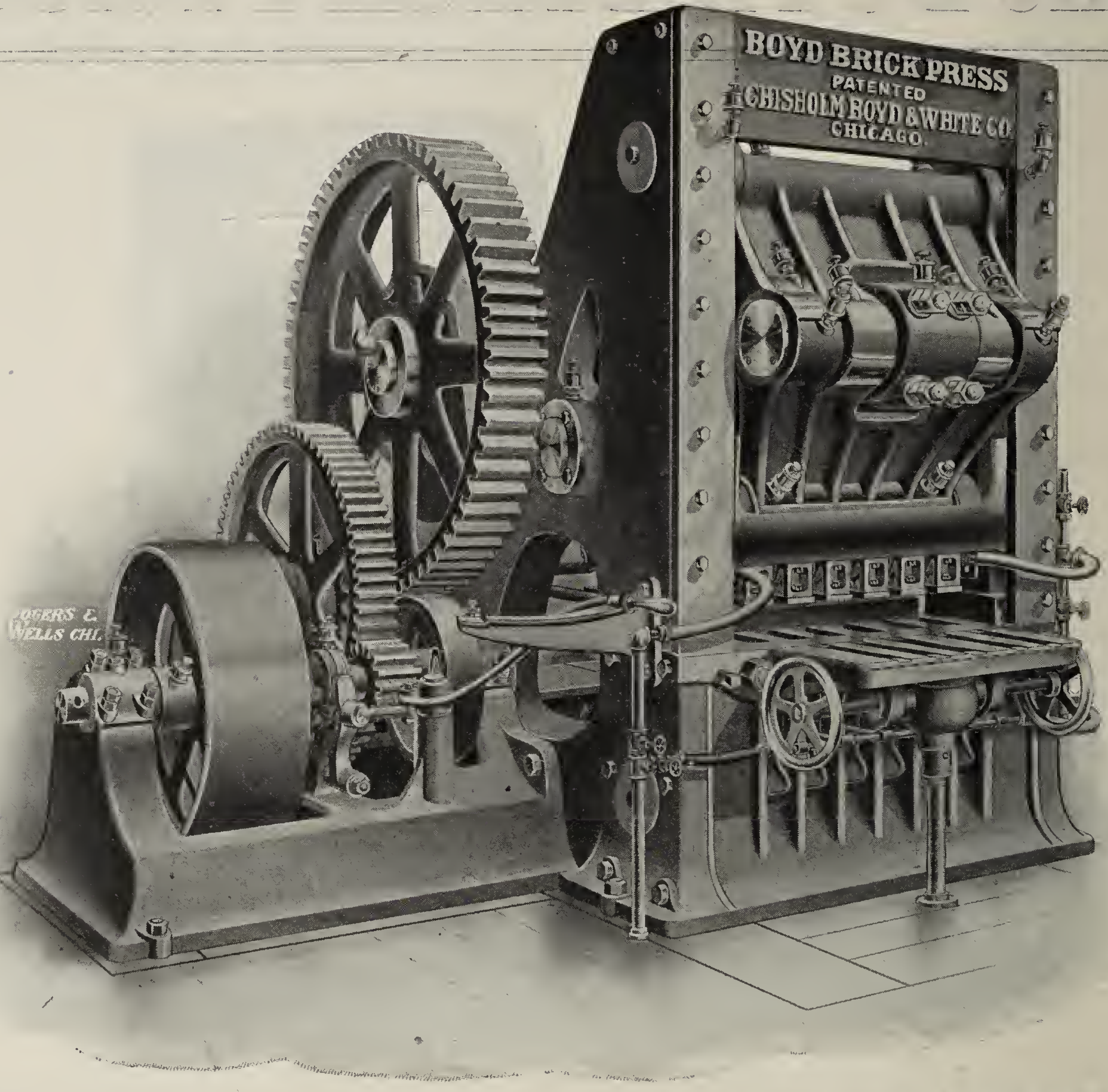
America's Greatest Brick Press.



Another Record for the Boyd Press!

Six of our Six-Mold Presses in use **on one yard** since 1892. Average cost of repairs for each machine $1.00 per year.

The Boyd Press exerts greater pressure than any other machine made. It is the only Press in which the lower plungers are independent of the lower crosshead. This feature positively ensures equal pressure and finish on both sides of the brick, and no granulated or soft centers.

The mold liners are made of the hardest and toughest known metal, and are guaranteed for two years. The movement of the Boyd Press is noiseless and without jar or shock; no rubber or air cushions, hooks, latches or other uncertain and unmechanical devices are employed. Write for General Catalogue No. 10.

CHISHOLM, BOYD & WHITE CO.,
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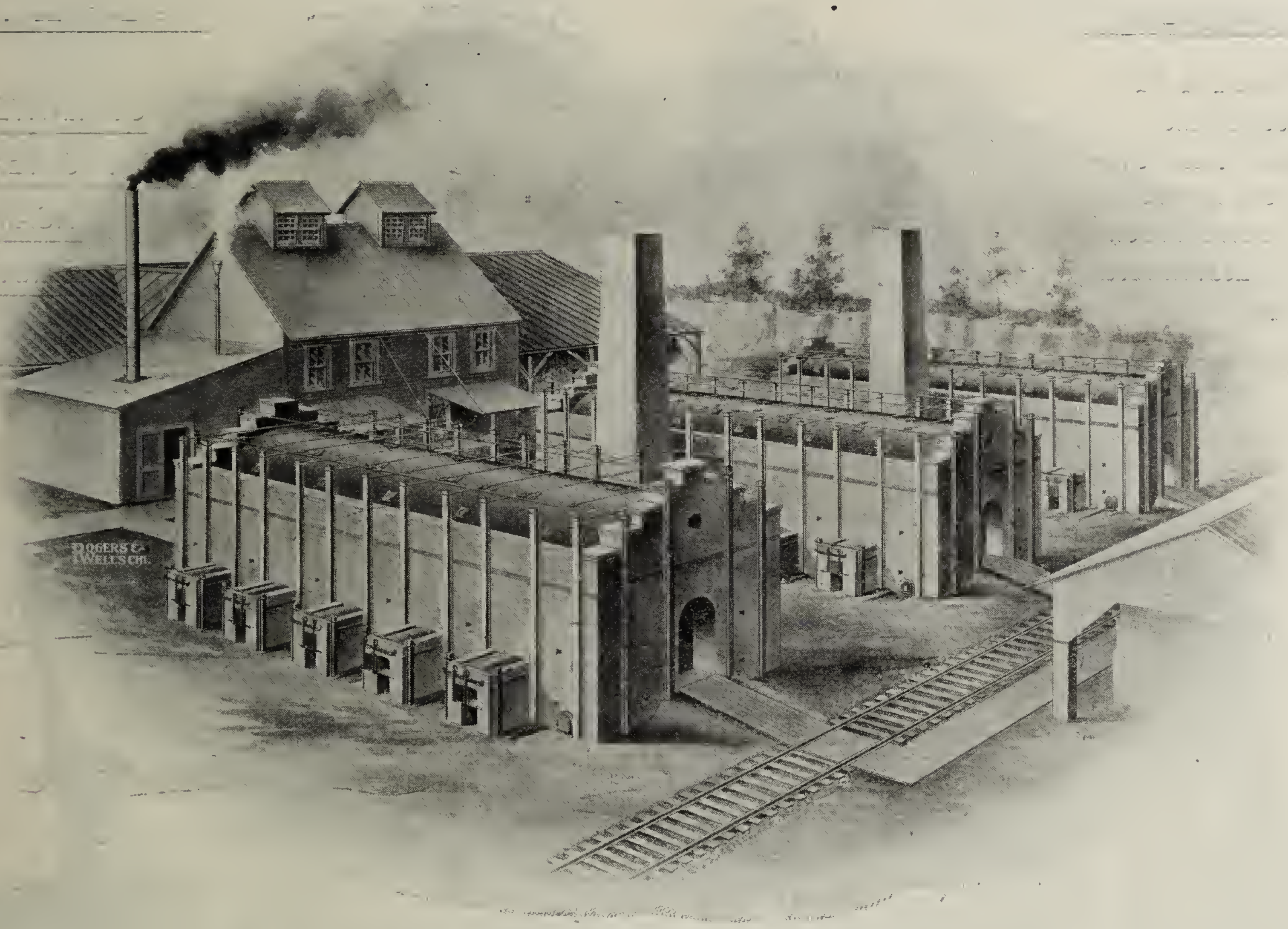
Mention The Clay-Worker.

Chisholm, Boyd & White Company,

ENGINEERS AND CONTRACTORS FOR BRICK PLANTS.

MANUFACTURERS OF

The Boyd Brick Press.


ROGERS & WELLS CH.

A MODERN BRICK PLANT—As Equipped by Us.

A Sure Thing—We are prepared to construct and equip a Brick Plant of any desired capacity, furnishing the brickmaking machinery and power plant, erect the necessary buildings and kilns, and turn the plant over to the purchaser in proper working order, under guarantee of satisfactory results.

Brick Plants designed and equipped by us have the highest reputation for efficiency. They are modern, up-to-date, compact, convenient in arrangement, and are not encumbered with unnecessary or useless machinery or appliances.

CORRESPONDENCE SOLICITED.

CHISHOLM, BOYD & WHITE CO.,

CHICAGO, U. S. A.

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The LATEST IMPROVED

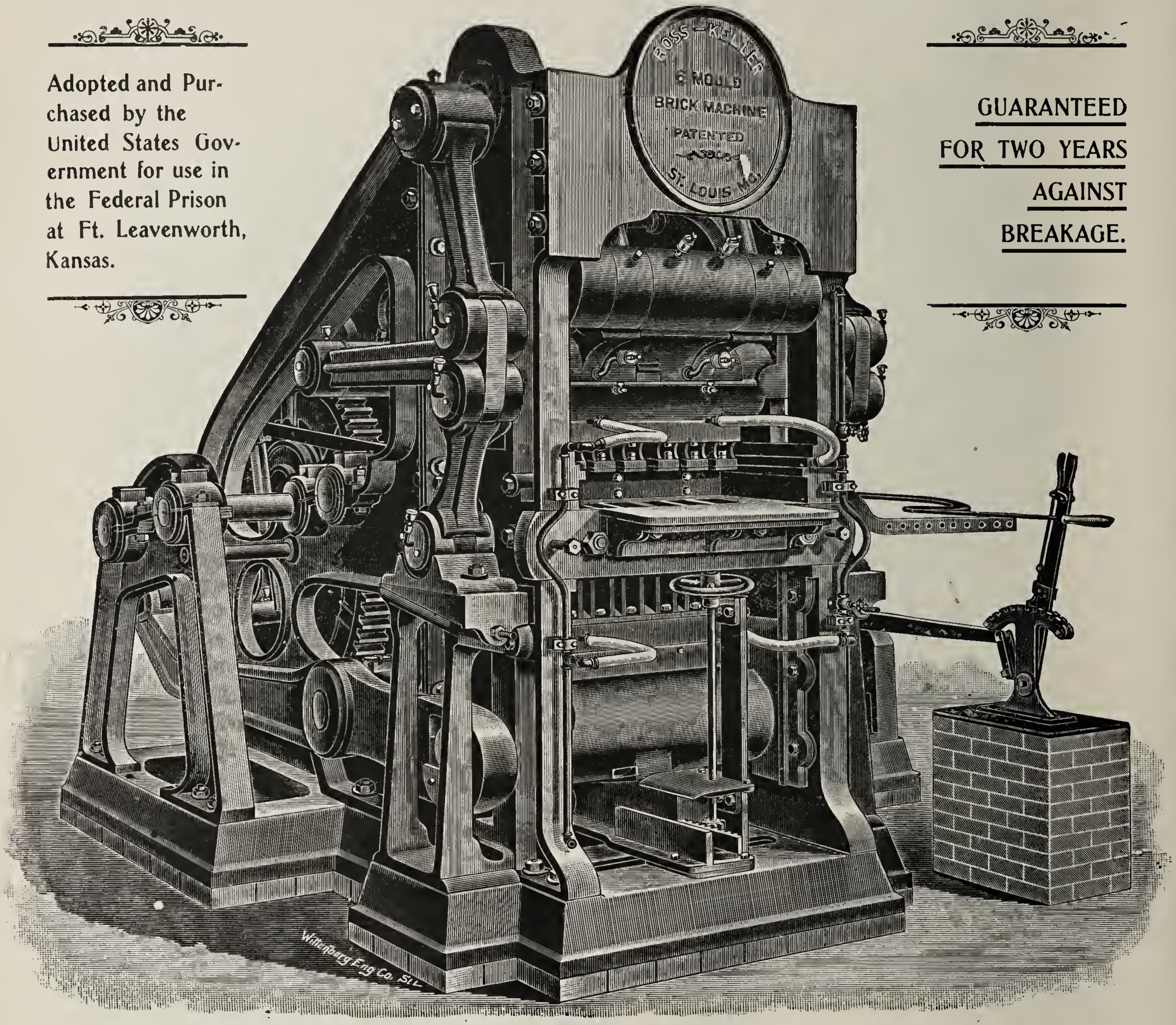
Ross-Keller TRIPLE PRESSURE Brick Machine

Manufactured in four and six-mould sizes. Weight of four-mould machine 58,000 pounds; capacity 24,000 brick per day. Weight of six-mould machine 75,000 pounds, capacity 35,000 to 40,000 brick per day.

BRICK SET IN KILN DIRECT FROM MACHINE.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

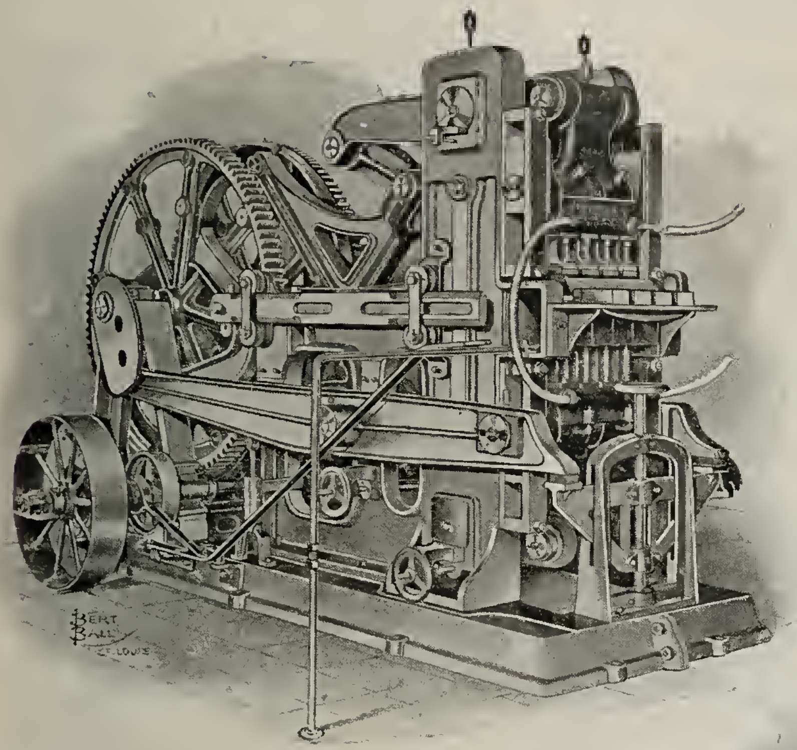
GUARANTEED FOR TWO YEARS AGAINST BREAKAGE.



THIS machine has an unbroken record of success. It is used on a number of the best equipped brick plants in the United States. It has never failed to give entire satisfaction and we are perfectly safe in guaranteeing that it will work any clay of which pressed brick can be made, and make them better and cheaper than any other press. It makes better brick because the pressure is greater and is applied in a way most effective. It makes brick cheaper because it is unbreakable and hence there are no repair bills or expensive delays and stopping of work which brickmakers know are more costly than the repair bills themselves. If you want to make the best brick at the least expense the season through don't fail to investigate this machine. with it you can "put money in your purse." Let us tell you more about it and give the address of those now using it. Remember "the proof of the pudding is in the eating of it."

For Prices and Full Particulars, address **ROSS-KELLER BRICK MACHINE CO.,** Fullerton Bldg., ST. LOUIS, MO., U. S. A.

The New Fernholtz Brick Press.



WONDERFULLY
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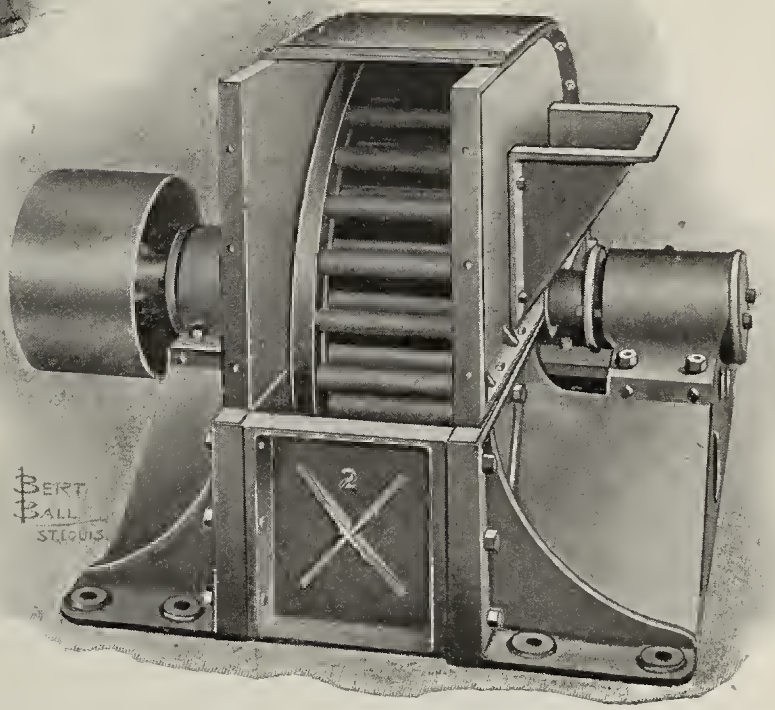
Fitted with the Celebrated

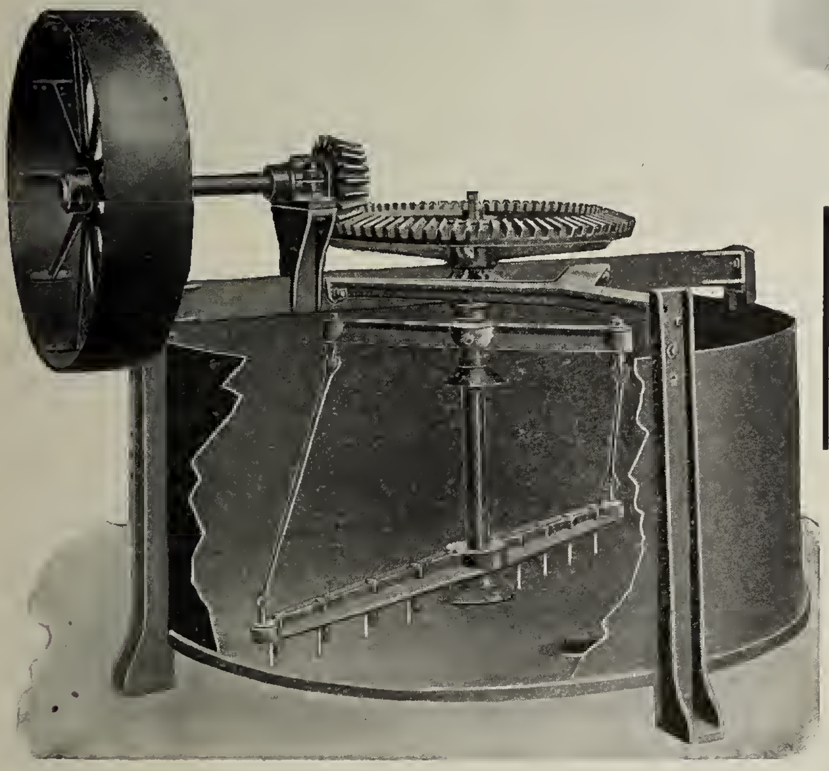
FERNHOLTZ MOLD BOX

Which is used by leading Brick Manufacturers in other Dry Presses.



The Fernholtz PATENT Clay Pulverizer.

No more rivetting Pins in Cage.
Any one can put them in. Most economical Clay Grinder ever made.



The Fernholtz Iron Frame Clay Mixer.

"The Mixer that Mixes."

WE HAVE a first class repair department and can repair all kinds of Brick Machines and Machinery. We make a specialty of Molds for Fancy Shape brick at reasonable prices.

Dealers in BRICKYARD SUPPLIES.

If you don't see what you want ask for it. No trouble to answer questions.

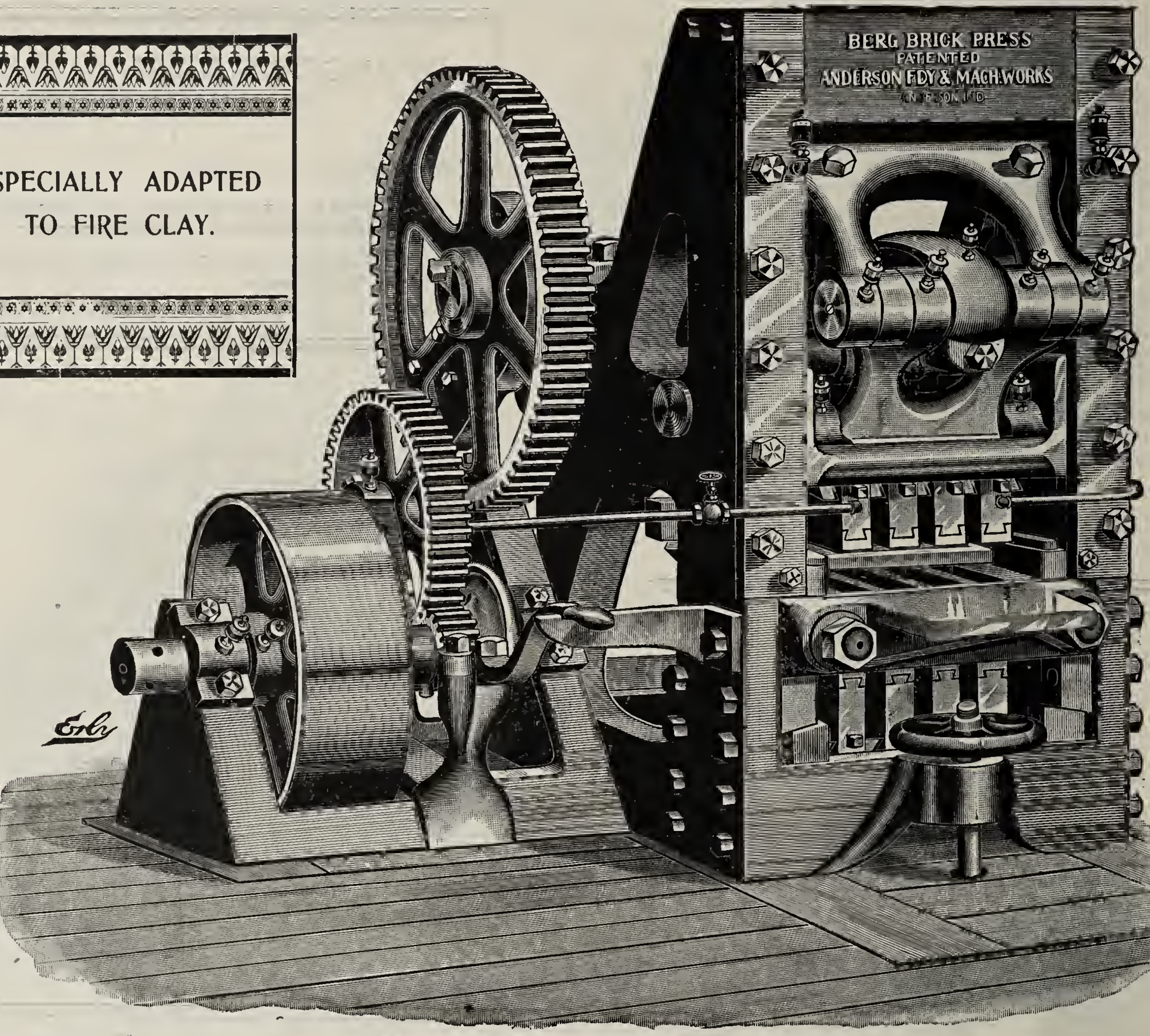
The Fernholtz Brick Machinery Co.,

CABLE ADDRESS "FERNBRICK."
WESTERN UNION CODE.

Boyle Ave. and Old Manchester Road, ST. LOUIS, U. S. A.

The BERG BRICK PRESS.

ESPECIALLY ADAPTED TO FIRE CLAY.



The Highest Development of the Art of Brickmaking—so Pronounced by the U. S. Government.

Three distinct pressures.
Greater Pressure than any other machine.
Greater Strength than any other machine.
Will put more clay into given space than any other machine
Less working parts than any other machine.
No Plunger Stems, eye rods or Springs.

Mold Liners Made of Tempered Tool Steel.

Makes all size Brick and Tile from 2 to 24-inch.

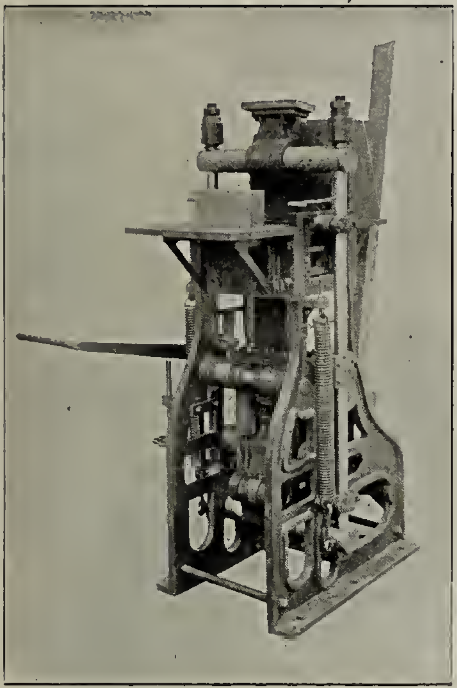
SOLD BY

Chicago Brick Machinery Co.,
225 Dearborn St., CHICAGO.

MANUFACTURED AND SOLD BY

The Anderson Foundry & Machine Works,
Anderson, Indiana.

Mention The Clay-Worker.



The New Grath Hand-Power Brick Press.

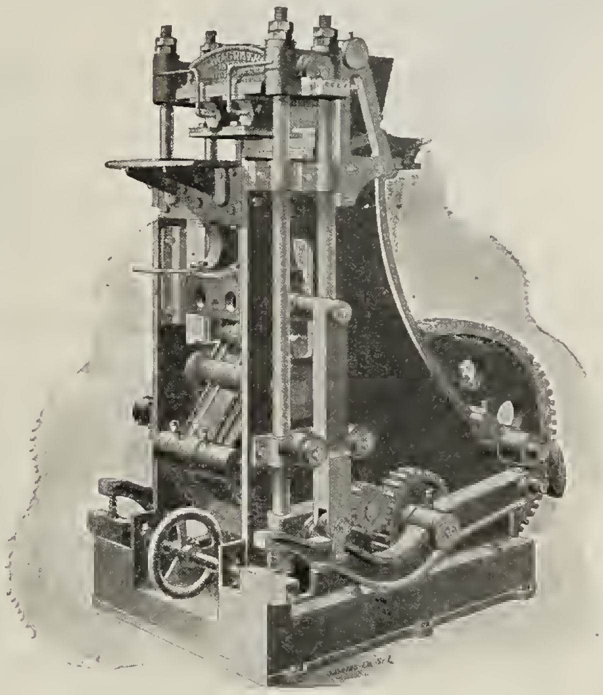
FOR MAKING PLAIN AND ORNAMENTAL PRESS
BRICK FROM SEMI-DRY CLAY.

The accompanying cut shows the only successful **HAND POWER PRESS** for pressing brick direct from the clay. The brick made on same are equal to those made on any steam power or hydraulic press. They have a polished face and perfect edges and corners. As will be seen, the press is equipped with charger and feed box. Two men can easily make 2,000 best quality press brick per day. By simply changing the liners and die plates, brick of any size up to 12½ inches long, 8½ inches wide and from 1 to 4¼ inches in depth can be pressed. In making brick on edge the mould is 9 inches deep. No brickyard is complete without a press of this sort. It is also recognized as the only successful press for making plain press or front brick for small yards that are making brick by the plastic process.

The Coffeyville (Kansas) Vitrified Brick & Tile Co. were the first one to order one of these presses, and to show what they think of same, they have only recently placed an order for two more of them.

The Grath One and Two Mould Steam Power Press.

The accompanying cut shows the latest improvement in Brick Presses which are built in two sizes. The One Mould, which has a capacity of 5,000 best quality press brick per day; the Two Mould having a capacity of 10,000 best quality press brick per day. This press is so constructed that all shapes and sizes of ornamental brick on flat can be made on same by simply changing moulds and die plates, and is the cheapest as well as the simplest and most powerful Press of its kind in the market. The brick made are very dense with perfect edges and corners. The Press is guaranteed against breakage for one year. All parts subject to strain are of steel.



The GRATH UP DRAFT KILN

with Grath Gas and Coking Furnaces attached for burning slack coal, or with Grath Improved Solid Bottom Grateless Furnaces for burning mine-run coal, will give better results than other Up Draft Kiln in the market.

The Grath Improved Down Draft Kiln

with Grath Gas and Coking Furnaces attached for burning slack coal, or with Grath Improved Solid Bottom Grateless Furnaces for burning mine-run coal is the best and simplest Down Draft Kiln in the market for burning common, pressed, paving, fire and enamel brick, also and drain tile, sewer pipe and conduits.

The Grath Gas and Coking Furnaces

can be attached to all kinds of kilns, whether new or already up, and will produce better results with slack coal than can be obtained with lump coal in ordinary furnaces.

The Grath Improved Solid Bottom Furnaces

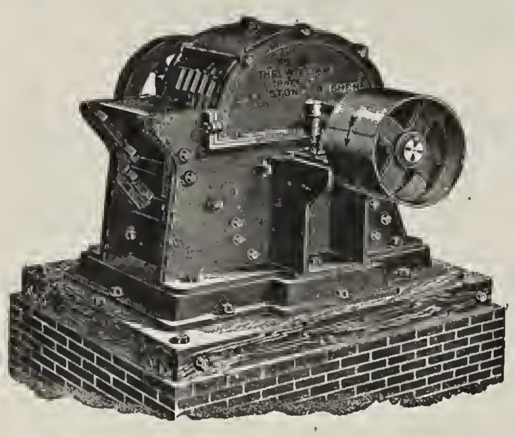
can be attached to Up or Down Draft Kilns, and will produce better results than all other furnaces, with less labor, and are cheaper to build than any other furnace. Send for catalogue and prices.

The Illinois Supply & Construction Co.,

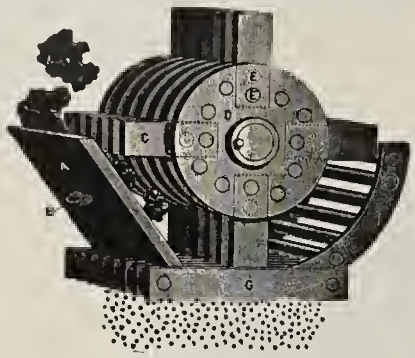
800 Columbia Building, ST. LOUIS, MO., U. S. A.

The Williams Patent Crusher and Pulverizer Co.

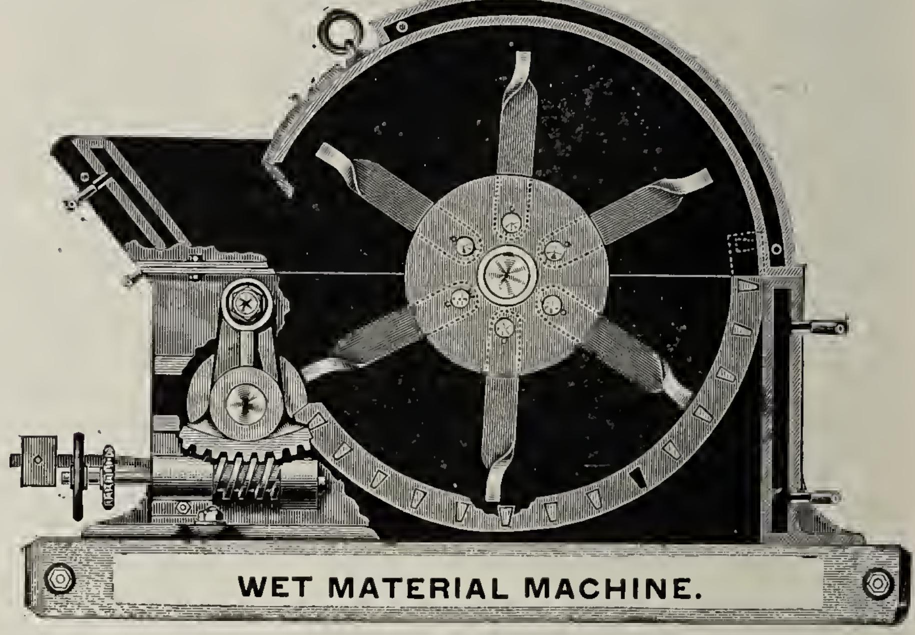
St. Louis, Mo., U. S. A.



SHALE CRUSHER ahead of a Pan. 5 Sizes.

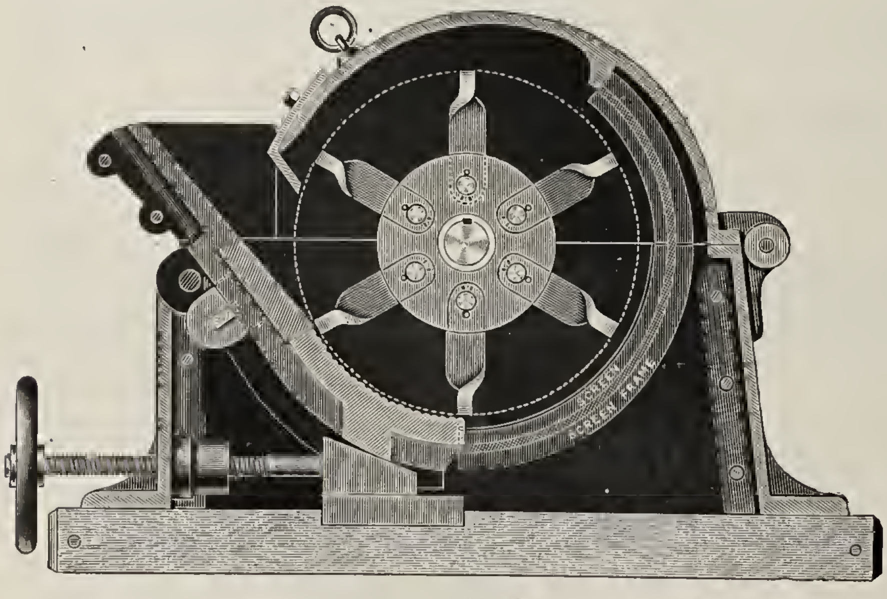


Interior of Same.

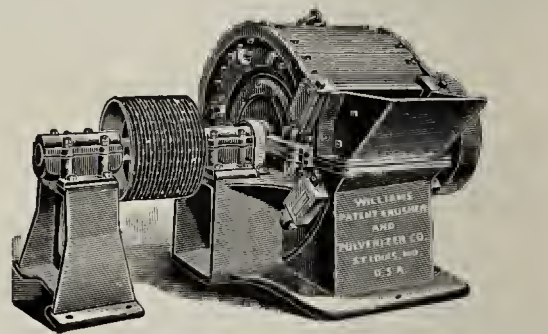


WET MATERIAL MACHINE.

WE NEVER FOLLOW BUT ALWAYS LEAD. Our Steam Screen leads them all. We guarantee to work satisfactorily any clay that will make a Brick, wet or dry, with less cost than any other machine on earth. : : : : : :



TAILINGS GRINDER (which finishes without additional Screening). Five Sizes.


WILLIAMS PATENT CRUSHER AND PULVERIZER CO. ST. LOUIS, MO. U.S.A.

SHALE and CLAY PULVERIZER. Five Sizes.

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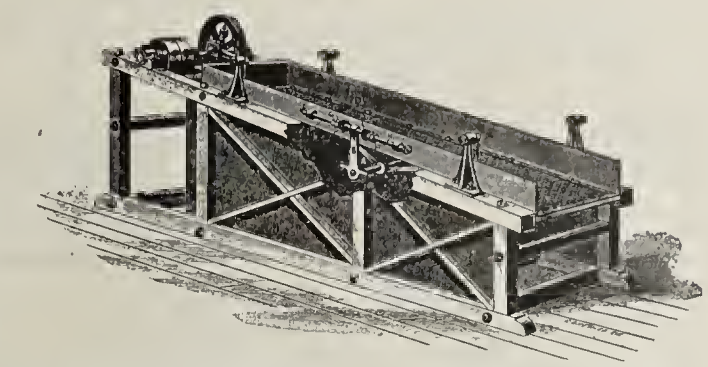
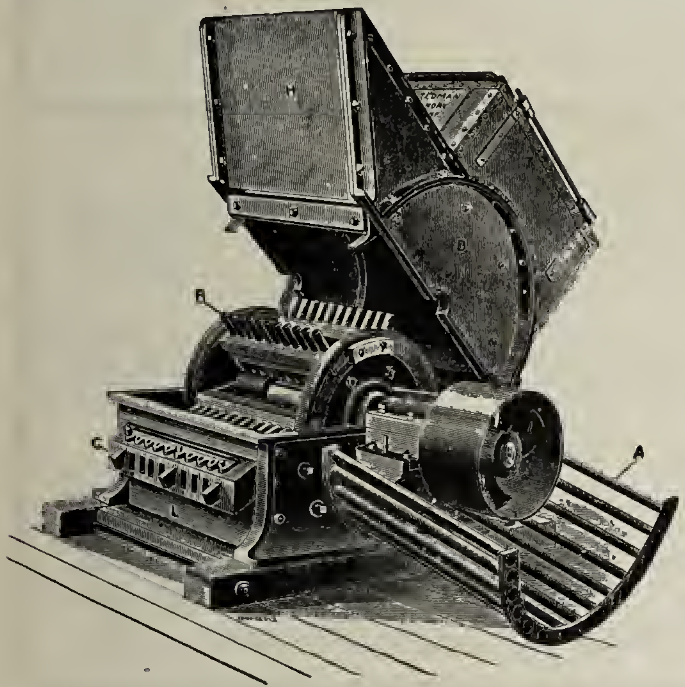
PHILADELPHIA OFFICE: Stephen Girard Bldg.
LOUISVILLE OFFICE: 1301 West Main Street.
CHICAGO OFFICE, 741 Temple Court Building.
SAN FRANCISCO: Partridge Building.

STEDMAN'S AGITATING INCLINE SHAKER SCREEN.



A GOOD Screen for properly screening to any degree of fineness a great variety of materials, and especially clay, is a long felt want. Our Incline Agitating Shaker Screen meets the requirements of the trade in the most successful manner possible.

In this screen we have one of large capacity for small floor space and one that will screen fine without clogging, as the agitating device we have underneath the screen wire prevents any clogging of the screen holes when screening clay or any other material in a dry or semi-dry condition. The screen will run with little power and without any "shake" or "jar" to the building, as the moving parts are well balanced by an adjustable counter-weight within the rim of the balance or fly wheel.



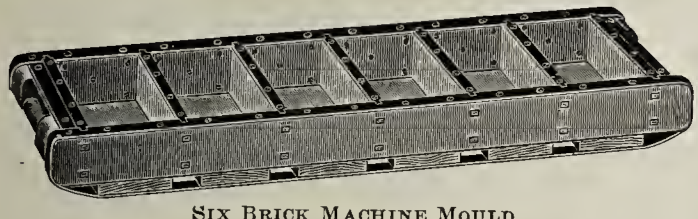
STEDMAN'S TORNADO CLAY PULVERIZER.

For Thoroughly Pulverizing Clay in a Dry, Semi-Dry or Damp Condition.

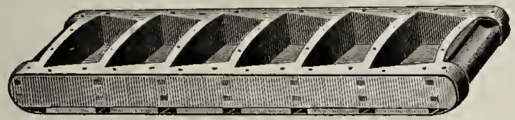
Its construction is such that it will not clog in pulverizing damp clay, and the journal bearings are constructed dust proof.

Write for catalogue, giving full description, references and testimonials.

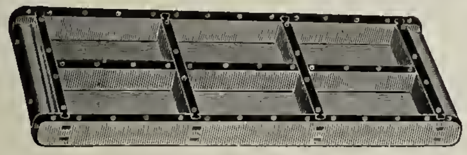
Stedman Foundry and Machine Works,
Aurora, Indiana.



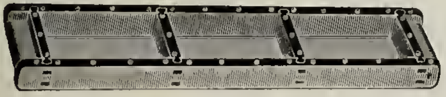
SIX BRICK MACHINE MOULD.



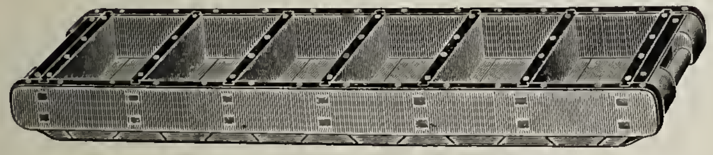
CIRCLE MOULD.



HAND MOULD, SIX BRICK.



HAND MOULD, THREE BRICK.



ROOTS PATENT BOTTOMS.

DO IT NOW.

PLACE YOUR ORDER for 1902 brick moulds with Arnold. You can have them made and shipped any time between now and May 1st, 1902, and if you have the order placed *there* you know you will get the best there is made, and will get them promptly and when you want them. We make moulds to fit "any old machine" that uses moulds and guarantee satisfaction if you will give us the following particulars:

1st. Size of the brick.
2nd. Number of brick in a mould.
3rd. Thickness of partition or distance from center to center of bars in die.
4th. Length of mould over all allowing 1½ inches at each end for handles if possible.
5th. Style of handle by number, (see our catalog).

We also make hand moulds any number of brick and any size desired.

Machine moulds with ROOTS PATENT BOTTOM. We have made quite a number of these moulds in 1901, they are designed for making a better quality of brick than ordinary molds, and cost but little more. In addition to moulds we make a full line of Trucks and Wheel Barrows, also make special Trucks and Wheel Barrows to order, and a full line of Furnace Fronts, Kiln Doors, Grate Bars, Ventilators, etc.

Let us know what you will need and get our price before you place your order elsewhere. Get our catalog. Address

D. J. C. ARNOLD, NEW LONDON, OHIO.

JOHNSONBURG VITRIFIED BRICK CO.
Johnsonburg, Penn.

Street Paving **Brick and Block.**

High Grade Fire Brick. Samples on Application.

INDIANA PAVING BRICK AND BLOCK CO.
W. W. WINSLOW, Proprietor.

INDIANA PAVING BLOCK BRAZIL, IND.

Street Paving Brick and Block.

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OFFICE: 1 HUBBARD BLOCK,
Works at Brazil, Ind. INDIANAPOLIS, IND.

VITRIFIED PAVING BRICK.

A valuable treatise on the manufacture and use of Paving Brick up-to-date. By H. A. Wheeler, E. M. Mailed to any address on receipt of $1.00.

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Do You Want Clay?

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THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

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Written for The Clay-Worker.

THE MONTGOMERY LAND COMPANY A SUCCESSFUL BRICK COMPANY.

By C. G. Elliott.

WHEN YOU THINK of it, why should not a land company engage in the brick business, especially when its object is to extend and beautify the residence portion of a thriving city? There is a reciprocity feature about the proposition which is attractive from a commercial point of view. The Montgomery Land Co., of Yazoo City, Miss., has done this, greatly to its own advantage and to that of the substantial building interests of the town.

By way of explanation, it should be said that Yazoo City is a typical Southern city of the smaller class. The Yazoo river, upon which it is situated, is one of those meandering, sluggish Southern rivers, a kind of cross between a bayou and a river, which is a navigable tributary of the great Mississippi. The entire valley is a belt of exceptionally rich alluvial soil, which, when cleared of its valuable timber produces the long staple cotton, the best yielding of all the varieties of cotton produced in the South. Yazoo City is a great distributing and commercial center for what is fast developing into a rich and fertile country. Her attractive residences, with lawns of carefully clipped Bermuda grass, over which the rich, heavy leaves of the magnolia tree cast a grateful shade, tell a story of past prosperity and coming financial strength.

Yazoo City, Miss., as Seen from an Adjacent Hill Top.

By reason of the abundance of lumber in that region ("the woods have been full of it") brick as a building material has not been in demand until recently. The denuding of the bottom of the choice woods and the desire for more city-like business blocks and residences, have of late years given rise to a demand for brick. This state of affairs and its bearing upon a good prospective business the Montgomerys were not long in perceiving. The company had bought a tract of laud at the north edge of the city, divided it into blocks and lots, and had the satisfaction of seeing it sell readily and gradually build up with comfortable cottages and pretentious residences.

A bank of clay near the bluff border of their tract when tested by the Fernholtz people, of St. Louis, was found suited to the manufacture of dry pressed brick. The members of the company knew nothing about the business personally, but they were fortunate in securing the services of men experienced in its practical details and were also equally fortunate in getting a machine installed which was adapted to the clay.

The clay is free from stone of any kind and when thoroughly dry is characterized by an orange or ochre color. An average stripping of four or five inches of the surface is removed by means of plows and wheel scrapers, below which the clay to a depth of four or five feet is used for brick. The drying of the clay is effected before it is removed from the bed.

A plowing is turned and left in the sun until the clay is dry. It is then hauled to the storage shed, a building 90 feet square and open at the sides. A large stock of clay is kept in store to tide over seasons of wet weather, when no clay can be dried.

At the opposite end of the dry shed is located the boiler, engine and brick machine. The machine is a four-mold Fernholtz, with a pulverizer. Its capacity is 20,000 per day. The usual run, however, is 17,000 per day. Ending up against the machine shed, with but a driveway between, are the four kilns of the plant.

One economical feature about the manufacture of dry pressed brick is that no tempering of clay, sheds for drying green brick nor patent-dryers are required. The expense of handling from dry shed to kiln, as well as the loss of time occasioned by the drying of soft or stiff-mud brick, is avoided when the dry process is used. The brick are taken direct from the machine and stacked in the kiln, and are ready to burn as soon as the kiln is filled.

There are four clamp kilns, each with a capacity of 250,000 brick. In burning wood is used to watersmoke, which requires seven days, and coal for the balance of the burning, which usually requires eight days. That dread of the brick man, bad burns, is rarely experienced at this plant now. About one-half or two-fifths of each kiln is face brick and the balance good building brick. The clay burns a uniform cherry red.

The company have the cost of production figured down so that they are satisfied with their margin when they sell face brick at $15 per thousand and common brick at $7. Coal costs $2.75 per ton. Labor, however, is not high, as may be judged from the fact that the drying and hauling of the clay to the shed, about five hundred feet distant from the bank, costs 17 cents per 1,000 brick. The economy of burning is shown from the statement that one-half ton of coal burns 1,000 brick. It must be remembered that this does not include watersmoking, which is done with wood.

As before intimated, brick buildings are increasing in number in the city, so that the entire output of the plant is used at home. It is quite clear that as the surrounding country is developed and better methods of farming are practiced, more attention will be given to constructing better buildings in both country and town. The land company has done a good work in aiding and encouraging brick construction in Yazoo City. Its pleasant location as a residence town and growing commercial importance bid fair to support the brick business, as well as any manufacturing company can desire.

NEW YORK BUILDING TRADES AT PEACE.

After a fight lasting for six years the warring factions in the building trades unions of New York city and vicinity have buried the hatchet and joined forces, with the object of doing away with the internecine disputes which have been the cause of so many building strikes during the past few years. Six years ago the Building Trades Council was formed by unions which seceded from the Board of Walking Delegates, and since that time there has been a constant series of strikes and disputes in the building trades, owing to the rivalry between the two bodies of workmen. Twice in the interval they have come together and reached an agreement to amalgamate, but in each case the agreement fell through and failed of consummation. This time, however, it seems that an actual agreement has taken place and the breach is understood to have been finally healed. The settlement was reached at a meeting of the two bodies on March 11, when an amalgamated association, to be known as the United Board of Building Trades of New York, was formed, with a full list of officers. Furthermore, a committee was appointed to provide a constitution and by-laws, a leading feature of which will be a clause providing for the arbitration of all labor disputes. Thus, it is hoped, an end has at length been put to the troublesome and unnecessary interruptions to building operations through the disputes of the rival unions, which have been afflicting New York city for so long. Already the settlement has resulted in the calling off of a strike involving some 1,500 workmen employed on a number of large buildings that are being erected by one of the big contracting concerns. The settlement of this war of unions will be hailed with satisfaction by a long-suffering public as holding out the prospect of a new era of improved conditions and the removal of a seriously disturbing factor from the local building industry.—Exchange.

For the winning of industrial victories the man behind the machine is quite as essential as in naval warfare is the man behind the gun, and to the one is to be accorded the same proportion of credit for the work when well done as to the other. The value of the man is perhaps as much shown by the failures and defeats which inevitably occur when he is absent, as by the successes which are as sure when he is present and fully alert.—American Machinist.

WRITTEN FOR THE CLAY-WORKER

LIGHT AND HEAT—SEVENTH PAPER.

By Master Mechanic.

THE SIXTH PAPER in the July number of THE CLAY-WORKER gave a preliminary summary of the formation and the constituent parts of mineral coal. In continuing the subject we will state that the quality of the coal cannot be judged from its color, any more than can clay. While some coals have a dark-brown color, others may have it jet black.

It is a difficult matter to classify bituminous coal, owing to the slight demarcation of the many kinds. We will roughly state the proximate component parts, which will range about as follows:

Fixed carbon	50 to 80 per cent.
Volatile matter	12 to 50 per cent.
Earthy matter	2 to 20 per cent.
Sulphur	1 to 3 per cent.
Water	1 to 4 per cent.

Bituminous coals are usually named caking or noncaking coal. Caking coal, when heated, fuses together and increases in size. It takes on a pasty appearance and seems sticky, like tar. Small yellowish jet flames emerge from it and turn to smoke. This smoke is carbureted hydrogen; hence it is used for gas purposes and cooking.

The non-caking coal is the so-called free-burning coal. It needs less stirring, as the air finds ready access to it on the grate, the lumps not fusing together. The block coals west of the Ohio river are mostly of this character.

Cannel coal can also be classed amongst the bituminous coals. It is usually very light, only 25 per cent. heavier than water unless mixed with earthy matter. Yet there is a cannel coal found in Kentucky that only shows 2 per cent. of extraneous matter, while the Davis county coal of Indiana only shows 6 per cent. of ash. As these coals are very rich in hydro-carbons, they are excellent for gas.

The geographical distribution of the various coals of the United States may be classed: First, anthracite, the eastern slopes of the mountains of Colorado and the Alleghenies; second, bituminous, Mississippi valley, Maryland, Pennsylvania, Virginia, Indiana and Missouri.

The value of coals is determined by the amount of water one pound of coal can evaporate when burned under a steam boiler. It stands to reason that we refer to the very best construction of such appliances when tests are made. We will select a few coals from a list at hand from different States, giving the constituent chemical parts and their theoretical evaporating capacity of water at 212 degrees Fahrenheit:

Locality.	Moisture.	Volatile Matter.	Fixed Carbon.	Ash.	Sulphur.	B. T. U. Theoretical.	B. T. U. Calorimeter.	Evaporation in pounds.
Ohio—								
1	2.47	31.83	64.25	1.45	0.56	13.714	....	14.2
2	8.25	35.88	53.15	2.72	0.43	13.414	....	13.9
Pennsylvania—								
Anthracite	2.04	6.36	78.41	13.19	......	12.300	....	12.73
Bituminous—								
Pittsburg	1.80	35.34	54.94	7.92	1.97	....	13.104	13.64
West Virginia	0.94	18.19	75.89	4.68	0.30	13.400	....	13.87
Illinois	5.50	40.14	40.53	13.83	4.80	11.723	....	12.10
Indiana	3.50	32.80	63.00	1.00	0.98	....	14.020	14.5

In the foregoing list we selected the better qualities from the list of the coal-producing States. While most of the evaporating qualities were given theoretically by making deduction from their heat qualities, three of them were taken by actual calorimeter tests, in order to find the amount of heat units.

As stated before, coke is the residue after the volatile parts have been expelled by heat. It is porous, with a gray lustre, very hard and brittle, and is nearly pure carbon. Coke from gas retorts is softer, darker in color and ignites easier than coke made in ovens. In the brick business very little coke is used. However, some operators consider gas coke a very efficient fuel for water-smoking, owing to its smokeless qualities. It is a well-known fact that coke is usually lighter than coal. This is due to its increase in bulk during the process of coking, and amounts to 40 per cent. when coked in ovens. When coked in heaps, similar to the old-fashioned way for charcoal, it does not gain over 20 per cent. in bulk. The loss in heating qualities by the expulsion of the hydro-carbon in coking is said to be 40 per cent. If the loss in weight is as so stated it cannot be a loss to the buyer, as the 40 per cent. has to be added in coke to make up the ton of commerce. By the loss of the hydro-carbons the quality for making blaze is lost, but on the other hand we have a substance that is over 96 per cent. of carbon, with the noxious sulphur eliminated to a small fraction.

The writer has adopted it for the last two years as an ideal fuel for the furnace in the home, as it is kindled easier than hard coal and proved 33 per cent. cheaper. A test with a neighbor using the same make of furnace and having the same-sized house proved it. The only drawback is the tendency of coke to absorb moisture. The dealers understand that and are apt to add it. Having seen the water dripping from the bottoms of the wagons as they are hauled through the streets, we know whereof we speak.

The efficiency of any particular kind of coal and coke depends not only on its chemical parts, but also on the amount of ash and moisture in it, as also on the size of the lumps.

In a former paper we gave the elementary principles of combustion. In our succeeding paper we will proceed to analyze the action of coal and coke when burned on grates or in furnaces.

Before closing the paper I ought to say something about artificial fuel, which in most cases is substantially the fine or pulverized particles of coal pressed or formed into briquettes, some adhesive element having been mixed with it. In Europe and China such fuels are articles of commerce, while here in America the cheapness of coal fortunately makes them unnecessary. Coal balls are used very extensively in northern China. These are balls made by Chinese cheap labor, by hand, of culm from the mines of the Chillie district of semi-anthracite coal.

Pressed Brick Plant of the Montgomery Land Company, Yazoo City, Miss. See page 117.

THE USE OF ROOFING TILE ABROAD.

In describing the manner in which roofing tiles were used in Greece and Rome, a writer in an exchange states that flat tiles with raised edge extended from rafter to rafter, the upper end having a rib which entered a groove formed on the under side of the tile placed above it. After these were laid the joints above the rafters were covered with other tiles, each formed like the half of the frustrum of a hollow cone, so that they were able to lap upon each other, their edges lying snugly to flat tiles on the roof. The end of these ridges was terminated with an ornament. Tiles, both flat and curved, were in great demand in Roman architecture. Roofs were covered with the flat and curved tiles alternating. Tiles two feet square, with a foot at each angle, were used to line the thermæ, so that an air space between them and the wall should prevent the absorption of water by the latter.—Exchange.

WRITTEN FOR THE CLAY-WORKER.

THE WORLD'S BIGGEST KAOLIN DEPOSIT.

ONLY SIXTY MILES FROM ST. LOUIS, in Warren county, Missouri, on a ranch owned by Mr. Frank Reifsnider, of Warrenton, Mo., and Akron, O., is found the most extensive deposit of kaolin known in the world. No mere pockets here and there, with "faults" and admixtures of conglomerates, "niggerhead," lime or gravel, but a solid mass of white clay, most of it in a huge ridge or hill range, above the level of the railroad track running alongside it. On the 973 acres of the Reifsnider property more than 800 acres are of these vast clay deposits, which have been opened for practical working to a depth of forty-eight feet, and by numerous borings in widely scattered parts of the property the limit in many places has not been found at a depth of more than sixty feet. Taking as a basis only the forty-eight-foot bank, which has been developed, a single acre at this depth would give us over 144,000 tons of kaolin. On the entire property the amount, from the evidence of what is in sight, certainly runs into millions of tons, and is practically inexhaustible.

It seems strange that with such an immense deposit of kaolin as this, lying practically idle, almost unexploited, we are still importing from Europe 100,000 tons of clay annually, upon which a duty has to be paid of $2.50 per ton. Why is this? Is the alertness and adaptability of which we are proud at fault, and are we really, when once we get into a groove, a very conservative people? There may be something in that, for, happily, we are at bottom a conservative people, as every great nation must be. There is not sufficient reason, though, why we should import an ounce of clay, still less 100,000 tons a year. It is true that the foreigner makes up for nature's irregularities in regard to clay deposits of careful preparation, sorting, slumming, etc., so that our potters, papermakers and other users of white clay can rely upon one ton of the material being similar to any other ton. This is worth much to the manufacturer. There are very few clay deposits anywhere, in this country or elsewhere, even small ones, that are so remarkably uniform in character as this at Warrenton. Americans have had more momentous matters to attend to than the preparation of clay. In due course we must attend to this, and when we realize that nature has provided the material all ready for our use there will surely be no further need of importation.

While Professor Frick, of Warrenton College, was probably one of the first to point out the commercial value of this great clay deposit, the first official recognition of it was by the Geological Survey of Missouri in 1900. The board of managers at that time were: Gov. L. V. Stephen, president; Messrs. O. A. Crandall, Sedalia, vice president; George W. Garrett, Lamar; Lewis M. Rumsey, St. Louis, and Dr. John S. Logan, St. Joseph. The report under their names, which was signed by the celebrated Dr. John A. Gallagher, state geologist, was as follows:

"I examined some of the openings in the clay property near Warrenton in October, 1898. My impression then was that the deposit was an altered shale bed in place, and therefore a very extensive deposit.

"Since that time a number of trial holes have been sunk down into the clay beds. Mr. D. K. Gregor, assistant state geologist, has made a careful examination of the property recently, and I herewith inclose his report. It confirms my first impression that the clay deposit on the Reifsnider land, near Warrenton, is not a pocket deposit, but an altered shale bed in place, and therefore a very extraordinary geological occurrence.

"Thirty feet of merchantable material, spread out over four or five hundred acres of surface, is a conservative estimate of the extent of the deposit; therefore the body of available material embraces at least several million tons."

The report by Assistant State Geologist D. K. Gregor referred to is as follows:

"F. Reifsnider property, Township 46, Range 2 west, and lots in Township 46, Range 3 west, containing 973 acres shale deposits, confined almost exclusively to northern half of Section 2 and adjoining lots in Section 3.

"Shale deposits rest on Trenton limestone, without any noticeable unconformity. Examined some twenty-five prospects, varying from ten to twenty-five feet. Indications point to at least sixty feet of shale."

Face of Kaolin Bank, 48 Feet Deep.

The Missouri Geological Survey, Vol. XIII, for the year 1900, contains the following:

"Before leaving the last number of the Ordovician Division, however, I beg to say that the most remarkable clay deposit in the known world is the Reifsnider clay property at Warrenton, Warren county. It consists of several hundred acres of Lorraine shales in place, altered into a fine, white, plastic clay, suitable for almost any ceramic purpose.

"The original shale bed was about sixty feet thick and has an exposed area of five or six hundred acres.

"The supply is therefore practically inexhaustible.

"JOHN G. GALLAGHER, State Geologist."

Several analyses have been made from different parts of the deposit by different chemists, with results that are remarkably similar. I take the one made by Prof. H. A. Wheeler, who is a high authority upon all matters pertaining to clay. It is as follows:

Silica	43.56
Alumina	41.48
Water	14.05
Sesquioxide of iron	0.35
Lime	0.45
Alkalies	0.20—1.00
	100.09

An interesting comparison may be made between this and four other well-known kaolins, as follows:

	No. 1.	No. 2.	No. 3.	No. 4.
Silica	58.00	46.23	44.10	44.69
Alumina	34.50	35.27	39.36	40.38
Iron	.....	.....	1.04	trace
Lime	4.50	.....	.....	0.13
Alkalies	3.00	.....	.....	1.09
Cobalt and nickel	.....	.....	trace	.....
Water and loss	.....	18.50	14.90	13.41
Undetermined	.....	.....	.....	0.30
Totals	100.00	100.00	99.40	100.00

No. 1 is the porcelain clay used at the celebrated works belonging to the French nation at Sevres France.

No. 2 is the china clay of Passau, Germany.

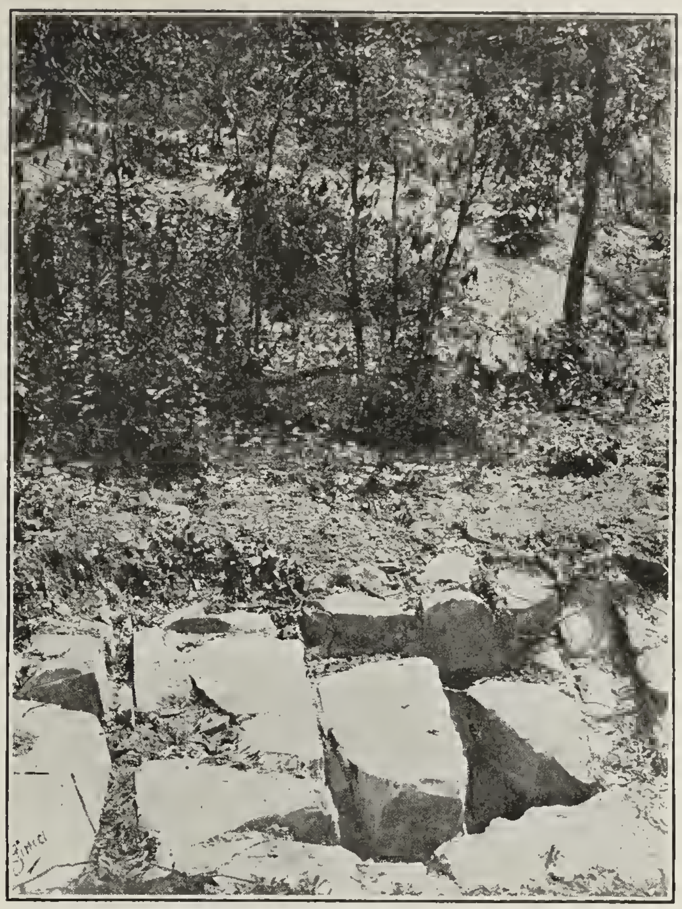
No. 3 is kaolin from Woodbridge, N. J.

No. 4 is kaolin from Aiken county, South Carolina.

Chemists state the composition of a perfect clay, in which each constituent—aluminum, silicon, oxygen, hydrogen—are in exactly the right proportion, to be: Silica, 46.64 per cent.; alumina, 39.45 per cent.; water, 13.91 per cent.; or, in round numbers: Silica, 46; alumina, 40; water, 14. This chemically perfect clay is so rarely supplied by nature that it is a mineralogical curiosity. Where there is an excess of one of the constituents it is an advantage for a highly refractory clay that this excess should be in alumina. In this Warrenton clay the materials which are not wanted amount to only 1 per cent.; in the Sevres clay they are 7½ per cent. It is true that the Sevres clay is not used for refractory purposes, but the New Jersey kaolin, which commands a good position in the market, contains a little over 1 per cent. of undesired admixture, and this is all iron, which is the least desired of common nonessential constituents. That the total of nonessentials in this Warrenton clay, amounting to only 1 per cent., has no practical effect upon its refractoriness may be inferred from the fact that the general manager of the most important fire-clay works in the country, after using several tons, wished to make a contract for 4,000 tons or more per year.

A Hill of Kaolin.

Among other testimonies to the remarkable qualities of the clay is that of Dr. Richard Moldenko, secretary of the American Foundrymen's Association and manager of the Pennsylvania Malleable Company, Pittsburg, Pa., who, writing in June, 1900, says: "Have just completed an examiation; chemical analysis shows the clay to be of surprising purity, carrying only 1 per cent. of fluxes. A clay may run up to 5 per cent. in fluxes before it is relegated to the second grade. A preliminary fire test shows that the clay stands up unaffected in the full bed of the open-hearth and steel furnace, and has all the qualities necessary to make No. 1 fire brick. I congratulate you on having the best American fire clay that has come under my very extended observation."



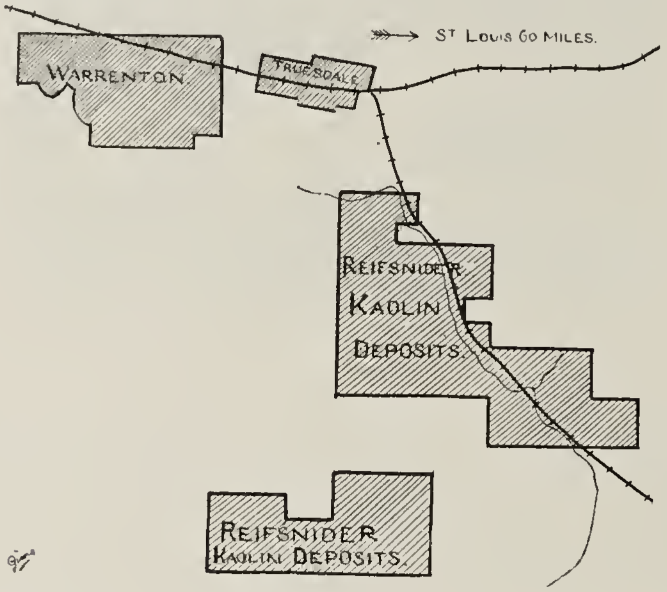
Outcroppings of China Clay.

Analyses made of two samples of the Warrenton clay by Dr. O. Wuth, of Pittsburg, Pa., showed a composition very close to the analysis by Professor Wheeler. Dr. Wuth remarks: "I consider the clay a very superior article for fire bricks particularly, and glass pots, as well as glass tank furnaces, because it has no sand mixed with it, all the silicic acid being chemically combined with alumina."

We have such vast natural wealth in this country, some of it lying about on or near the surface of the ground, unheeded and unrecognized, that there may be some excuse for us in giving our chief attention to gold, silver, copper and iron. Even coal I have known instances of cropping out on the surface and the owner not taking the trouble to put pick and shovel to it, but he would jump at some shining yellow iron sulphide "fool's gold." It is, nevertheless, a marvel that this great deposit of white clay is not exploited. There are industries than can use it. Perhaps porcelain and pottery are the least of these, for a great quantity of kaolin is consumed every year in the manufacture of the best white paper; the rubber industries demand tons of it; linoleum, wall paper, oil cloth, window shades, emery wheels, paints use surprisingly large quantities of this kind of clay, even chewing-gum makers buy it in carload lots.

A photograph which I took shows only a small part of the long, low hill, about two miles in length, of solid kaolin. The large white patch near the middle is the naturally exposed surface showing the clay. This is seen everywhere, in larger or smaller patches, and the surface in general is but scantly covered by the few inches of soil. At the foot of this kaolin hill range, running parallel with it and also with the Charette, a creek that empties itself into the Missouri river, is the branch of the Wabash railroad.

Another photograph, taken of the surface of the ground on top of the hill shows a place where a few inches of the soil has been removed, exposing the pure white of kaolin, while through the trees and everywhere around are seen white patches where the clay is naturally exposed. The photograph of a face, which has been devoloped, of the clay bank, shows a strip 48 feet in depth, from the top of the hill to where the camera stood. Borings were made here to a further depth of 20 feet without any change being found in the character of the clay.



While all the world might be supplied with the raw material, for there is enough of it, it looks like an industrial sin not to utilize some of it on the spot. Good coal is mined at a distance, on the Wabash railroad, of only thirty-six miles, so that fuel would be abundant and cheap. The old settlements, such as Warrenton, Truesdale, and others near, would afford a plentiful supply of labor of the best kind that now has to leave home to find occupation.

So many things that we need and get from abroad could be made from this kaolin—chemical apparatus of many kinds, acid faucets, bowls, distilling worms, tubes of many sorts and sizes, used in manufacturing chemicals on a large scale.

It only needs a beginning, by the right man or men, no matter on how small a scale at first, to make this great deposit of kaolin a veritable Comstock mine among clay banks.

GEORGE J. M. ASHBY.

Written for The Clay-Worker.

COST OF PRODUCTION

Modern Machinery vs. the Hand-Mold Method.

L. C. Moore.

IT IS DIFFICULT to make a comparison that will justly set forth the merits of a new and popular method of doing any kind of work, and an old and almost obsolete method.

There are so many and varying conditions of material, demand of markets, labor conditions, etc., that one has to cover a broad field of inquiry to satisfactorily answer the question as to which is the most economical method, and after he has done all this, and answered the question seemingly as the general survey of all matters concerned would indicate, still there will be isolated cases where conditions are such that the reverse of his conclusions would undoubtedly obtain.

The simple molding of bricks, either by hand or machinery, is but a small part of the expense of production, for drying, setting, burning and marketing must be charged with by far the greater part of the cost of production of the finished article. "But," says one, "is not the cost of these various processes the same whether the bricks are made by hand or machinery?" We wish to say in reply: "Not always." If that were true, then there would be but the question of a few cents per thousand difference between the different processes, but we shall discuss this question in another part of this paper.

We shall aim to take into consideration the various conditions of locality, markets, material and any other matters which we may think may bear upon the subject, and then try to reach conclusions in accord with the facts. What we say must necessarily be based on our own experience and observation, and we shall concern ourselves about building brick only.

The demand for bricks has increased during the last few years at an enormous rate, so that where once a few hundred thousand would fill the demand now many millions are required, and even in our small towns the demand has arisen to proportions that rivals that of cities of considerable size a few years ago. This has led to the necessity of erecting large factories where once a few small yards answered the purpose.

In most localities with which we are acquainted clay suitable for hand molding exists in but comparatively small quantities, so that one could not afford to put up costly sheds, dryers, kilns, etc., for fear that he would soon exhaust his raw materials, and be forced to move. This deprived the hand-mold manufacturer of the two strongest accessions of the brickmaker in producing the best materials at the lowest cost, viz., a good dryer and good kilns.

It is too much to attempt in this paper to discuss the economy of dryers, either depending upon artificial heat or natural air, But if we will just think back upon the past of a few sights that have greeted our eyes, of vast yards of green bricks lying upon the ground to dry, and of the rain drenching them in deluges, of the work and waste a few days later, when we attempt to clear up and once more commence operations, we need no arguments to convince us of the economy of putting green bricks in some safe place to dry.

We know that dryers and kilns have been constructed for hand-mold bricks, for in some localities clay suitable for this method lies in great quantities. But in most sections that have come under the writer's observations one seldom sees a clay bank used for hand molding more than six feet in depth.

One would soon strip a good-sized farm to furnish bricks to fill the demand of even our small towns. In some instances we have known the clay to be shipped considerable distances when the clay in the vicinty of the factory was exhausted, thereby enabling the manufacturer to continue operations at the old stand, when the addition of machinery would have enabled him to use clay lying adjacent to his factory much superior in quality to the clay brought from a distance, and thus not only make a superior quality of ware, but also save the expense of the long haul of the raw clay.

We have even known manufacturers to rake and scrape for hand-molding clay when great bluffs of shale frowned down upon the small valley which they had skinned to its utmost to obtain clay that suited their methods, and later enterprising men of more knowledge of brickmaking have reaped rich harvests from those bluffs that were not considered worth $10 per acre.

We spoke of the economy of dryers, and now as to the economy of good kilns. Again, I will speak from personal experience and observation. Some men claim that they can burn economically and well in the old-fashioned scove kiln. But I cannot do it, and I have never seen it done. And right here the demand of one's market cuts a figure. Architects will not accept materials that were used during the days of old methods. A large brick church in our city, built thirty years ago, was often pointed out as an example of brick architecture of the olden sort. But it was burned to the ground five years ago. When the walls were pulled down the inwardness of the work was revealed. Many of the bricks when exposed to heavy rains resolved themselves again into clay without the disintegrating action of frost. It showed plainly the character of the burning done in scove kilns thirty years ago. We can't smuggle such materials into walls now and thus realize $8 per thousand for them. (Concluded in Next Issue.)

THE USEFULNESS AND ECONOMY OF TILE.

Written for the Architects' and Builders' Journal by S. Homer Calkins.

THE SELECTION OF THE various materials necessary for the construction and decoration of a building demands the careful consideration of the architect and builder. It is usually to them a matter of pleasing interest, while to many the consideration of the decorative materials become a matter of fascination. It matters not how pretentious or how humble the dwelling, there is usually a place for tiling.

There are many who speak of tiling as a modern luxury, and yet the same people will tell you tiling has been used for centuries past, not only in palaces and public buildings of renown, but in the homes as well as throughout European countries. The Romans, Egyptians, Spaniards and Dutch, whose productions of tiles and ceramics are familiar to those who have proved the practicability of tiles, not only being users of them for centuries past, but continuing to the present time.

About thirty years ago the first tile factory was started in this country. They at once realized a very difficult task, as our country represented so many nationalities, each having a fondness for tiles of their ancestors, and the American's idea for something original made the task doubly difficult.

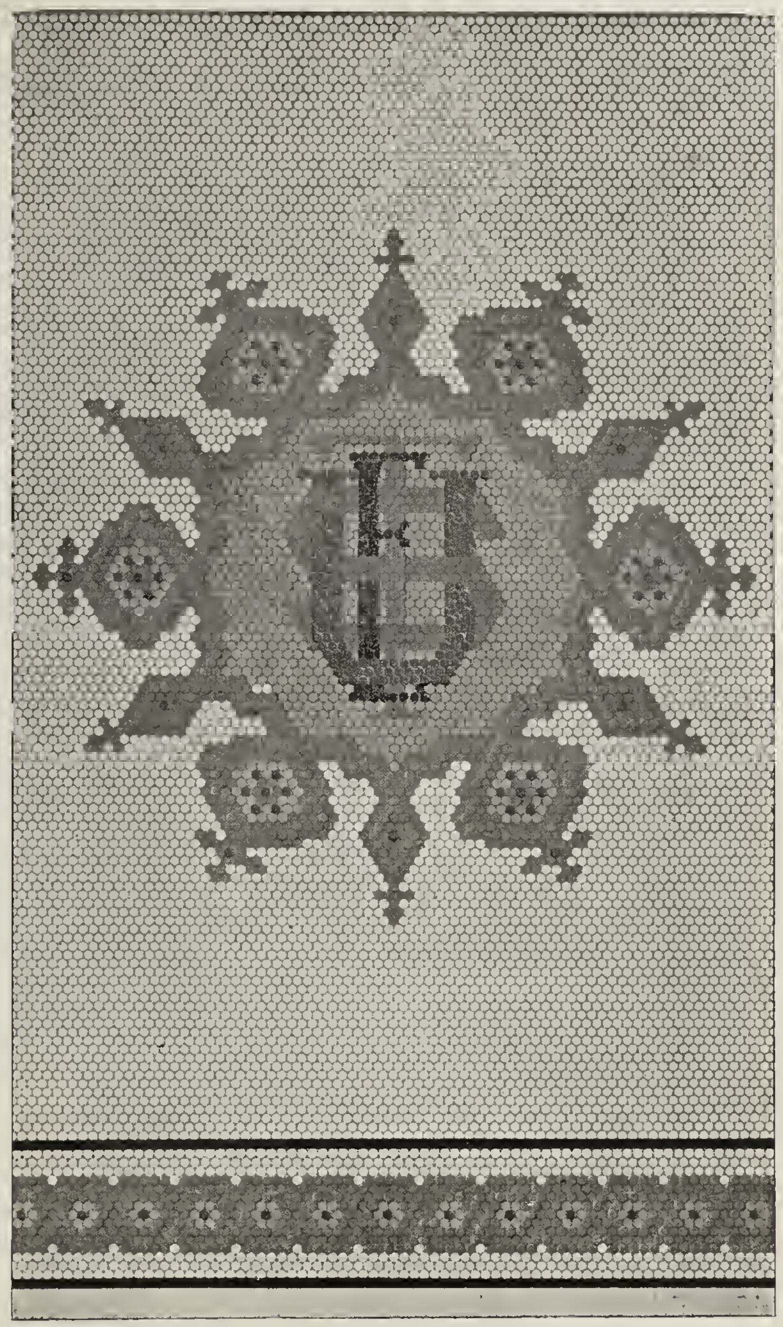
The early idea of our tile factories extended little beyond producing an encaustic tile for floors and enamel tiles for fireplaces, copying much after the English, and for several years their success appeared to be very uncertain; but at last American pluck conquered.

We now have twenty-five tile factories, and for several years America has led the world in variety and quality of tiles, although the total output annually in this country does not yet equal the consumption of little Spain. We are just beginning to learn the styles and qualities of tiles best adapted to our use and the many practical and economical uses we can make of them.

Vitrified ceramic or mosaic tiles were first introduced by the Egyptians. This form of floor was subsequently employed by the Greeks and called by them Kepajos, from which we derive the word keramic. This style of floor is fast coming in favor, as it combines the principal features sought for when a tile floor is contemplated. European manufacturers were the first to introduce them in modern times, but American factories soon followed. The general size is three-fourths of an inch in diameter, and are either square, round or hexagonal.

Architects have long been aware that large tiles come loose more readily than small ones.

A ceramic floor is sanitary, because the tiles are impenetrable; decorative, being small in size the various colors can be so combined as to make from a plain white floor to the most elaborate Moorish or Oriental design. Durability and lightness are also combined in them, weighing less than three pounds to the square foot as compared with marble tile weighing sixteen (the same quantity of material being required, in addition, to lay both). As four thousand degrees of heat, Fahrenheit, is required in their manufacture, their value as a fireproof floor must be recognized, while the heat of an ordinary fire will crumble marble and all other forms of mosaic.



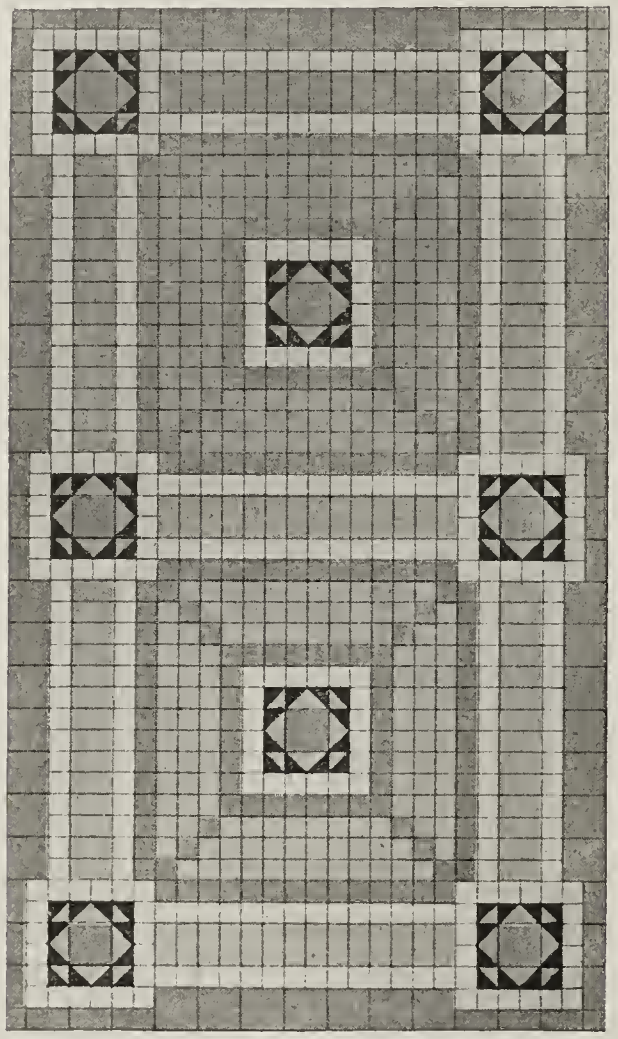
Floor Tile Monogram in the Office of the United States Encaustic Tile Company, Indianapolis. The Ornamental Feature of the Design Measures Five Feet, the Border Being One Foot in Width.

There being very little waste in the manufacture of small tiles, and easier to vitrify than large ones, they are not only cheap to manufacture, but by modern methods easy to lay, and consequently make a very inexpensive floor.

Glazed tile for wall finishes has also gained popularity. The home is not complete without the bathroom, lavatory and kitchen being wainscoted with tiles. Factories, power-houses and even cotton mills have already discovered the saving to their machinery by wainscoting their engine room walls with glazed tiles, in addition to the tiling of the floors, which makes cleanliness possible and thereby extending the life of the delicate machinery employed.

Too much care cannot be given to the proper preparation of the foundation or backing for tiles, to insure satisfactory work. The greatest drawback to tiling to-day is the need of well-trained mechanics. The mechanical branch has not kept pace with the manufacturer, and trade as well as the public suffer in consequence.

We have over two thousand dealers, employing four thousand salesmen and twenty thousand workmen. Less than 20 per cent. of the dealers and 10 per cent. of the salesmen have had mechanical experience in tiles, and for this reason much inferior work must necessarily result. The tile salesman should be required first to learn from mechanical experience the various conditions and experiments for tile constructions before he assumes the responsibility of advising others.



Floor Tile Pattern Executed in Five Colors by the United States Encaustic Tile Company, Indianapolis.

Many buildings are erected with wooden joists, light in weight, with long spans and of unseasoned timber, and in such buildings, without proper and intelligent preparation of a foundation, many worthless tile floors have been laid. In such a construction it is advisable to first cover the wood counter-ceiling with heavy tar paper, laying over this, not over two inches thick, a concrete of cinder, sand and cement, with three-inch mesh expanded metal imbedded in same. This insures a tough, elastic, light, but strong, foundation on which tiles can be laid in a substantial manner.

When the day comes that architects and builders will be as careful in selecting practical men for the erection of their tile work as they are in the selection of the goods the usefulness and economy of tile will become the more apparent.

Written for The Clay-Worker.

PORTLAND CEMENT.

IN MANY FACTORIES the work of the combination of ball and tube mill is done by the Griffin mill. This machine consists of a steel ring, against the inside surface of which a heavy steel roll, revolving on a vertical shaft, presses by centrifugal force. The mill is provided with screens, which allow the pulverized material to pass through, while the coarser particles drop back into the mill.

The finer the raw mixture is ground the better will the chemical reaction in the kiln take place, and hence the higher will be the grade of the cement. For good results the raw stock powder should not leave more than 5 per cent. residue on a 100-mesh sieve.

Now the raw cement is ready for the rotary kiln. This so very important piece of machinery resembles the tube mill in appearance, but is much larger. The average American rotary kiln is 60 feet long and 6 feet in diameter. It consists of an iron shell, lined with high-grade fire brick and inclined about 15 degrees. This great shell rests on two pairs of revolving rollers, each pair being about 10 feet from the ends. The cylinder is driven by gears, it being provided with cogs around its circumference at the middle. When in operation the huge tube is revolved slowly, and, at the lower end, powdered coal is blown in by means of a fan. At the upper end the raw cement mixture is fed in a steady stream. The coal dust, together with the air blown in, generates a very high temperature at a distance of about 12 feet from the lower end of the kiln. Slowly the green mixture passes towards the zone of maximum temperature, becoming hotter and hotter, till it finally is vitrified, and is discharged from the kiln in the shape of black, more or less irregular, balls from the size of a pea to that of a walnut. The red hot clinker drops on to a pan conveyor and is carried away to a cooler, a high sheet-iron cylinder, into which air is blown at the bottom, the clinker being dumped in on top. In some places the hot clinker is cooled by water being sprinkled on it, or, again, the pan conveyor may run in a pit containing water up to the level of the pans. Some mills simply dump their clinker in piles and let the air cool it.

The cooled clinker is now ready to go through the final grinding. The machinery used for this purpose is either an exact duplicate of the raw grinding outfit, consisting of a ball and a tube mill, or the tube mill may be replaced by a Griffin mill. By means of conveyors the ground cement is taken to the bins, where it stays till sufficiently cured—that is, till the free lime has been air-slaked.

The above process applies to all dry mixtures, and is modified only in case a soft, moist clay is used with limestone. Where such a clay is used it must be dried in a rotary dryer before being mixed with the limestone.

Where, however, a marl is the principal cement material, the preparation of the raw mixture is accomplished in the wet way. The marl, which usually is quite moist and often in the shape of a soft mass, being dredged up from the bottom of a lake, is mixed with the clay in a pug-mill-like machine, provided with a screen and a door for the removal of roots and stones. Enough water is added to make a slip or slurry containing some 60 per cent. of water. In place of this kind of mixer a crusher something like a dry pan is sometimes used, in which the liquid cement mixture runs out through the perforated bottom. The slurry is now pumped into tube mills, by means of plunger pumps or compressed air, in a steady stream, the ground mixture escaping at the opposite end. The marl and clay have now been intimately blended and ground and are ready for the kiln. But in order to insure thorough mixture, as well as to store slurry for the night run of the kilns, the cement slip is pumped from the tube mills to large tanks holding about 80 cubic yards each. Here the liquid is kept agitated by means of stirrers or jets of compressed air. These tanks also enable the chemist to make an analysis of the mixture, and, if not correct, to make the proper correction by pumping in high or low lime slurry, according to whether the mixture is low or high in lime.

From the tanks the slurry is piped to the kilns. Where this process is used it is evident that the rotary kilns, in addition to burning the cement to vitrification, must evaporate and expel the large amount of water in the slurry. This, of course, reduces the capacity of the kiln and increases the amount of fuel per barrel of cement. While a dry mixture plant turns out from 160 to 220 barrels per kiln in twenty-four hours, a wet process mill will produce only 110 to 150 barrels. On the other hand, the manufacturers by the wet method claim that they produce a more intimate mixture with less expense for power, and also with less wear and tear of machinery. From the kiln on, the dry and the wet processes are entirely the same.

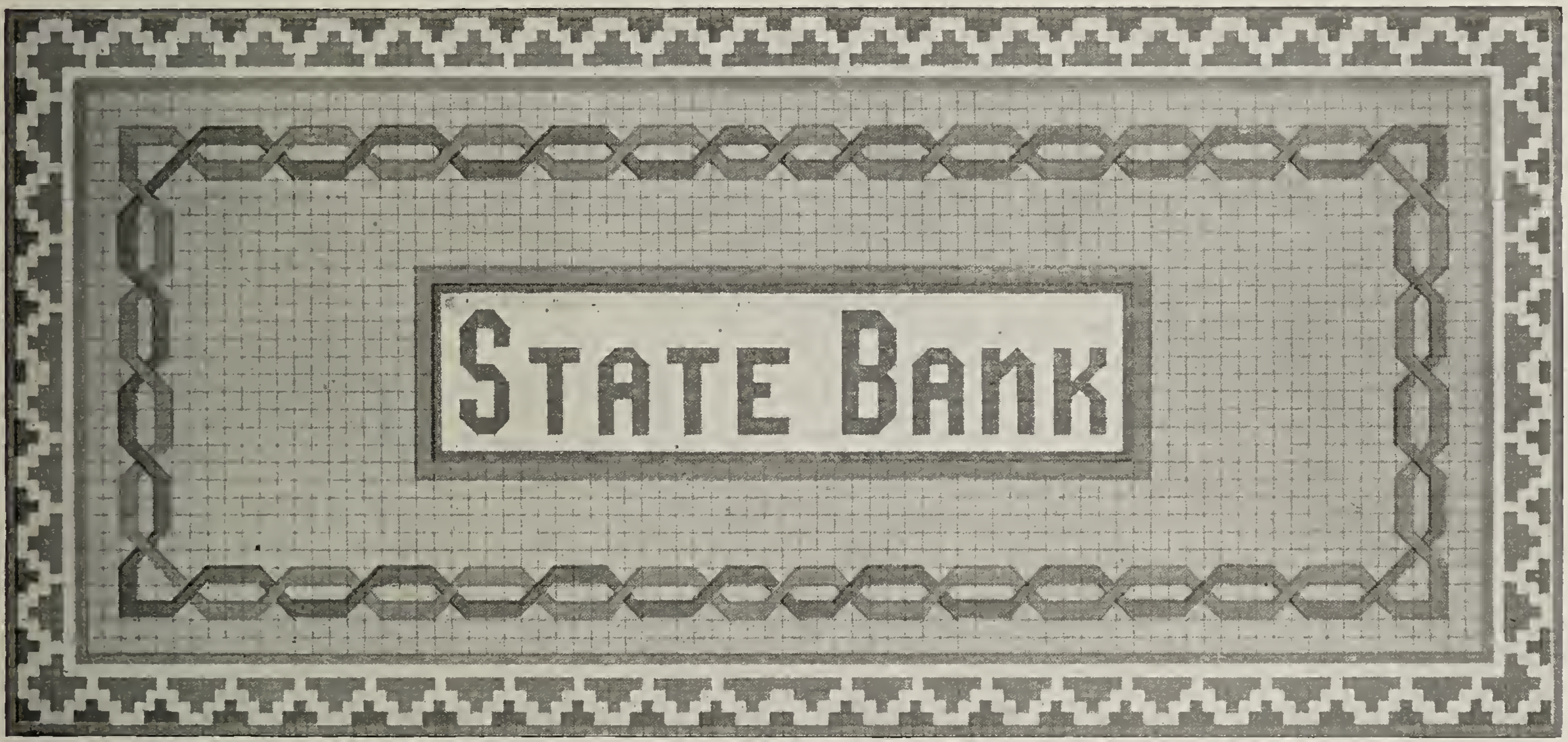
Portland cement, as we generally find it, is a sharp powder of grayish color, which has a high specific gravity. Fresh cement has a specific gravity from 3.12 to 3.25, cured cement from 3 to 3.15. The finer the cement is ground the more complete will be the chemical reaction of hardening, since only the very finest particles are rendered entirely active. The coarser particles react with water only on the surface. A cement of proper fineness should not leave more than 20 per cent. residue on a 120-mesh sieve.

On stirring Portland cement with water it becomes stiff after a shorter or longer space of time. When it has stiffened so that it will not dent on being pressed with the finger nail it is said to have set. At this point the real hardening process begins, which goes on for years. We can distinguish hence two periods in the solidification of cement: the setting and the hardening. Cements may be quick and slow setting. When a cement sets in one hour or less it is known as quick setting. If it requires much more time it is called slow setting, though this classification is not rigid. Underburned cement and cement high in alumina tend to set quicker than materials high in silica and burned to the proper degree of vitrification. Quick-setting cements are always to be regarded with some suspicion, because they are apt to be inferior in ultimate strength, as well as lacking in respect to constancy of volume. All cements must be worked before they begin to set, otherwise they will suffer a decrease in strength, and will also show a long period of second setting. The temperature of the air affects the cement, inasmuch as it will set quicker in warm weather than in cold. This is also true of the temperature of the water used; warm water will hasten the setting.

The more water is used in the mixing of cement mortar the slower will it set, and vice versa. When cement sets heat is evolved, and a thermometer placed in the mortar will show a rise in temperature. This rise is the greater the more free caustic lime is in the cement—that is, lime not combined with silica and alumina to form hydraulic compounds, owing to more or less imperfect mixing and grinding. It is impossible to make a Portland cement without any free lime, but its amount must not be excessive, and whatever of such lime is there must have been air-slaked to lime hydrate. For this reason a high increase in temperature shows that the cement has either been improperly mixed and ground or underburned, or has not been properly air-cured. A cement should not show a rise in temperature of more than about 18 degrees F., though this limit cannot be accurately fixed.

Many substances, when mixed with cement, affect setting in a marked degree. The alkalies, like soda, soda ash or potash, make it set more quickly; gypsum (sulphate of lime), sulphuric acid, calcium fluoride, etc., tend to make it set slower. Gypsum is used extensively to make quick-setting cements set slower, and many manufacturers could not do without it. Sea water, owing to its content of magnesium chloride, retards setting.

After setting, the cements grow harder and harder, till in about a year maximum strength is reached. Quick-setting cements are not, as a rule, quick hardening, but the reverse is true. Slow-setting cements show greater strength in a shorter time than quick-setting ones, since slow setting gives



Design for State Bank at Indianapolis. Executed in Five Colors by the United States Encaustic Tile Company.

the particles of cement a better chance to consolidate and to displace the water.

In order to harden satisfactorily there are two conditions necessary that the cement may attain its best strength: During the setting the mortar must not be disturbed in any way, and for several days it must be kept from drying out. If it is allowed to dry out, robbing it of the water necessary for hardening, it will never reach its full strength.

Portland cement hardens in air as well as in water, and, if kept moist for several days, it will attain a greater strength in air than if allowed to harden in water. The greatest strength, however, is reached if it hardens alternately in water and in air.

Too much water used in making cement mortar decreases the strength; providing sufficient water is allowed for the hardening process proper, the ultimate strength will be the greater the smaller the excess of water used in the mixing of the mortar. Hard water increases the strength, but sea water lessens it.

The strength of Portland cement is expressed by the tensile and crushing strengths in terms of pounds per square inch. But since the crushing test requires an expensive and elaborate apparatus the tensile test is the one universally employed. The cement, either neat or mixed with sand in the proportion of 1 to 3, is made into mortar with water and molded in brass molds into briquets, having about the shape of the figure 8, whose cross-section at the thinnest part is equal to one square inch. By placing the halves of the hardened briquet into movable, adjustable clamps, and gradually increasing the tension, tending to pull them apart, a point will be reached at which the test piece is broken. The pressure applied to break it, as indicated by the machine, will express the tensile strength in pounds per square inch. Good Portland cement, after twenty-eight days, should show a tensile strength of at least 600 pounds when neat and 180 pounds when mixed with sand in the proportion of 1 to 3.

At least as important as the tensile strength is the soundness of the cement—that is, its property to harden without increasing unduly in volume and without cracking. All cements swell in water, but excess of quicklime, sulphate of lime and magnesia give rise to a dangerous increase in volume, shown by the appearance of cracks and often by the complete destruction of the cement. This becomes most pronounced in the neat cement, and much less so when it is mixed with sand. Often it is found that cement which swells and cracks when neat is perfectly normal when made into a mortar. The swelling of a cement is indicated by the appearance of fine cracks when a pat of the material is placed in water for several days; when the swelling is bad the cake of cement warps and cracks at the edges. The cracks due to swelling must not be confused with such which may be due to shrinkage owing to rapid drying. Shrinkage cracks are irregular and are produced only during the setting; cracks due to swelling appear after the hardening has commenced. The test to bring out the soundness of a cement consists in making a pat of cement, allowing it to harden in a moist atmosphere for twenty-four hours, and then placing it in water for at least three days. It is best, however, to extend the test over twenty-eight days. A rapid test, often practiced, is the boiling of a pat of neat cement for three hours in water. A good cement will be perfectly sound after the boiling. It is important in this test that the cement be first placed in cold water, which is gradually raised to boiling.

Portland cement, when hardened, is quite readily attacked by mineral acids like muriatic and sulphuric acids, and even by organic acids like vinegar, etc. Carbonic acid in water has been found to attack cement plastering very vigorously. Alkalies have no injurious influence upon the cement; the same thing may be said of petroleum, sewerage, etc.

Heat exceeding a temperature of 600 degrees F. deteriorates hardened cement very rapidly, since the water of combination is expelled and the mortar rendered loose and friable.

Elaborate tests were carried on at Hamburg, Germany, in 1895, by an official commission, in which the fire-resisting power of concretes was to be determined. It was found that all the sand, gravel, stone and fine cinder concretes failed after having been exposed to temperatures ranging from 780 to 1,060 degrees C. (1,436 to 1,940 degrees F.) The only concrete which stood the test was a coarse cinder concrete, 1 cement to 7 of cinder. All hydraulic cements, both natural and Portland, harden in consequence of a process of crystallization due to the combination with water. This water of combination amounts to from 10 to 15 per cent. At a high heat this water is expelled and the cement loses a great part of its strength, in fact often is reduced to a powder. A high heat, continued for a long time, hence is fatal to the strength of all cement mortars and concretes, and it is evident that cement cannot rightfully compete with burned clay in the branch of fireproofing. Burned clay, containing no water of hydration, is never liable to this great defect.

In conclusion, a word in regard to natural cements as compared with the Portland: Many hundred tests have shown that Portland cement, when made into a standard mortar (1 cement to 3 sand), is, on the average, at least twice as strong as standard natural cement mortar after one year. Portland cement also is much more constant in volume than the natural, which makes it possible to construct with it sidewalks, sewers, tiles, ornaments, etc. These two considerations must govern whether one or the other is to be used. For many purposes, such as the building of walls of ordinary sized buildings, canal locks, foundations of houses, etc., natural cement is good enough, and, of course, is cheaper. But wherever it is essential that the work should possess maximum strength, as well as be free from the danger of cracking and swelling, Portland cement should be used. This is especially true in these days, when its price approaches closer and closer that of the natural cement, so that at present the cost per unit of strength of the two kinds of cement is very near the same.

AMERICUS.

A PROSPEROUS PENNSYLVANIA FIRM.

The Reese-Hammond Fire Brick Company, of Bolivar, Pa., with works at Bolivar, Fairmont and Curwensville, have secured the contract for the large new blast furnace and four hot-blast stoves being erected by Julius Kennedy for the Rochester and Pittsburg Coal and Iron Company at Du Bois, Pa. The Reese-Hammond company recently furnished the brick for a blast furnace for one of the United States Steel Corporation's plants, and within four months have secured orders for six blast furnaces and eight Kennedy hot-blast stoves. They were also awarded the contract recently by the Union Steel Company for brick for their new open-hearth plant and other furnace work being erected at Donora, Pa., amounting to about 7,000,000 high-grade fire brick, from their Curwensville works, in Clearfield county. This company owns a large acreage of the purest and most refractory clays in Clearfield county, and have under lease some of the most desirable territory in that country. They are increasing the capacity of their Curwensville works to 75,000 high-grade fire brick per day, building several miles of mine railway and making other extensive improvements that will, when completed in a couple of months, make the Curwensville works not only the finest plant in the Clearfield region, which has long been conceded, but will make it the largest and best plant, possessing advantages not possessed by any other plant in the country.

The Reese-Hammond Company have almost completed their new No. 1 works at Bolivar, which replaces the old one destroyed by fire in March. The new plant is a brick structure, 60x312 feet, two stories high, strictly modern in all its equipments, and will have a capacity of 30,000 brick per day. It is to be used for the manufacture of high-grade refractories exclusively.

This company has won every important contract for high-grade material for which it has contested this year, their brick proving by analysis and experiment to be superior to any other material considered, which is, indeed, a phenomenal record. The total capacity of their seven plants, including all classes of high-grade refractories and other fire-clay products, reaches the enormous output of 285,000 brick per day, making the Reese-Hammond Company several times the largest independent fire-brick manufacturers in the United States, with a well-established reputation of thirty-five years' successful experience.

WRITTEN FOR THE CLAY-WORKER.

WISCONSIN BRICK AND TILE NEWS.

DURING THE MONTH of July the Allis-Chalmers Company, of Milwaukee, was awarded the contract for the manufacture of the machinery for one of the largest brick-making plants in the world, to be established near Madrid, Spain. It is to have a capacity of 1,200,000 bricks a day, and it is said that King Alfonso XIII, as well as others of the royal family, is interested in the enterprise. Isadore Pedruza de la Pascua, one of the principal directors of the Crisna Company, recently visited Milwaukee to place the big order. The outfit will represent 10,000 tons of machinery, and when complete the plant will have more than $600,000 worth of American machinery.

At the recent state convention of the Prohibition party Eden W. Drake, of Milwaukee, was nominated to lead the party in Wisconsin as its candidate for Governor. Mr. Drake has been more or less identified with the brick business and was one of those most active in the organization of the Wisconsin Clay Workers' Association at Madison in February 1901. At that meeting he was elected the first president of the association and presided at the second convention held in Milwaukee this year. Mr. Drake is a mighty good fellow, even if he is a Prohibitionist—maybe that is in his favor—and will apply the same business methods to his candidacy and the advancement of his party that characterizes all his efforts in the business world.

R. R. Birdsal, a Racine contractor, has secured contracts for brick pavements to be laid in Milwaukee on Kinnikinnic avenue and Park street. The contract for the first-named street was given at $2.08 a cubic yard, and for the four blocks on Park street at $2.04 per yard. The W. G. Taylor Company furnishes the brick for this work, which will run up to half a million of Union Paver brick, manufactured by the Sciota Fire Brick Company.

The W. G. Taylor Company is furnishing Indianapolis terra cotta for the new Kennebec apartment house, which includes the decorative work for three entrances and a course between the first and second stories.

Brickmakers at De Pere, Wis., struck Aug. 1 for an increase of wages or shorter hours. At the Smith yard the matter was settled by calling 25,000 bricks a day's work, instead of 28,000. At Roffer's yard an increase was granted.

Building permits issued in Milwaukee during July show a total value of the work estimated of $420,000.

The John Pritzlaff Hardware Company is putting up a six-story brick and stone warehouse, 110 feet front, 50 feet rear and 100 feet long.

The Johnson Electric Service Company has commenced the erection of a factory and office building. It will be seven stories in height and 175x60 feet. The outside finish will be of St. Louis brick, with stone trimmings.

The annual picnic of the board of directors of the Milwaukee Cement Company took place at the company's works, just north of Milwaukee, on Thursday, July 31. Directors Samuel Marshall, John Johnston, Howard Greene, B. K. Miller, Jr., and Joseph Berthelet were included in the party, which very pleasantly combined business with an afternoon in the woods and an inspection of the extensive works of the company.

Maj. J. G. Warren, the United States engineer at Milwaukee, has recommended that the breakwater and harbor piers in Milwaukee bay be built over entirely of concrete, so that there will be no further costs for renewals. The inner portion of the north harbor pier and the inner arm of the breakwater will be reconstructed of concrete, for which the sum ef $82,000 has already been appropriated.

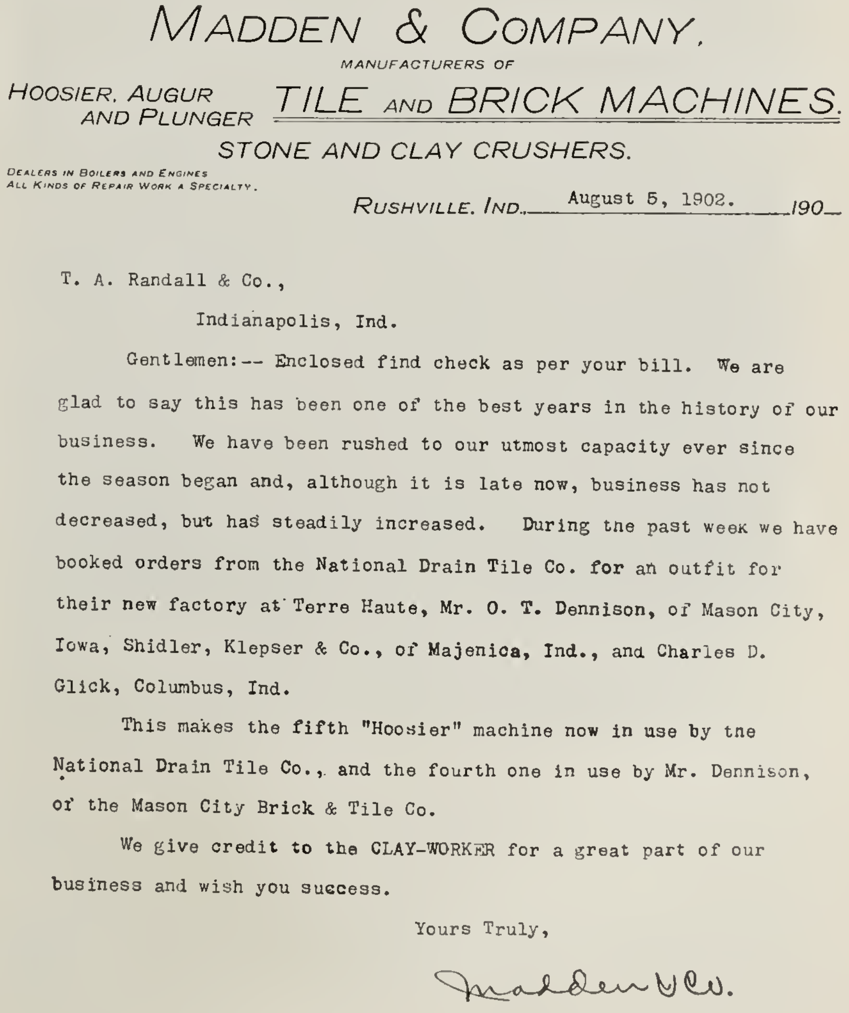
Contracts for 31,578 square yards of cement sidewalk about nine Milwaukee schools were let in July, at a cost of $3,700, H. A. Schlick getting part of the work at 11 to 12½ cents per foot, E. A. Sponholz some at 13 cents and John Sullivan the balance at 12¼ cents.

According to statistics just issued from Washington on the Clayworking Industry in the United States Wisconsin ranks twentieth in the output of clay, 170 firms reporting a value of product at $1,247,544. Milwaukee is credited with an increase in all building for the year 1901 of $1,910,537 over the preceding year.

There is a prospect that a new brick yard will be started at Two Rivers, Wis. Recently some Chicago people have been looking the ground over with a view to engaging in the manufacture of brick on a large scale.

GOOD MACHINERY AND A GOOD ADVERTISING MEDIUM—A COMBINATION OF MERIT THAT ALWAYS WINS.

An interesting letter from one of the clay machinery firms now enjoying a most prosperous season, thanks to the trade-getting qualities of The Clay-Worker and the merits of "Hoosier" machinery



MADDEN & COMPANY,
MANUFACTURERS OF
HOOSIER, AUGUR AND PLUNGER TILE AND BRICK MACHINES.
STONE AND CLAY CRUSHERS.
DEALERS IN BOILERS AND ENGINES
ALL KINDS OF REPAIR WORK A SPECIALTY.

RUSHVILLE, IND., August 5, 1902. 190

T. A. Randall & Co.,
Indianapolis, Ind.

Gentlemen:-- Enclosed find check as per your bill. We are glad to say this has been one of the best years in the history of our business. We have been rushed to our utmost capacity ever since the season began and, although it is late now, business has not decreased, but has steadily increased. During the past week we have booked orders from the National Drain Tile Co. for an outfit for their new factory at Terre Haute, Mr. O. T. Dennison, of Mason City, Iowa, Shidler, Klepser & Co., of Majenica, Ind., and Charles D. Glick, Columbus, Ind.

This makes the fifth "Hoosier" machine now in use by the National Drain Tile Co., and the fourth one in use by Mr. Dennison, of the Mason City Brick & Tile Co.

We give credit to the CLAY-WORKER for a great part of our business and wish you success.

Yours Truly,

Madden & Co.

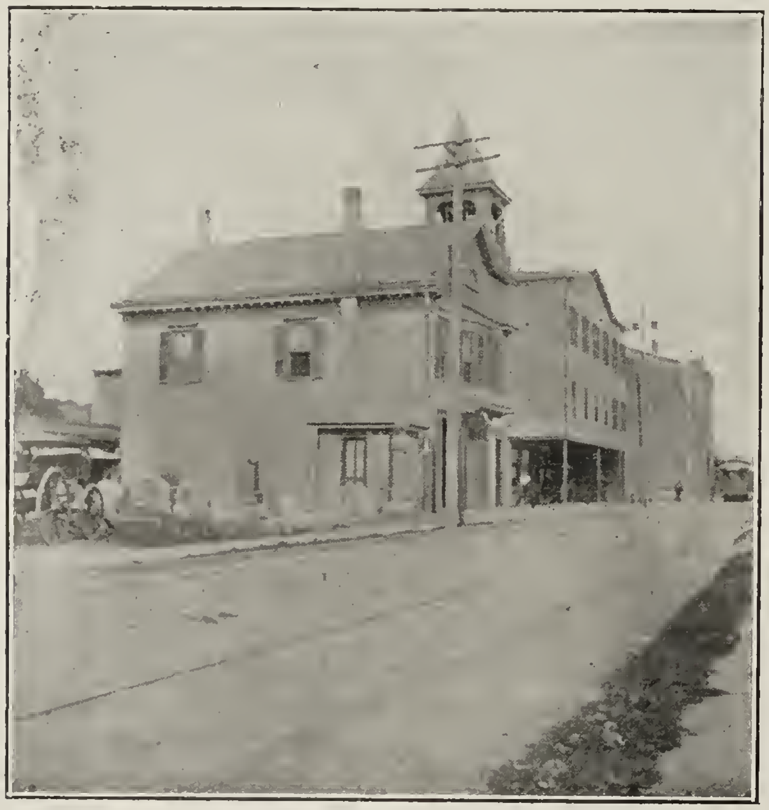
WRITTEN FOR THE CLAY-WORKER.

A HANDSOME BRICK STREET.

A Successful Paving Experiment That Leads to More Brick Paving.

THERE IS UNIVERSAL complaint in Eastern towns of 5,000 to 10,000 inhabitants regarding the streets. Macadam is scarcely solid enough to stand the traffic on the main streets and paving seems too expensive. In some instances it is undoubtedly too expensive, but very much depends upon the character of the paving and the wearing qualities. If it has to be renewed constantly it is expensive. If something can be put down which will last indefinitely with inexpensive repairs, then it is not costly, but is economical. The expense should always be considered as extending over a series of years, not as being limited to one season, or, if the paving is as it should be, one generation of taxpayers.

Hackensack, N. J., is located in a series of brickyards, but its paving has been limited to macadam on all streets. On the residence streets this is strong enough and doesn't wear materially. At any rate, the cost of repairs doesn't amount to much. But Main street is horrible. So was Mercer before a trolley went through it. After a rain it was a mortar bed and during dry periods it was so sandy that one had to hold his nose and eyes if the dust flew. When the trolley sought a franchise it was specified that the street should be paved with brick, and this was done, and we now have a model street. The brick were bedded in concrete and laid to last.



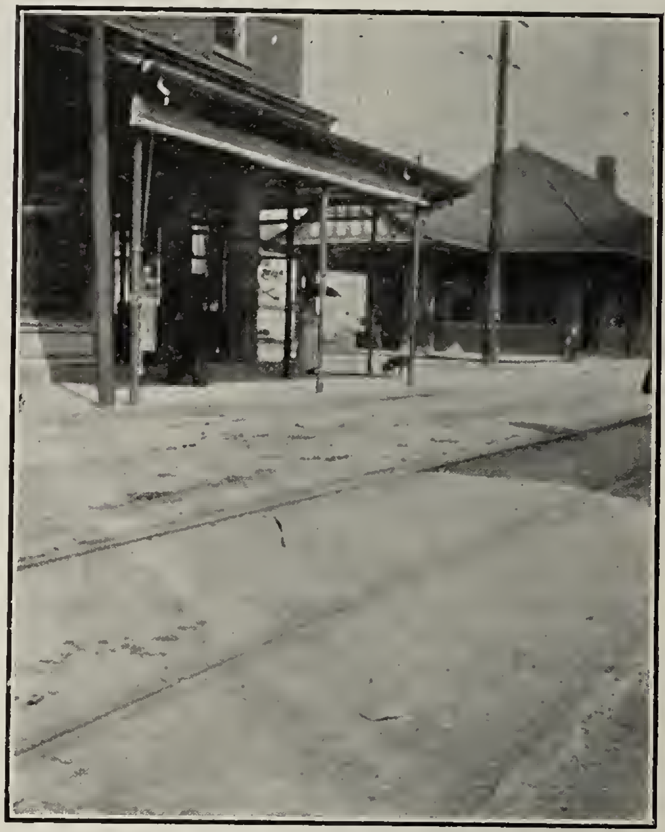
Mercer Street, Hackensack, N. J.

The accompanying illustrations show two views of the street. It will be noted that it is extremely smooth and even, and these views were taken after the heaviest traffic of a town of 10,000 people has passed over it for a year and before a cent has been laid out in repairs or has been needed, in fact. The bricks have laid through one winter and not one moved or heaved.

So well is the paving liked that another trolley line which has just been granted a franchise, has agreed to lay a brick pavement on Main street just as good. It must be bedded in concrete and must be in all ways as good as the one illustrated herewith.

Further than that, there is a good deal of discussion going on regarding paving in other sections of the town where traffic is heavy. And when any is done, as is likely to be shortly, it will be done with brick, like the accompanying photographs.

This is shown here and described merely as an object lesson for brick manufacturers. A little effort expended in this direction will frequently lead to similar extensions of the use of brick. It is not so much a question of first cost as it is to show town councils and city governments that the expense distributed over a series of years, as is always the case in brick paving, doesn't amount to so much in any particular year as in other varieties of paving. Object lessons are worth more than argument, and an ocular demonstration of the value of brick as a paving material, such as is shown here, will always result in increased use.



A Perfectly Smooth Brick Pavement.

It requires, in the first instance, some effort, perhaps, to win in a fight in which there are numerous other varieties of paving material offered, but the assertion is ventured that, once an entrance into a particular field is secured, there will be no danger of brick being supplanted with anything else, provided it is properly made and properly laid. It should in all instances be adapted to the service which will be required of it Soft brick on streets with heavy traffic will result in disappointment. Hard brick on streets with light traffic are more desirable when durability is taken into consideration, but are, perhaps, unnecessary. There are so many grades that any sort of traffic requirement can be satisfied.

More than that, the streets which are paved with brick always look neat, as shown here. There is never the accumulation of slime which is so disagreeable on asphalt, and there is not the rough traveling which is characteristic of Belgian blocks. In other words, the smoothness which so many admire in asphalt, and which is possible under proper traffic conditions in macadam, is combined in a good brick pavement with the durability of Belgian block under heavy traffic. And all these elements of desirability are obtainable with brick at less than any other form of paving.

Why, then, is not more of it done? Perhaps there hasn't been hard and persistent work enough done. Perhaps the durability of present-day brick is not sufficiently understood by present city governments and town boards. Perhaps half a score of other influences are working against the expansion of brick paving in numerous communities. But, whatever may be the reason, it will be a good bit of business for workers in brick to do all they can to have the use of brick extended wherever some durable and hard paving is required. At the same time, it must be understood that there are certain special conditions which might make it unwise to pave with brick. Some forms of heavy traffic can be better accommodated with Belgian blocks, and macadam is satisfactory for residence streets where traffic is limited to pleasure vehicles. There is no use in attempting to force brick where it is manifestly unwise, but where it is proper there should be a determined effort to capture every contract possible.

BURTON.

A WOMAN POTTER.

Interesting Experience of Mrs. Cornelius Poillon, Who Has Learned the Art of Mixing Clay.

"THIS IS SUCH comfortable, restful work—just the thing for nervous people," said Mrs. Cornelius Poillon in her New Jersey pottery. "Of course," she added, "one can have nervous prostration when the kiln is opened and the work of days is revealed in ruin, but there is no hurrying the clay nor, in fact, any part of the process. It is steady, painstaking effort that achieves success."

Mrs. Poillon is a potter. That is, by long and diligent experiment and undaunted courage she has learned the potter's secret of clay mixing, and all the pottery, both for decorative and kitchen utensils, made in her establishment is the product of formulas worked out by herself.

To get the formulas was the difficult part of her undertaking, for every potter guards the secrets of his mixtures with jealous care. It was only because the potters had little fear of a woman learning their art that Mrs. Poillon was admitted by certain ones to their establishments for experimenting purposes.

Mercer Street, After A Year's Use.

"Potters," said Mrs. Poillon, "are the most charming men in existence, and the most 'cheerful liars.' With the most suave manner and fetching blandishments they will make you think that they are giving you a perfect formula, when, as a fact, they are throwing you off the track all the time."

Mrs. Poillon began her efforts in pottery with china painting. But the possibilities of that process were limited, and a great admiration for the colors and depth of underglaze was her incentive to enter the field of experiment. With three lessons, in which she learned what the underglaze colors look like and how to apply them she started to work out results.

—Her Untiring Efforts.—

A small kiln was built in a New Jersey town, and there Mrs. Poillon worked for an entire summer before a single good result in color was attained. To be sure, there was one exception in the underglaze blue, but as cobalt blue cannot be destroyed by heat, that was not classed as an important achievement. The goal of all her efforts at that time was to produce a finished landscape in the various tones of green, brown, gray, etc. To produce a perfect piece of underglaze work the ware on which the decoration is painted, the colors used and the glaze covering the whole surface must all be in chemical harmony, and to attain satisfactory results the worker must be familiar, through long experiment, with all these factors and their action under intense heat. The second summer found Mrs. Poillon still in pursuit of these ends, and at last, after patient trial, she won. Each shade of every color was tested on all the different wares, with all the various glazes, until a definite knowledge of results was gained. The cost of firing each kiln as an experiment was $30. So, although the work was fascinating, the expense was a serious drawback.

"A perfect understanding of his mixtures is as necessary to the potter as to the baker," said Mrs. Poillon. "China clay stone, ball clay and flint are equivalent in the potter's work to butter, eggs, sugar and flour in the baker's processes, different combinations and proportions producing different wares."

A Macadam Street That Will Be Resurfaced With Brick.

—Art of Mixing.—

In order to learn the art of mixing Mrs. Poillon gained admission to a pottery and there shoveled and mixed side by side with day laborers. All the practical experiments she supplemented with study abroad, and gradually the work which began as a recreation assumed the character of an ambitious enterprise.

At present Mrs. Poillon, with her assistants, is making her own wares, her own colors and her own glazes. It is her work as a true potter to mix the clay and colors. Skilled laborers do the throwing, pressing, casting, jiggering and hand modeling, as the various processes are called. The place in which the work is done might be mistaken for a junk plant. A high board fence decorated in lavish profusion with gaudy posters entirely conceals every suggestion of the pottery excepting, perhaps, the top of a misshapen chimney, which does not intrude itself upon the observation. The gate, a section of the fence set on hinges and containing serial portions of the decorations, is only visible to the initiated. Upon opening the gate a scene of disorder wild to the point of picturesqueness presents itself. There is every kind, sort and description of vagrant box, barrel, "sagger" tub, board and timber and an old wagon or two, long unused. Pottery, broken and unbroken, dried and undried, baked and in the biscuit, is scattered in every direction and serves to blend the medley into something like harmony.

—The Potter's Wheel.—

In the inclosure is an old brick furnace, emitting at the time of the reporter's visit Plutonian fumes and filled with saggers containing cooling porcelain. The pottery itself is a series of unpainted sheds, thrown together, apparently, as business demanded enlarged accommodations. Tubs of wet clay, drying casts and molds, the simple machinery demanded for the work, a few people leisurely working in various departments and an old horse that travels far every working day without "getting anywhere" complete the equipment. The potter's wheel, old in the days of Pharoah and too little used in these days of machine-made and stereotyped wares, is a part of the outfit. Only workmen skilled by long practice can use the wheel. They are known as "throwers," and few are to be found in this country. The kitchen utensils are made by a machine known as the "jigger" or in molds. All this work is done by laborers.

Suggestions for designs, decorating, coloring and glazing, as well as the preparation of the materials, are the work of Mrs. Poillon. "There is nothing about work in clay that a woman cannot do successfully," said Mrs. Poillon. "In it she can find wide scope for original expression."—New York Tribune.

SPECIAL STEEL PALLETS, ETC., FOR CLAYWORKERS.

The Avery Stamping Company, of Cleveland, O., whose advertisement appears elsewhere in this issue, wish to call attention to their ability to do all kinds of sheet steel work, such as special shaping, shearing, stamping, drawing, dishing, flanging, etc. They have been in the general metal-working business seventeen years, during which time machinery and appliances that would facilitate and improve production have constantly been added, until at present they own a most complete equipment of hydraulic and other presses of enormous power, shears, punches and a great variety of machinery, which enables them to work metal either hot or cold. They make all sorts of special articles, among which as of special interest to brick manufacturers might be mentioned steel brick pallets; also washers of standard and special sizes. In fact, they can furnish almost anything in the line of flat or formed work. They are always glad to hear from parties having anything that can be duplicated in sheet steel. All inquiries should give full description of what is wanted, as well as the quantities that would be ordered, as in this business, very similar in that way to printing, economy in manufacturing, and consequently the cost of same, depends on the number of pieces to be gotten out. Correspondence is respectfully solicited.

THE PHILADELPHIA BRICKMAKERS ARE ALL HAPPY—PROSPEROUS TIMES AND GOOD PRICES.

AS I JUMPED off the car out in Kensington avenue, Frankford, and made my way across the lot toward the big sign of

—T. B. McAvoy's Sons—

the right optic gave a start, for on the other side of the kiln a buggy was leaving at a rapid pace, and I was fearful lest that same buggy should hold the 215 pounds adipose tissues, bones and negligee shirt of genial Aleck McAvoy. My alarm, however, was needless, for I found him midway between the kilns and the offices as happy as a school boy and as bright as a star.

Greetings exchanged we got down to rock bottom. "Yes, business is good; never better. Within the past month hard brick has gone up a dollar, and orders are coming in faster than we can handle them. See, there is scarcely a brick around the plant, and stretchers bringing $12 and salmon $6 to $6.50. We turned out last year between nine and ten million, and for this year we will have to go one better."

On the 30th one ten-arch clamp was burnt, and on the 2nd of this month another was being set for another burn, just to maintain the most imperative demands.

On the office table lay an order for an immediate hauling to be made for the big mill, 196x120 feet, to be erected at Third and Columbia avenues, supplemented by another for an immense manufacturing plant now in course of erection at Second and Erie avenue. In addition thereto, Aleck must needs hustle to furnish the stretcher and hard brick for a building operation consisting of eighty two and three-story houses, to go up at Sixth and Luzerne streets, and some thirty two and three-story houses to be erected at Frankford road and Cambria. The first two operations will take over three million. In addition to this Holmesburg, Bridesburg, Lacony and other small places continue to drain the yard.

There is at present an active demand for Philadelphia red press brick, and hand-made press brick have jumped from $18 to $20. Wherever the eye turns over the thirty acres there are signs of genuine activity and progression.

Aleck has a good plant and knows how to handle material and men. The Chambers machine was working up to the top notch, turning out 75,000 daily, and the stretcher and repress will sell in any market, bar none, and so from morning until night Aleck keeps seventy-five men limbered up, free from rheumatism and as obedient as a newly-made bride. Since hard coal cannot be obtained, they are using soft coal, which takes some thirty-six hours longer to burn.

Like his father, Aleck takes an interest in local politics, and was recently elected to the Town Council. The brickyard poet announced the event in this wise:

—Our Boss.—

He hasn't got a buggy,
  Nor need to scowl or frown;
His name is good for anything
  Within this ancient town;
For you know he's been selected,
  With pride and without alloy,
To represent the Twenty-sixth ward
  As Select Councilman McAvoy.

—A Brickyard Fire.—

The fire which occurred at the Frankford Brick Works, located at Torresdale avenue and Bridge street, Frankford, last month, left little else but the four Dutch kilns standing. The new pipe dryer and the brand new Hercules machine went down and out before the fury of the flames.

Fortunately for Mr. William Kelly, the insurance adjusters were at that time doing little else but dusting down ready for the fall trade, so they jumped into the breach, had the tattered remnants sorted over, and, after smoking several boxes of Manual Garcias, concluded quickly to hand over to Mr. Kelly sufficient of the needful to buy a new machine or two and something to pay the boys for cleaning up.

The plant, which covered some four or five acres, was equipped with a sixty-horse-power engine and two boilers of sixty-horse-power each (these, the boilers, were saved), two twelve-arch Dutch kilns and two ten-arch Dutch kilns. In the early part of last year, in making my semi-annual visit, I found them busy installing a new pipe dryer, some 120 feet long by 44 feet wide, and the yard assumed a good, aggressive aspect, ready to meet all comers with orders, from Holmesburg down to Seventh and Walnut.

Under the Kiln Sheds at Siner's.

Running level with the unprecedented volume of business which this season has attacked all our brickmakers from Reading down to the "Neck," William Kelly was sending out brick almost faster than he could burn them, when the fire occurred which made chaos out of prospective prosperity.

Hauling Coke in Place of Coal at McAvoy's.

Now the yard has been cleaned up, and everything and everybody is waiting tiptoe with impatience for the newly ordered Hercules machine, of which William Kelly speaks in glowing terms. The Horton Manufacturing Company has advised that it is on the road. With this installed, the Kellys hope to be running by the time the August issue of The Clay-Worker arrives in the Quaker City. George Carnell was also the recipient of an order for a new sand grinder, and Messrs. Potts have promised to deliver a new sanding machine so that even fires, like ill winds, have a compensative side.

The Frankford Brick Works will start in again with a newly constructed up-to-date plant. The new dryer will be extended in length and width, with three aisles. Hitherto there was no track from machine to dryer, and only one from dryer to kiln. With the additional tracks, the former trouble and loss of time in the trucking will be entirely effaced. Two new twelve-arch Dutch kilns will be added, and a machine shed 150x50 feet will be erected.

Many cumulative orders will be rushed through for the various building operations, which call for all the bricks William Kelly can turn out between this and turkey-killing time. Hard brick is quoted here as high as $8.50 and $9, salmon $6.50 and stretcher at $12. Coal and its future delivery is a subject all along the line, and in this the question of some important method of economy is being discussed.

The old yard of Joseph L. Siner, at Kensington avenue, has been entirely worked out and is now dismantled, after having served its present proprietor well and steadily for over thirty years. All the brickmaking is now done at the plant on Frankford avenue, and here, with Siner, junior, and a pipe between us, we discussed prospective, "fore and aft," as the Hibernian put it.

Alex McAvoy's "Resting Place."

Speaking of the tremendous call for brick, Mr. Siner corroborated what was said at the yards:

"Never in my recollection was such a call for bricks, and, as for prices, say, we're getting $8.50 for hard, nearly two dollars more than we were getting two years ago. Salmon brings $6, and $11 to $12 for stretchers. Those black headers fetch $12. Some of these old graybeards talk of getting $14 for hard, but, of course, that was just after the war. But never within the memory of the Myrtle Green youth have the markets flowed with the roseate hue of suggestive prosperity. The year of 1901 was good. Our output was nearly eleven million."

The Siners shut down in February, just sufficiently long to make a few needed repairs, and since that time have worked the Martin machine steadily for its 30,000 daily.

In the four oven kilns they are now using coke, feeding the fires in the primary stage with a little hard coal, just to give it a good start. Bye-the-bye, the Siners claim they were the first to use coal instead of wood. Anyway, they have tried all kinds of fuel and cling tenaciously to coke as best suited for their four kilns, which have a capacity of 250,000 and take seven days to burn, using coke three days and after that gas nut coal.

The Siners admit it takes a little longer to burn, but they have the advantage of a larger percentage of hard brick.

They are about to tack on another twenty acres to the present layout, and this will give them a splendid opportunity to set up the machinery brought over from Kensington avenue, and which now lies boxed up in an adjacent field. Having a supply of coal on hand sufficient for the next sixty days, father and sons (and they are good, clean, vigorous boys, as hard as iron and as courteous as the twentieth century need desire), are not lying awake at night wondering when the coal strike will end, but take their work as wholesome food day and night, quitting the yard when their day is done with the knowledge that there must be something in brickmaking when the hauling for the average day runs between 80,000 and 100,000, and prices holding steady, and, in many cases now, for cash at thirty days, even if coal is worth $3.40 per ton.

As I passed up and down the station platform, fumin' a little and cussin' much, for I had just missed a train by a fraction of a minute, I bethought me of Scipio's philosophy when he he missed a train out in Colorado (at least it was funny and original): "What! Yer puffing, wheezing, snorting, blanket mortgage yearling, without a father or mother, yer think ye've got me left, don't yer? Why! I could take yer out and lose yer, ye goldarned plush upholstered, nickel-plated dude box—well, yer ain't." So I made tracks for the sinuous, jolting trolley, passing on my road the old dismantled yard of the Excelsior Brick Company, and a little farther on the magnificent ruins of the erstwhile formidable Peerless Brick Company. I am afraid the price asked for this property is a trifle steep, except it were backed by a rich corporation—$175,000.

A Great Fire Brick Manufactory—View of Mount Union Plant.

I have counseled A. C. Collom to attend the next convention. He is a genial member of the brickmaking fraternity and a good brickmaker with a nice plant up in East Washington lane, near Chestnut Hill, and, as he said the other day, "no one ever specifically invited me." Some of you companion-loving members of the N. B. M. A. around here might do so, and be well requited for your trouble. He is like the rest of the clayworkers, writing orders with both hands, and expects to turn out some ten or eleven millions this year.

The plant covers some five acres, boasts of electric lighting, turning out 40,000 daily from a Martin machine and the hand gangs, with an up-to-date tunnel dryer, to which the bricks are run by elevator direct from the machine. And visitors of the fraternity are always welcome. From office to engine shed, all is spick, span and systematized. Come on, any of you; look me up, and we'll have a pleasant ride and shake hands with a man not bowed down with business cares or bothered with competitors.

The projected operations for this fall outrank all previous years, and although sky scrapers come high, the people will have them, and in sequence the brickyards in general have little fear of the bottom falling out of this substantial tub. May the season prove a long and prosperous one. Our boys have waited long and patiently for it.

W. P. LOCKINGTON.

LOYALTY A CROWNING VIRTUE.

If the concern where you are employed is all wrong, and the Old Man a curmudgeon, it may well for you to go to the Old Man and confidently, quietly and kindly tell him that he is a curmudgeon. Explain to him that his policy is absurd and preposterous. Then show him how to reform his ways and you might offer to take charge of the concern and cleanse it of its secret faults.

Do this, or if for any reason you should prefer not, then take your choice of these: Get out or get in line. You have got to do one or the other—now make your choice.

If you work for a man, in heaven's name, work for him!

If he pays you wages that supply your bread and butter, work for him—speak well of him, stand by him and stand by the institution he represents.

I think if I worked for a man I would work for him. I would not work for him a part of the time, and the rest of the time work against him. I would give an undivided service or none.

If put to the pinch, an ounce of loyalty is worth a pound of cleverness.

You cannot help the Old Man so long as you are explaining in undertone and whisper, by gesture and suggestion, by thought and mental attitude, that he is a curmudgeon and his system dead wrong. You are not necessarily menacing him by stirring up discontent and warming envy into strife, but you are doing this: You are getting yourself upon a well-greased chute that will give you a quick ride down and out.—Extract from Elbert Hubbard's "Get Out or Get in Line."

For cheap machinery the reader is referred to our "For Sale" columns. We do not advise the purchase of cheap machinery. As a rule, cheap machinery is dear in the end. but for some places second-hand machinery answers a very good purpose. Those wanting experienced help will also find the "Wanted," "For Sale," etc., columns a means of satisfying their needs.

WRITTEN FOR THE CLAY-WORKER.

A GREAT FIRE BRICK MANUFACTORY.

THE SAVAGE FIRE BRICK COMPANY, illustrations of which appear in this issue, and which is one of the oldest institutions of its kind in America, on April 10, 1902, passed from its original management into new hands. This management now controls an output of 40,000,000 fire brick per annum.

The plants are located at Keystone Junction, Williams Station, Hyndman and Mt. Union, Pa. The first three named represent the Savage Fire Brick Company proper, the output of which is high-grade flint clay and silica bricks, to which will soon be added magnesite, the Mt. Union plant being wholly a producer of silica brick, than which there are none better, the ganister being from the famous Blair county up-lift. The Savage Fire Brick Company was organized in 1871 by J. J. Hoblitzell, Esq., through whose energy, effort and perseverance it has grown from a capacity of 2,000 brick per day to that of 100,000, with a market which reaches to all parts of all America. On April 10 Mr. Hoblitzell, who has been its guide throughout thirty years of successful business, retired, after having amassed a fortune and feeling himself entitled to a well-earned rest.

Gooseberry Incline, 2200 Feet Long, Over Which Coal and Clay Are Transported.

The purchasers and directors are Scott Dibert, John H. Waters, G. W. Waggoner, of Johnstown, Pa.; Francis J. Torrance, of Pittsburg, Pa., and W. S. Ravenscroft, of Ridgway, Pa., Mr. Dibert being president and Mr. Waters treasurer. All are men active in the business world, several practical in their line of work. Already under this new direction has the business nearly doubled, until many months of unfinished work is on their books.

The product includes every class of high-grade bricks, blast furnaces and stone work, open hearth, cupolas, coke ovens, glass house, copper furnace, and all sizes and shapes, from three pounds up to two thousand pounds. They also manufacture sleeves, nozzles and runner bricks. This company owns 2,800 acres of high-grade flint clay, 800 acres of ganister and 800 acres of coal, and employs upwards of four hundred men.

The plants are of modern design, having the stone floors for steam drying, burning being done in the New Castle kilns.

The illustration showing the opening of the mine at Williams Station, Pa., is what is known as the great flint, or indurated fire clay, bed, situated in the upper section of the Pottsville Conglomerate No. XII of the Pennsylvania Geological Survey, the analysis of which is as follows, by Prof. Otto Wuth, of Pittsburg, Pa.:

Williams's Incline, Over Which Passed Millions of Fire Brick in Crude State Before Four-fifths of the Plants of To-day Were Thought of.

	Flint.	Bond.
Moisture, 2,300 feet	14.02	13.02
Silicic acid	54.65	55.21
Alumina	30.74	31.18
Peroxide of iron	0.08	0.07
Lime	0.19	0.18
Magnesia	0.13	0.11
Alkalies	0.11	0.23
Organic matter and loss	0.00	0.00
	100.00	100.00

Analysis of the silica rock obtained from the upper member of the Medina sandstone shows: Silica, 97.65 per cent., remarkably pure and uniform. The supply is inexhaustible. Mr. John Fulton, the eminent mining expert and geooglist, in a report upon this property says: "If the clay and coal upon this property were sold at two cents per ton the returns would exceed a million dollars."

This vast area of clay can be partially comprehended when one looks at the flash-light picture taken in the Williams Station mine, 800 feet in the hill, showing twenty-five feet of flint clay. The car, which stands four feet high, enables one to calculate the thickness of the vein. Capt. James H. Noel, who stands at the left of the picture showing the Williams mine mouth, is father of the mine. To his ability is due the excellent condition of the mines, which are dry and thoroughly ventilated. Mr. D. J. Jenkins is general superintendent of all the works, and has them well in hand. Through the exercise of great care in all the departments in process of manufacture the highest results have been attained, and it remains for the first complaint to be entered by a customer concerning any work sent out under his supervision. His ideas concerning cleanliness around brick factories is worthy of emulation. Everything at these various plants, including fifty or more dwellings, is kept freshly painted and tidy. Such a condition no doubt inspires the workman or tenant to further efforts in the same direction.

Entrance to Williams's Mine, Showing Group of Miners. On the left stands Capt. James Noel, the father of the mine. Thirty years' constant attention has made this one of the greatest fire clay mines in America, and that means in the world.

Flash light picture of the famous Savage 25-foot vein of flint clay. The car, which stands 4 feet high, enables one to calculate the thickness of vein—solid rock, roof and pavement.

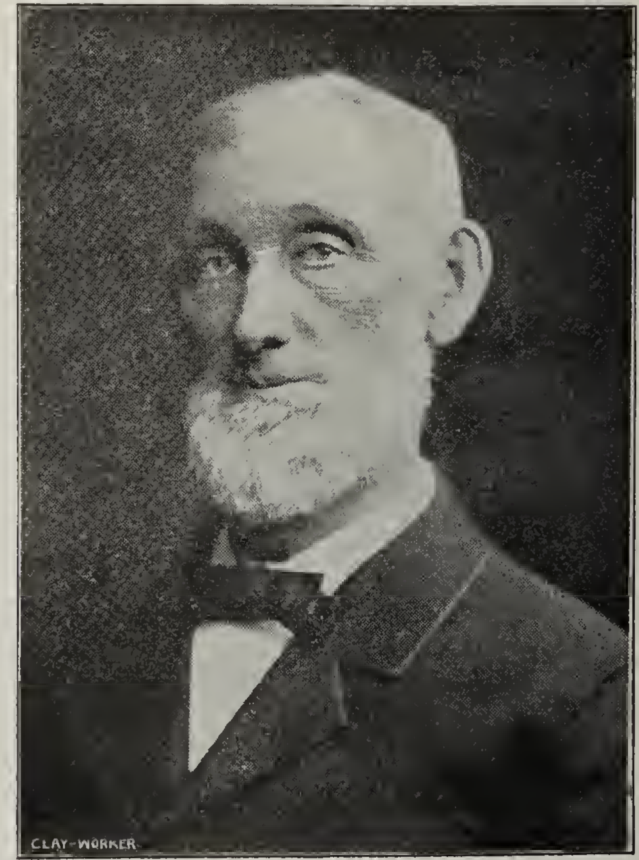
To the writer this whole operation is one of interest, and he takes great pleasure in presenting to the readers of The Clay-Worker a brief description and some views of probably the largest and without doubt one of the oldest institutions outside of a trust of its kind.

WRITTEN FOR THE CLAY-WORKER.

BRICK AND BUILDING IN WASHINGTON.

ACCORDING TO the opinion of Mr. Theo. Holbrook, president of the Standard Brick Company, of Washington—than whom there is no one here better acquainted with the brick-making and selling business—the output of brick in the District of Columbia and neighborhood this season will be between 80,000,000 and 90,000,000. This is a pretty fair showing, and as brick are bringing good prices—$6.50 for salmon, $8.50 for arch and $9 for red—we may say that the Washington clayworkers are "onto the right side of the market." And the future outlook is quite good—in fact, excellent.

There is a great deal of building by private parties now going on; also some government enterprises; but at present the citizen is ahead of Uncle Sam in the matter of buying brick. Later on, possibly next year, the clay product in brick and terra cotta will claim much attention from the government for buildings in the capital city, for some important structures to be put up here were appropriated for by Congress last session. Among these will be the new War College and the Engineers' School, which, altogether, will require over forty buildings, large and small, and will cause the purchase of many millions of brick.



J. J. Hoblitzell, Founder of the Savage Fire Brick Company.

Another big government enterprise will be a new building for the National Museum. The plans for this have not yet been made, but from estimated cost of the future edifice, $1,500,000, it may be stated that it will be a huge one. The present Museum building is 300 feet square and three stories high, and the cost was $250,000. Mr. Theo. Holbrook furnished the brick for this building; the late General Meiggs had charge of its construction. At that time General Meiggs was a firm believer in the superiority of hand-made brick, and desired such for the Museum's structural material. He and

Mr. Holbrook had an argument over the respective values of hand-made brick and machine bricks. General Meiggs said:

"If you can show me a machine-made brick that has lasted three thousand years I will take yours."

Mr. Holbrook had no machine brick three thousand years old (had not been in the brick business quite that length of time), but he said to Meiggs: "General, if you will fly back from the other world three thousand years from to-day I will show you some machine bricks in good condition." General Meiggs did not accept the challenge—perhaps he wasn't sure of his ability to get back to terra firma, or perhaps he didn't wish to come back—but he accepted the machine brick for the National Museum, and a very good-looking edifice was built with them—about 8,000,000 of them.

The new Museum building will be considerably larger than the old one, as it should be, for the latter is already overcrowded with the various exhibits and there is need of more space. The number of exhibits there now amount to over 3,300,000, of which there are about 3,600 specimens of modern pottery, porcelains, bronzes etc., and about 33,300 pieces of American aboriginal pottery. On account of lack of exhibit space a great deal of the latter is not in sight to the visitor, being put away in the underground portion of the Museum. Of late the Museum authorities have revived interest in the ceramic department, particularly in Chinese pottery, of which there are many beautiful specimens in the big national show place. The annual report of the National Museum, just out, contains, among other things of discriptive and scientific interest, a reprint of the article, "The Ceramic Art in China," by A. E. Hippisley, and with this are quite a number of new and excellent illustrations of rare porcelains. The article alone should be of value and interest to makers of fine ware, if anything can now be learned by the American from the yellow man of the Orient. It seems that the author mentioned here has learned not a little about the heathen's method of using kaolin, colors, etc., which he (the author) describes with much detail; also gives descriptions of several hundreds of specimens of Chinese porcelain.

Silica Quarry, Mt. Union, Pa., Showing Ganister From Which the Celebrated Silica Brick Are Made.

Congress appropriated $800,000 for exhibits from the National Museum, Smithsonian Institution, Fish Commission, Department of Labor and other government places, to be shown at the St. Louis Exposition, for purchasing (some specimens), placing and taking care of. This offers a fine opportunity for the Museum to show the world its splendid collection of specimens of the potter's art, or at least a part of it. The American aboriginal should have a place in specimens of his clayworking art at the fair, for much of the land known as the "Louisiana Purchase" was the home of the American red clayworker. Concerning the material for the new National Museum there seems to be some difference of opinion. The Museum authorities desire a stone building, but Congress, in the act appropriating for this purpose, specifies brick and terra cotta as the material.

And brick and terra cotta will, with steel, make the structure. By this means a much larger edifice can be gotten; also a handsome one. For about $14 per 1,000 a very good face brick can be obtained, and this, with fancy, ornamental brick and terra cotta trimming, would make a fine artistic effect. It is possible that enameled brick also will be employed for inside work in the new Museum. It will not be necessary to import these brick, as was done for the Congressional Library, at a cost of about $100 per 1,000, for they can be bought in the United States, and for (some grades) $45 per 1,000. This was about the cost of those used in the new Government Printing Office. The latter place, I think, bought its enameled brick from the Mt. Savage (Md.) factory, owned by Mr. A. Ramsay. This factory has capacity for 1,200,000 brick per year, and ships its product to various parts of the country.

If there is any difference between the American-made and the English-made enameled brick it is in size. The American product is 8¾x4¼x2⅝ inches, the English 9x4½x3 inches. The factory mentioned gets its raw material—shale and flint fire clay—from mines on Savage mountain. The brick are molded on stiff mud machines, and after being dried on brick floors are burned in down-draft kilns. There is no reason why the making of enameled brick should not become a great industry in this country, for now there is considerable demand for them, and their employment is steadily growing in favor. The United States government has long since set a good example in this particular by using enameled brick in large quantities, and in many large public business buildings this bright, clean brick is seen doing good service.

Second View of Silica Quarry, Mt. Union, Pa.

NICODEMUS.

When a new machine is started for the first time it should receive more than ordinary care, from the fact that the bearings have not been worn to a fit in the short time taken in limbering up in the shop where it was made. Should any defect develop, it is the business of the operator to at once have it corrected. It will not do to run the machine if only partially disabled, as any further defects would be outside of the maker's guarantee.

WRITTEN FOR THE CLAY-WORKER.

BUTTONHOLE TALKS.

The Way to Billy's Heart.

THE BAD ANGEL still held its place in the stained-glass window. It was clearly a case of a bad angel in a good place. The one as bad as the other was good.

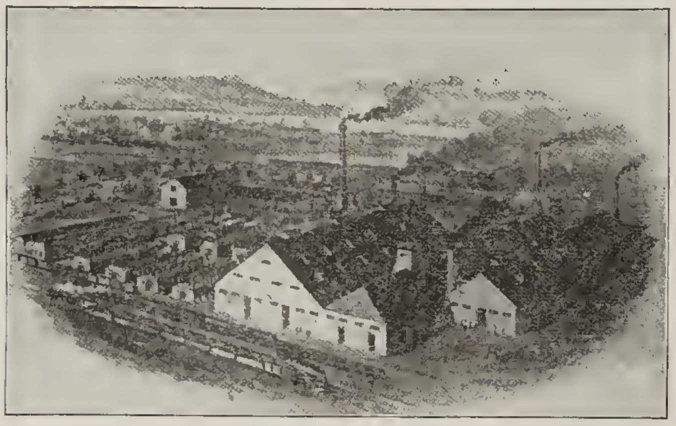
Billy often wondered at this, but he was to learn in later years that this was by no means an isolated case, and, in fact, that the bad angels in good places were legion; that, indeed, it often seemed that the worse the angel the better the place into which it crowded itself. Yet, while the bad angel still held its place in the window, it had absolutely lost its hold on Billy, and he heard no more sermons from it. The old preacher was gone—whether dead or removed is another story—but absent he was, and in his place there was installed a young man of a different personality. Just out of school and newly married, he came timidly to his new field.

It chanced that Billy met him and his bride at the station, and as Billy clucked away and pushed on old Jerry's lines he was thinking vigorously of what things he could do to make affairs pleasanter for this young couple, who had won his boy heart at the first greeting, handshake and smile. They had Billy from the very start, and time only strengthened the bonds that held him to them. The quiet interest that this young man took in the little affairs of Billy's life amazed that young man and made him do much thinking. The fishing trips and the hunting trips that they took together cemented their friendship and bound them closer by those bonds of mutual taste that are so very effective. It is needless to say that Billy was ready, and even anxious, to fight for the young wife from the moment of her first smile and hand pressure, but he couldn't fight, because every boy in the village felt just as Billy did. There wasn't a 'tough kid' in the village but felt that this couple were his friends and who wasn't anxious to do something for them that would show that he did feel this way.

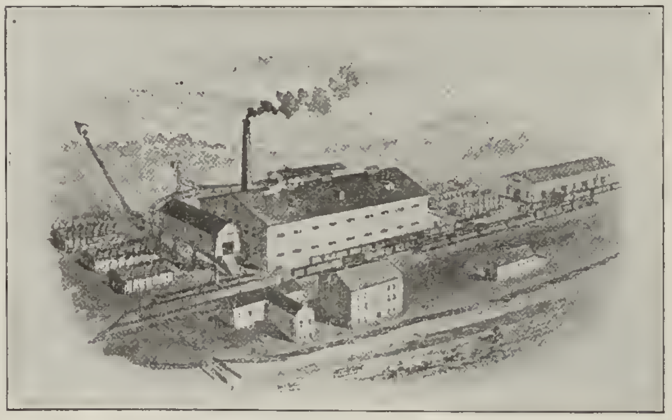
So it happened that when Sunday came Billy no longer had to be driven to church, because his very particular friend was going to talk and Billy wanted to hear what he said. Billy was bound to hear, and Billy did hear. Not only did Billy hear, but Billy understood, and the great and good truths came to Billy with a new meaning and with their message of peace and good will to all, and Billy's whole future was influenced and changed when the preacher was changed, and the bad angel in the window never got a look or a thought, or had any chance to preach sermons to Billy after the young minister began his ministration. GATES.

A GREAT FIRE BRICK MANUFACTORY—Page 133.

Keystone Works.



Hyndman Works.



Williams's Works.

PERPETUAL MOTION OR PERPETUAL DRAFT.

Forever There Is a Current of Air Up a Smokestack, an Inventor Says.

Charles Wondries, a Chicago inventor, says he has discovered the secret of perpetual motion. He is trying to prove it at the smokestack of a burned brewery.

His apparatus is a cylinder with a propeller wheel set inside near each end, and between them, on the same shaft, an ordinary flywheel. By connecting this cylinder with the smokestack the apparatus will run perpetually, he says.

The motive power is a natural current of air, and for this reason the inventor calls his machine a "pneumatic motor."

"How do I make the air blow the propeller or fans?" said Wondries. "I don't make the air blow at all. Nature does that, and makes perpetual motion in the machine a fact. The air close to the earth is warmer than that above the earth. Hence, if you have a smokestack you have a draft, the warm air going up the draft revolves the fans, the flywheel turns around and it doesn't make any difference if there is not enough wind outside to blow a feather off your hand, the machine will go."

The inventor declares that already, with a small pneumatic motor and a stovepipe one hundred feet long, he has operated a sewing machine.

The smokestack is ninety-six feet high and two feet in diameter. The pneumatic motor is four feet long, the fans are eleven inches in diameter and the flywheel sixteen inches in diameter.

A HINT TO ADVERTISERS.

Space should not be crowded to the suffocation point. The public is being educated up to something more than mere information, and ads. must be restful and pleasing to the eye. Bald facts must be livened with pictures or white space. To be niggardly in an advertisement is policy as short-sighted as having a dimly lighted store for the sake of saving gas.—Printer's Ind.

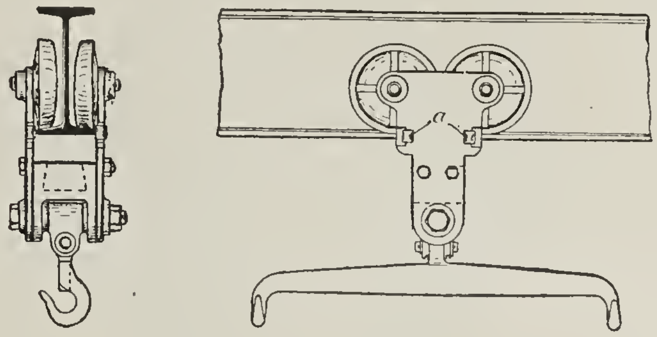
DRYING BRICK ABOVE KILN.—A correspondent, asking for advice says: "I have a continuous kiln of sixteen chambers, each holding 12,000 bricks (German standard size). Above the kiln a drying room is built, with racks to hold the pallets. For years past I have dried in this room from 9,000 to 10,000 bricks in twenty-four hours. As I wished to dry 12,000 bricks per day, I rearranged the racks last winter so that now there is room for 120,000 bricks, instead, as before, at most 100,000. Notwithstanding this, I am not able to dry off more bricks than before, as it now takes longer than with the old arrangement of racks. Can you tell me the reason for this increase in time of drying?"

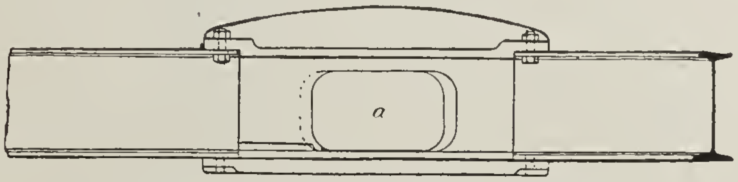
The reply is: Your question is very easily answered. By your rearrangement you have evidently placed the racks closer together than before, as you put more bricks in them in the ratio of 100 to 120. In all drying installations, experience teaches us that the further the bricks are apart the quicker they dry, and the closer they are together the longer the time required to dry them. In those drying sheds that are built over a continuous kiln the heat that radiates from the top of the kiln plays a considerable part in the drying. As the same kiln, run in a regular manner, always gives off an equal quantity of heat then, where the 120,000 bricks are crowded into the space formerly occupied by 100,000 it is obvious that it will take longer to dry them. In addition to this we may take into account that this summer is much cooler than last year.

LIGHTING INTERIOR OF STEAM BOILER.—When cleaning out a steam boiler the lighting of the interior is a very important matter. Open lamps in a boiler are a danger, in consequence of the very little room to move about and the risk of the workman setting his clothes on fire. Easily inflammable lamps, such as kerosene or gasoline, are liable to explode, and the explosion of a lamp in a boiler is more serious than elsewhere, for it is harder to get away from it. The common oil lamp by its production of smoke, soon makes the interior of a boiler unendurable. An electric lamp has been designed for the interior of a boiler, which can be very easily adapted wherever an electric-lighting system is in use. An ordinary incandescent bulb is attached to an insulated, flexible conductor of sufficient length to use it in any part of the boiler. The conductor is attached to the lighting system in the usual way. As there is nothing on the inside of a boiler to hang a lamp on, the bulb is fixed on an electro-magnet, so that it can be stuck upon any part of the ironwork. The incandescent bulb is covered with wire work to prevent it being broken.

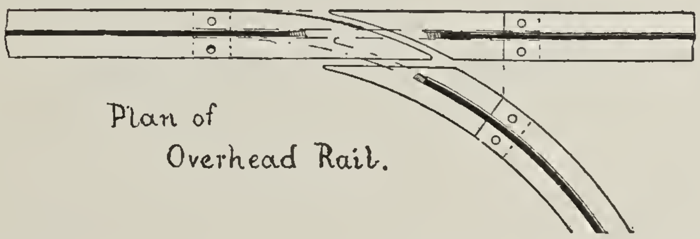
TO HARDEN PLASTER OF PARIS.— A German patent gives a very simple method of hardening gypsum by means of ammonium borate. The resulting plaster cast exhibits great durability. The ammonium borate may be prepared by dissolving boracic acid in warm water and adding sufficient sal ammoniac (ammonium chloride) to it. The ammonium borate remains in solution. The liquid is used either mixed with the plaster or the finished cast is painted with it. The operation is done at ordinary temperature and the cast is thereupon dried. In two days' time the surface is fairly hard and is quite insoluble in water. The hardening inside is slower. The ammonium borate in itself is not only harmless, but is an antiseptic.

OVERHEAD RAILS.—There have recently been a number of accidents where overhead rails are used, where the load swinging heavily sideways has caused the wheels of the carrier to jump off the rail and the load has fallen down, injuring the workpeople beneath. An overhead rail from which the carrier cannot jump can be seen in operation at the clayworks of the Oelberg Company, at Bonenberg, Westphalia. The rail consists of the ordinary "I" beam, which is fastened to the ceiling by its upper flange. The carriage or runner consists of two pairs of rollers, one on each side of the beam, running on the lower flange. The article to be transported hangs perpendicularly from the runner. At curves and switches the web of the "I" beam is partially cut away and the flanges are correspondingly reinforced. This is to prevent the rollers of the carrier jamming, as they are placed as closely together as possible. The arrangement will be readily understood by reference to the accompanying illustrations.





Reinforced flanges. Web cut away at a.



UTILIZATION OF EXHAUST STEAM.—It might be supposed that as there are to-day thousands of installations heated with exhaust steam the problem of the utilization of the exhaust for any and every industrial purpose has been completely solved and that there could be no doubt about whether its use is profitable or not. It appears that this is by no means the case, as is proved by a very interesting instance noted recently at a great chemical manufactory. It is astonishing what ignorance and fundamentally differing views prevail and what prejudices have to be overcome when it becomes necessary to replace an old heating system by one that is newer and better. It is even not so seldom that with the praiseworthy object of saving fuel a comparatively good system is replaced by an inferior one. Such a case as this I have in mind, in which a certain manufactory that had dried very large quantities of lumber by means of exhaust steam changed to drying with live steam and threw out the engine, for the reason that the consumption of steam was too great, replacing it by a condensing engine. The drying capacity for the lumber was certainly increased by about 20 per cent., but the consumption of fuel was nearly doubled, so that the firm had, in the end, to go back to the old system. Another works operated with a condensing steam engine of ninety horse-power, and the dryer, with 3,000 square feet of heating surface, was run with live steam. The daily consumption of coal averaged five long tons. The first thing that was done was to return all the water of condensation to the boiler. This improvement brought about a saving in fuel of 16 per cent. Before making any change in the disposition of the steam two specialists were called upon for advice. One of them, a heating engineer, strongly advised that the exhaust steam should not be utilized, inasmuch as this would be quite outweighed by loss of advantages of condensation. He thought that, anyway, it would not be advisable, for the sake of the few per cent. of steam that might be saved, to go to the expense of rearranging the dryer. The other engineer, who had put up several installations using exhaust steam, guaranteed with complete utilization of the exhaust a saving of coal of at least 25 per cent., and declared his willingness to forfeit his quite respectable fee if the promised percentage was not reached. The dryer was thereupon entirely changed, at a cost of about $2,500, in which was included the cost of the necessary enlargement and improvement of the dryer. The drying which was done with exhaust steam at 103 degrees C., instead of live steam at 140 degrees C., was reduced by 20 per cent., though this loss in some of the apparatus was made good by improvement in the draft, but the average saving in fuel, as was shown by several months' careful observation, was 38 per cent. Altogether there was a saving, by returning the condensation water to the boiler and utilizing the exhaust steam, of 54 per cent., which, at the price of fuel at the works, netted the firm the nice little sum of $4,800 per year. Professor Lynen, of Aix-la-Chapelle, in his excellent little work, "The Utilization of Heat in the Steam Engine," reckons the saving by using the exhaust steam at 40 per cent., which is shown by an example taken from actual practice to be in complete agreement with the facts. It is therefore all the more to be regretted that there are unnumbered managements of existing works that obstinately shut themselves up in their ignorance, thereby suffering an incredible waste of fuel. Last year I saw an entirely new works in which the heating and drying were both done with live steam, although the exhaust from the engine of 800 horse-power would have been amply sufficient for this. On expressing my surprise the engineer in charge declared that condensing steam preserved the engine—an entirely untenable argument, as the back pressure which the engine would have to overcome would, in the worst case, not amount to more than two or three tenths of an atmosphere, which would be of no importance, even for a badly constructed engine. —*Deutsche Topfer und Ziegler Zeitung.*

SLUMMING CLAY.—Clay work and brick manufacturing are continually being assisted by improvements of all kinds, permitting a fuller utilization of our materials, improvement in the quality of our products and in every respect a more rational and profit-making operation. A most important method of securing a good material of unvarying quality is the slumming of our clay, which is the only right method of accomplishing our object. All the rolls, crushers, ball-mills, pug-mills, etc., are unequal to the work of getting rid of objectionable admixtures in our clay. Discerning manufacturers have long since seen that attempts at economy should be in the machinery they are compelled to employ. Such as these will not fail to recognize the value of slumming apparatus. Apart from the fact that we get a superior material, the cost of manufacturing is considerably reduced. The so-called rake or harrow slumming machine, with automatic removal of refuse, has proved itself to be very useful. The self-cleaning arrangement removes the impurities that fall to the bottom of the machine, such as stones, sand, marl, iron sulphide, etc., without interrupting the work. The refuse is thrown into dump cars and does not have to be continually and uselessly worked and churned by the machine. Instances frequently occur where, in 100 cubic yards of clay from the bank, from 20 to 30 cubic yards consist of harmful ingredients, which have to be removed in order to get good results. —*Keramisches Rundschau.*

THE ROYAL PORCELAIN MANUFACTORY.—The report for the fiscal year 1901 shows that the past year, taken altogether, was satisfactory. Apparatus for chemical and technical purposes made at these works, which, as is well known, hold the first rank in the world's markets, were exported to countries that had never before taken them. The home consumption, too, showed no diminution. Among the special articles, for which there had not been so much call the year before, there was an increased demand for large plates used as diaphragms for electrolysis in the big chemical works; also for cylinders of a material which was originally used for filters. This is a hard-burned, porous mass. These are made as porcelain for flour milling. The sale of art ware and decorated tableware was equal to that in 1900, excluding the business done at the Paris Exposition, so that the depression in business which set in in the fall of 1900 did not become worse; on the contrary, business was livelier. As for the larger and more costly pieces of art ware, there was a smaller demand. This was no doubt due to the general depression in trade. Apart from this, the desire of the general public to make purchases was doubtless considerably affected by changes in fashion in art. Finally, it must not be overlooked that art products elsewhere have in the last few years greatly improved, and that in consequence there is much greater competition.

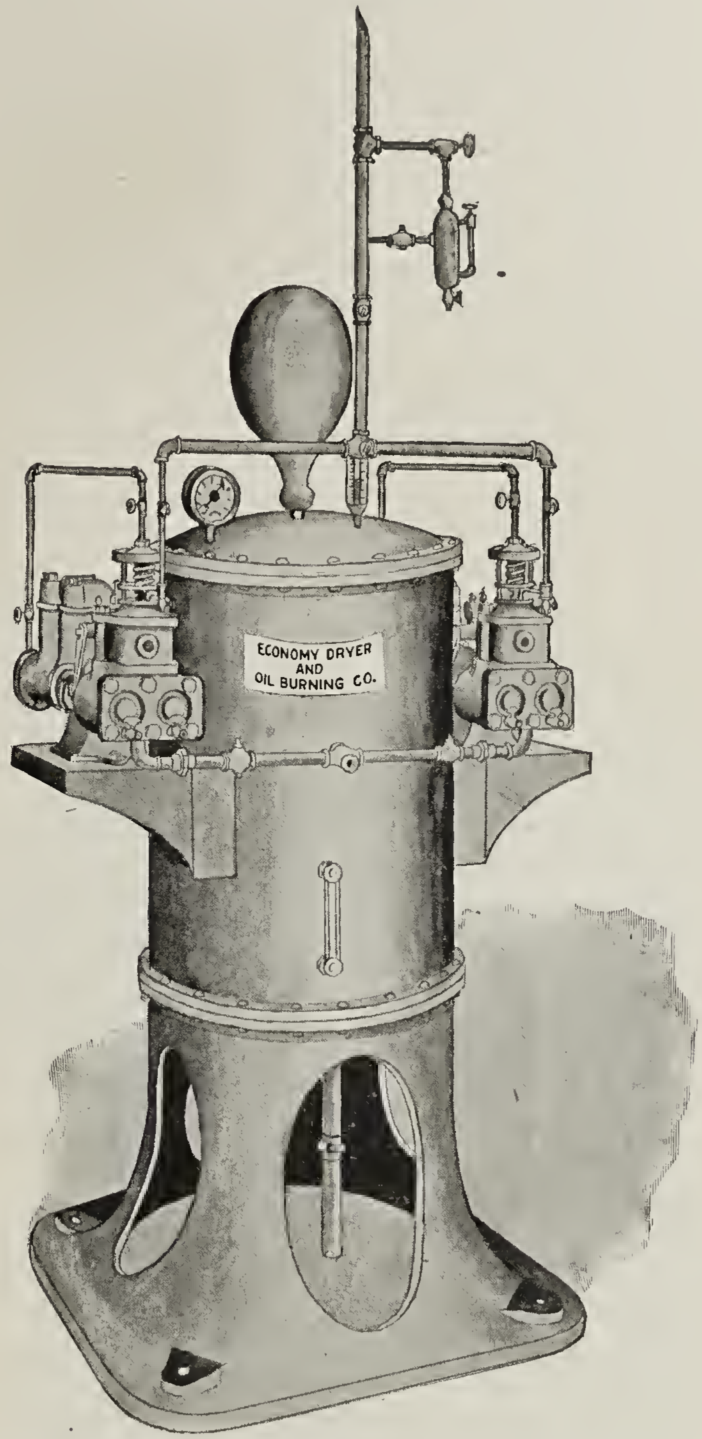
IRREGULAR BURNING IN THE CONTINUOUS KILN.—In answer to a request for help, I would say that the kiln where I am now was built about six years ago by a celebrated firm of kiln builders. The instructor sent by the kiln builders to start it was permanently engaged, but did not get good results. The fault was not looked for in the operation of the kiln in the setting and the burning, but in the kiln itself, and costly alterations were made and flues put in, without result. When I took charge I insisted that the bricks should be set head to head, and not too close. I made a rod one meter in length, which was always kept in the kiln. Whenever I went into a chamber that was being set I tried the setting by pushing in my rule, which had to pass through between the bricks. My predecessor used to say to the workmen that in a good kiln you can throw the bricks in and it will be all right. Seger cones, draft gauges and thermometers for water-smoking were luxuries conspicuous for their absence. I had firing shafts set across the entire chamber, so that the fuel was equally distributed and did not fall direct on to the floor of the kiln. As the heat from the kiln was not sufficient for drying of all the bricks, I had the smith make me some drying stoves to assist the work. With these I dried off some of the chambers of brick, at a temperature of 120 C. I had fuel fed into the burning fires regularly every fifteen minutes, besides firing alternate rows. One of the burners strongly objected to this. He wanted to fire as before, at hour intervals, and then fill up the fire shaft from the sole of the kiln to the roof. Instead of, as had been done, burning six to seven chambers in a week, I burn eleven and twelve chambers. All the new flues that were put in I have had filled up with rubbish, and the kiln is now running in the same condition as it was originally built. It may be seen from this that unsatisfactory results are not always due to the construction of the kiln. The fault is very often to be sought for in the way it is managed. My advice to you is to explain everything to your burner and show your setter how to set for the firing shafts in such manner that it will be possible to have an equal distribution of the fuel. The coal will be more completely consumed and there will not be so much unburned refuse in the kiln. Make use of Seger cones, the thermometer for water-smoking and the draft gauge. You will get more even burns, with a larger output and a saving in fuel. If your burner will not follow this advice, get rid of him. If you have a foreman, insist upon his subscribing to some good and instructive clayworkers' journal.

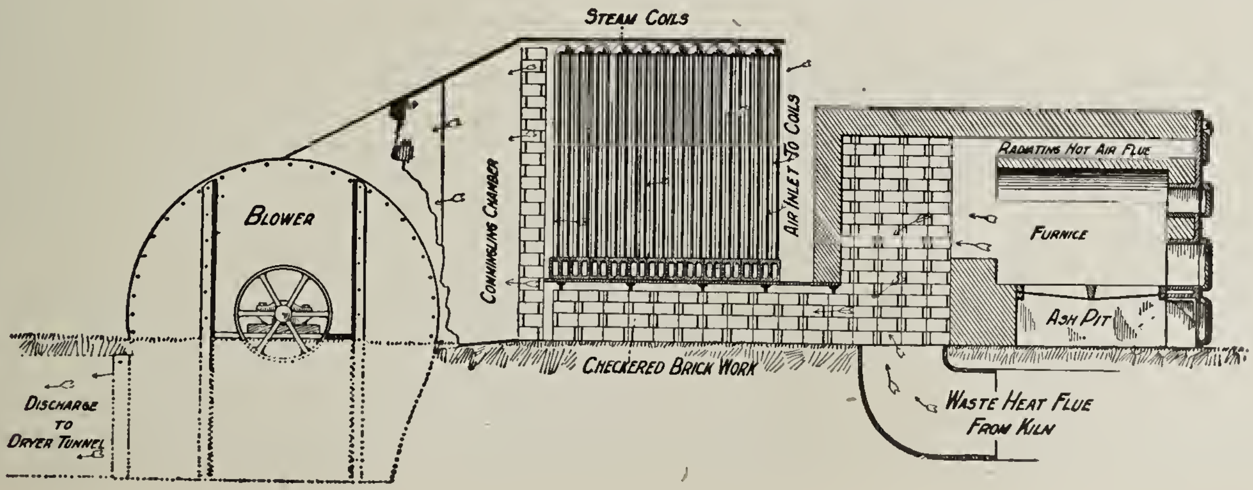
PREVENTING DISCOLORATION ON BURNED WARE.—The prevention of efflorescence on clay ware while drying or burning has been attempted without complete success by the use of solutions of organic materials from plants, such as bran and flour. An invention by Arthur James Keeble, German patent 132411, claims that bricks and similar goods can be perfectly protected from efflorescence during drying or burning by giving them a wash or coating of organic matter of animal origin, such as common glue, white of egg, gelatine, fish glue, etc. The liquid may be applied either warm or cold, and acids or other substance or liquid may be added to preserve the fluidity of the glue solution at lower temperatures than its normal setting point. The following solution has, according to the inventor, given good results: Common glue, 11 kilograms, dissolved in 180 litres of water; but any other of the above-mentioned materials may be employed instead of glue.—*Thonindustrie-Zeitung.*

OIL DRYING AND BURNING SYSTEM.

AMONG THE MOST recent and up-to-date improvements to be used in the clayworking industry is the new waste heat and radiating floor dryers and oil burning system, manufactured by the Economy Dryer and Oil Burning Company of St. Louis, Mo.

The accompanying cut represents their Combined Waste and Direct Heat Dryer, which has features not embodied by any other drying system on the market. It has three separate and distinct sources of obtaining heat, either one of which can be used independently of the other, or they can be used in combination at one time, which makes a very desirable and reliable dryer, and will produce any desired temperature, regardless of climatic influences. In the construction of this dryer, where steam is not wanted in combination with the waste and direct heat, the same can be eliminated, as shown in cut on ad. page, which will materially decrease the cost of installation. The above company also has a Direct Heat and Radiating Floor Dryer which is built very simple and fireproof, and will dry with less fuel per thousand than any other drying system of its type. With this style of dryer any class of fuel may be used, such as slack coal, wood, crude oil and natural gas, whereby any desired temperature may be secured, up to 400 degrees F. The arrangement in the tunnels of both of these dryers insure the most perfect and reliable results and dry the most tender clays at a minimum cost. The illustration represents the Fuel Oil Burning System using compressed air as an atomizing agent, which, as applied to clay plants, is the most economical and efficient method of burning crude oil. Compressed air as an atomizing agent has been tested thoroughly by the United States government for the purpose of utilizing the same on war vessels, with most satisfactory results. There is a saving of fuel oil of about 15 per cent. where compressed air is used instead of steam. The Economy Company has published a most complete illustrated catalogue, containing a number of valuable tables pertaining to dryers and the use of fuel oil in burning clay ware, which they will be pleased to mail to anyone interested on request.



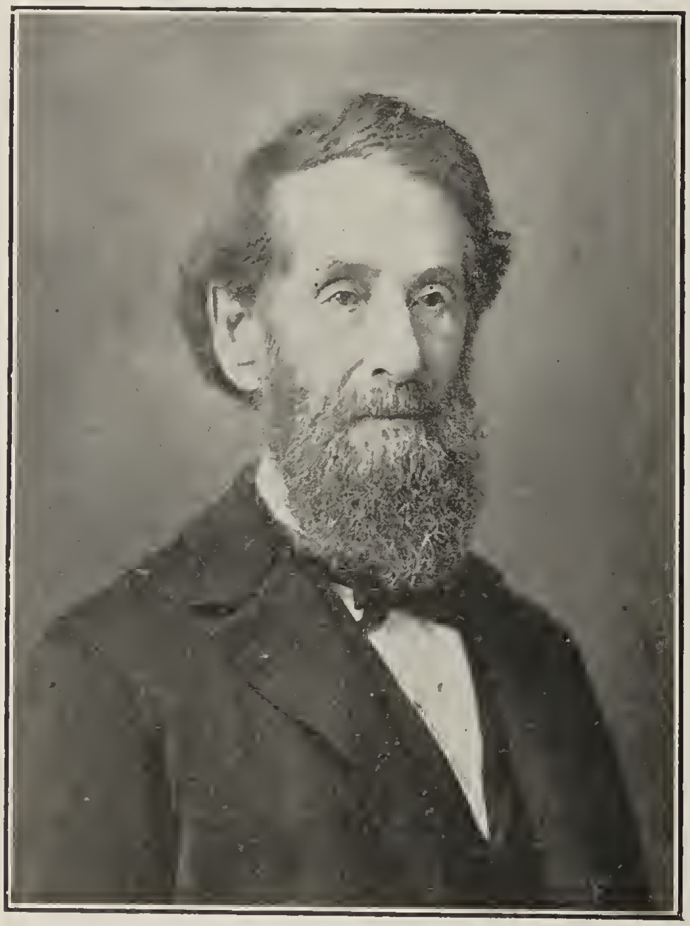


OBITUARY.

Isaac W. Knowles, of East Liverpool, O., First White-Ware Potter in the West, Passes Away in California.

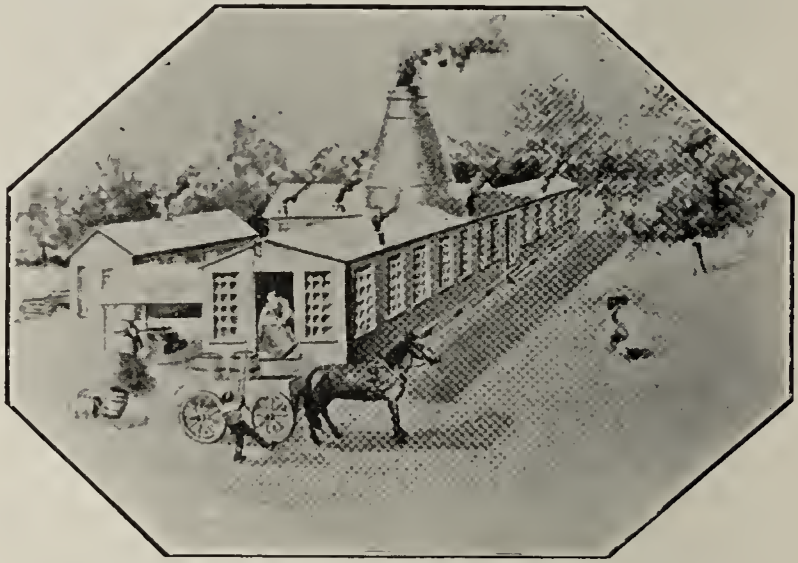
THE FOUNDER of the noted pottery firm of Knowles, Taylor & Knowles, the first white-ware pottery in the West, passed quietly away at the home of his son, in El Montecito, Cal., on Wednesday, the 23d of July. Mr. Knowles' health had been failing for some years and was particularly bad for the last year, when it was found necessary to take him to California to keep him away from the severe climate of Ohio. The news of Mr. Knowles' death was received with deep and sincere sorrow by the whole community, for it was by Mr. Knowles' long and tireless efforts that the mighty white-ware industry originated and flourished in East Liverpool. Mr. Knowles was the founder of the white-ware industry in this city and was the first to engage in the manufacture of this class of goods.

Isaac Watts Knowles was born on a farm in Pennsylvania in the year 1819 and was brought up in the country until his twelfth year, when he commenced to learn the trade of a cabinetmaker, being naturally mechanical and a good workman. Mr. Knowles was successful in his efforts in this line, as well as others entered into later on. In the year 1854 a small pottery was started by Mr. Knowles, in company with Mr. I. W. Harvey, whose son, W. J. Harvey, built the Shenango China Company at New Castle, Pa., but who is now engaged in building a plant at Derry Station, Pa. Later on, however, Mr. Knowles purchased the interest of his partner and conducted the business himself until the firm of Knowles, Taylor & Knowles was formed by Mr. Knowles, his son, Mr. Homer S. Knowles, and Col. John N. Taylor. Mr. Knowles looked after the practical end of the new concern, while Mr. Taylor attended to the office duties, and young Mr. Knowles attended to the sale of the output. The first plant was the one built by Mr. Harvey and Mr. Knowles, and had a capacity of one kiln, which was devoted entirely to the manufacture of yellow ware. At the time the firm of Knowles, Taylor & Knowles was formed the capacity of the concern was two kilns. This was, however, increased from time to time until the year 1885, when it had a capacity of sixteen kilns. White ware was first made by the firm in the year 1872, or two years after the new firm took hold. The china works was erected later on, but was burned to the ground in 1889, causing a loss of over $250,000. This works was, however, rebuilt, larger and grander than before. In 1891 the firm was merged into a corporation under the name of the Knowles, Taylor & Knowles Company, at which time Mr. Knowles retired from active management of the concern, retaining, however, the office of vice president, Mr. Taylor being president and Mr. Lee secretary.



The Late Isaac W. Knowles.

Mr. Knowles was of an inventive turn of mind. His invention of the "pull-down," one of the greatest and most useful inventions known to the pottery trades, is one of the greatest of his achievements. Up to the time that the "pull-down" was invented by Mr. Knowles all of the work of a "jolly" was done by a hand tool, which was called a profile tool. In Mr. Knowles' invention no hand work is necessary. The tool is fastened to the "pull-down" handle, the workman simply pulls the handle and the machine does the rest. This invention has been valuable and has reduced the cost of production to a minimum. Mr. Knowles had late inventions on new designs of this "pull-down," but owing to ill health he was unable to complete them and was much disappointed over the matter.



First Plant Established by Isaac W. Knowles in 1854.

Mr. Knowles had many other inventions of more or less note, among which might be mentioned the steam caliope. Mr. Knowles worked for a time on steamboats plying up and down the Ohio river, and conceived the idea of producing music by steam. He put his ideas into practical tests and found them successful. Mr. Knowles then showed his invention to his companions, one of whom, having more money than Mr. Knowles, produced the invention as his own and in this manner robbed Mr. Knowles of what has proved to be quite an invention. It is said that Mr. Knowles never listened to the music produced by one of these machines without expressing his regrets that he was unable to bring out his invention to the eyes of the public. Mr. Knowles also originated the lettered building blocks with which so many of our children amused themselves. It is said that he was the first to get up the idea of a wooden block with the embossed letters.

The news of Mr. Knowles' death was a shock to this community. Every one of the potteries and, in fact, every industry closed its factories until the funeral of Mr. Knowles was over. Every business house closed its doors, and the mighty pottery industry moved not a wheel until after the founder of its phenomenal success was laid peacefully away in his last resting place in the family vault in Riverview Cemetery, in

East Liverpool, the remains having been brought to this city from California and having been over a week in transit.

It has well been said of Mr. Knowles that "he was the man who turned the pottery industry from a trade into an industry."

IMPORTANCE OF THE POTTERY INDUSTRY.

SOME years ago a crockery dealer in a Pennsylvania town who has been in the crockery business for a long number of years displayed a Rockingham jar which he had purchased from the late Isaac W. Knowles when Mr. Knowles first started the manufacture of crockery in East Liverpool. This jar, as a souvenir, is very valuable, being among the first pieces of crockery turned out by what is now the largest crockery center of the United States. The report recently published by the State shows Ohio to lead over all other States and Territories—in fact, over all of United States possessions—at the present time, and although we can give Mr. Knowles credit for giving East Liverpool its start, we will have to give the present operators the credit for making it so. It has been a long, hard pull, brought about by the untiring energy of our local manufacturers.

Our Eastern competitors, Trenton, N. J., who have held the candle to us, as it were, for so long, are at last compelled to cry "quit!" and give us the lead, for at present, out of their thirty potteries, only 10 per cent. of them manufacture tea and dinner ware, all the balance of their ouput being sanitary goods, making Trenton's output only about 30 per cent. of the crockery manufactured in the United States, giving East Liverpool, with its suburban plants, as it were, credit for the balance of 60 per cent. This is something to be proud of when we take East Liverpool with her hills and only one railroad.

WHAT ONE EXPECTS IN CHICAGO.

A RECENT VISIT TO THE factory of Chishom, Boyd & White afforded an optical demonstration of the fact that they are very busy. Every department of their plant is running full-handed. H. J. Flood, president and general manager of the company, admitted that they had been compelled to run overtime during the month of July. During that time they shipped eight Boyd presses to five different States and one to Manitoba. With five of the presses they furnished complete equipments of clayworking machinery. The rest of the plants to which presses were shipped were already supplied with dry pans, pulverizers, etc. The following are among their recent shipments:

The Chappuis Company, Ltd., Rayne, La.—Four-mold Boyd press; also an equipment of stiff-clay machinery.

The Pressed Brick and Tile Company, Ltd., La Riviere, Manitoba—Six-mold Boyd press, with complete outfit of clay-preparing machinery, including a Williams shale pulverizer, all of which is now being installed. The plans for this plant were furnished by the Chisholm, Boyd & White Company.

The McLoud Brick Company, McLoud, O. T.—A two-mold Boyd press, with pulverizer and other necessary machinery, including the boiler and engine. This company has just erected a new plant, and will make brick of a red shale, which they have in unlimited quantities, and we understand they have already booked large orders for their output.

A. Abrahamson and R. Niedergesaess, of Seattle, Wash.—A Boyd brick press, with other machinery, furnished by the Chishom, Boyd & White Company. This is a new plant.

The Cherryvale Pressed Brick Company, Cherryvale, Kan.—Three Boyd brick presses and two Frost dry pans, which are now being installed. The plans for this large plant were furnished by the Chisholm, Boyd & White Company, of Chicago, and erected under the supervision of S. J. Allen, the manager of the company, who is said to be the oldest dry-press brickmaker in the United States. This company have their own gas for burning the brick and have already sold their output for two years.

The Summit Pressed Brick and Tile Company, Pueblo, Col., a complete outfit of machinery, consisting of a Boyd press, dry pan, etc.

Factory of the Knowles, Taylor & Knowles Co., as it Appears To-day.

PROPOSED POTTERY FOR WABASH, IND.

ACCORDING TO reports from Wabash, Ind., that city is talking pottery. A citizens' meeting was held in the City Hall for the purpose of considering a proposition held out by P. V. Mackall. A good-sized representative crowd was present in response to a call issued by Mayor James E. McHenry, who acted as chairman of the meeting, and Walter S. Bent as secretary. Mr. Mackall was introduced and stated that if the city would provide a $25,000 they would locate a pottery in that city, manufacturing only hotel and dinner ware, and would employ two hundred people, with a monthly pay roll of $8,000.

We hardly think anything will come of the proposition, as the parties interested are not engaged in the pottery business at the present time and are not familiar with the manufacture of crockery.

If you have anything in the way of machinery that you don't want put a card in the Clay-Worker "For Sale," "Wanted," etc., column.

By The Light of the Kiln Fire

THE LAST OF A GENERATION OF POTTERS.

EVERYBODY KNEW the Dummy. I needn't tell what his real name is, but I can say that he hailed from an old New Hampshire pottery and was the last generation of a family of potters famous through a dozen generations at least for their skill at the wheel. He went into the rebellion as corporal of a Maine company with not an out about his spare, athletic frame of six feet two in height. In sight and hearing he was acute as the best. He returned from the war a wreck, with his hearing totally destroyed. So deaf, he said himself, that he couldn't hear himself strike the ground if he fell off the kiln roof. He was a great story teller with his deep, gutteral tones, and his ability to read lip movements made him an easy conversationalist.

I never saw him unhappy. Wherever he went there was a laugh on tap, and his quiet little wife fairly adored him and enjoyed his comical stories to the utmost. She was seldom away from his side when he went down to town, for the Dummy had acquired a taste for certain refreshments during his army life that rendered her presence necessary as a shield from the snares that beset him in the city.

But the day came and I met him when there was no smile upon his face, and he was alone; the words that came from his bosom were slow and somber, and in his eyes was a look of hopelessness and tears.

"Lost my ole pard," he said, and went on without waiting for an answer, as if talking to himself, "went away and left me last week. Didn't hardly take time to say good-bye. Wasn't no sign of her goin' 'long in the evening. We romped 'round the old camp (you know my camp in the woods, a mile back from the corner). Russells, nearest folks, live three-quarters of mile away. She spent the evening sewing some clothes for me. I'd been out to the corner; brought her home a nice, new hat. She was tickled as a girl with a new doll. We joked and laughed and turned in about 9 o'clock.

"Half an hour afterward she caught hold of my collar and pulled me. I knew there was something wrong. I asked her what was up. She said: 'Hurry! Take me to the air! I'm suffocating.' I knew what that meant. I supposed it was a slight attack of heart failure. I took her to the door, and worked over her, rubbing her hands and giving her sips of cold water. She came to a little, put her arms around my neck, told me she was going to die, said doctors told her it would come that way. Then she kissed me and sighed and laid back. I thought she had fainted. I ran out of the door down through the woods to the road and screamed for help. Only answer I got was echoes and an old owl that made his home back of the camp. I ran back to Ella and began again to try and revive her but 'twas no use. She'd gone over the dark river without me and left me alone in that old camp with her corpse and her pets.

"I learned to-day she had been ailing for years, but she didn't want to worry me about it. She used to think her whole job was to make me happy. Well, she did. Thirty-eight years ago we met in Providence, R. I. I was going to the front with my company and mighty proud of my corporal straps. She cut the stripes off my sleeve as a keepsake and I never saw them till to-day; supposed they were forgotten and lost. Found them to-day in a small box she had before she was married, along with all her girl knick-knacks. She'd kept 'em all that time.

"Pretty lonesome place out there in the old camp now. Nobody left but me. Death's everywhere. Everybody's dying. Everything's dead. My turn next, I suppose. Had two pet cats; used to talk to them as if they were children. Cats understood and obeyed her, too. Had a pet dog; hound. I never took him in the woods; always left him with her. Day after we buried Ella her brother drove out to camp with me. I whistled for the dog. He came down the patch, crazy with joy to see me. Then ran back to the house. We got some dinner ready and sat down to eat. That dog came over to me, put his muzzle on my knee and looked up at me with a question in both eyes. 'Missus gone away, Jeff,' I said. With that the hound ran over, sniffed at Ella's slippers. (I leave all her garments and shoes just where she always placed them when she took them off.) Then he made for the bedroom, jumped up on the bed, smelled 'round and whined and came back. He barked at the door to be let out. I opened the door and heard him go crying 'round and 'round the camp. Bye and bye I heard a sharp gasp from him at the door. 'What's the matter with the dog?' Al asked. 'Heart-broken,' I said. 'You'll find him kicking out there on the porch. I heard his legs going.' (The Dummy couldn't have heard a cannon go off.) Al went to the door and there the dog lay, dead's a door nail. Heart-broken? Sartin; nothing else.

"I went to find the cats to feed 'em. Opened door to stairway. One came crying down to meet me. 'Where's Tommy,' I asked. The cat mewowed again and ran back upstairs. I found Tommy dead on the landing. I cleared away the table and swept the floor. In sweeping I had to move a lounging chair Ella used to sit in. Found the other cat dead under it. Both cats and dog dead. Heart-broken. Couldn't live without Ella.

"Everything's lonesome out to the old place. Everything's dead. My turn next. But death 'll have to take me kicking. I ain't going easy, you just bet on that. I sleep alone in the old camp, among the things that Ella placed there. Won't move a thing. Just going to leave everything as she left it. Makes me feel as if she was there.

"When a man and his wife have been pardners thirty-eight years there's a great big hole left when she goes away and leaves him. I found the programme of the show I took her to in Providence the night before I went away to get my ears busted and my legs cracked by the rebel guns down the Shenandoah valley. Strange how she kept those things all those years and never let on to me she had 'em.

"Women are mighty strange in their ways, and Ella was a woman. I shouldn't wonder if she liked me better than I liked her. She liked me better than I deserved. But what's the odds, anyway. Everybody's dying and everything's dead. My turn next. Good day, old man."

And there were real tears in the brave blue eyes that had in other days looked unflinchingly into the cannon's mouth as the Dummy swung away to his lonely camp in the Clifton woods.

THE DREAMER.

Many a business man has come to grief because he lacked a reserve of capital, of discipline or of knowledge of his business. In good times, when anybody could sell goods, he was all right; but, when a panic came and his notes were refused at the bank, he went down because he had no reserve of savings or of character. Shrewd business men are always on the watch for emergencies, financial storms, or panics; they know perfectly well that it takes a very different kind of ship-timber to wrestle with the tempests than it requires in pleasant weather, when there is no strain or stress. It is the man who prepares for an emergency, who keeps his sails trimmed, and his ship in order, that weathers the gale.—*Success for June.*

Written for The Clay-Worker.

THE NEW YORK BRICK MARKET.

—An Unusually Wet Season.—

THE YEAR 1902, so far as the manufacture of common brick for the New York market is concerned, is a great disappointment. When navigation closed last December the brickmakers were certain that this season would be as good as the one which had just closed. There was every indication that such would be the case, for the year 1901 had been remarkable as regards the price of brick, a steady advance instead of a falling off which had prevailed for the previous five years. When the fire in Paterson destroyed so many brick buildings it meant a very decided call for brick. It was thought that the long period of poor demand, as well as low prices, was past.

The brickmakers in this section are like men in other trades. They had been waiting long, and naturally rejoiced when the tide seemed setting their way, which would fill their pockets—but, alas, how soon was their dream swept away! As the first month of the year passed the call for brick fell off and continued steadily to show signs of weakness. If the demand for brick in Paterson had not increased over other years, there would have been grass growing on some of the yards this summer, and as it is it will still have some time to start. One yard shut down the 3rd of July and another will have ceased molding by the 10th of August.

—The Brickmaker of To-day—

Gives all his thought and time to contrive some way to reduce the cost of the brick he makes, which is right, so far as it goes, but that is not all. Why reduce wages and add more brick to the pit which is molded every day, and then make no effort to see that his stock should bring more money when sold. And there are more men in the brick trade who would travel in the same line if someone else did not make a move. He will growl because the prices are so low, but that's the limit. He won't come out and put his shoulder to the wheel towards making a good, sound, solid business which would put money in his pocket. To struggle along has been his way, and he will keep on doing so until he fails or dies. It has for the past five years been a struggle for some to keep afloat, and in the spring of 1901, when the Consolidated Company was formed, the burden had gotten so heavy that a lay-down was close at hand. The struggle was not all over, only partially ceased, simply because it was not unanimous. However, it was a relief as far as getting some profit for their stock.

—The Consolidated Company—

Was a movement that would be a great benefit to the trade, as it put that great evil of the trade, as some have called the commission men, on the same level as the manufacturer. What benefited one class was of equal benefit to the other. The long-felt want was thought to have been filled; that the go-as-you-please way of doing business was a thing of the past. The manufacturer sent his brick to market, and his commission man sold them, though many times the sale was far from satisfactory to him.

—The Demand for Brick—

This spring was not up to last season, and that thorn in the side (the men who would not join the combination) supplied a large part of the demand, and as a result the old stock on hand the 1st of July was quite large. On some yards it was in the way to such an extent that unless it could be disposed of they would have to stop molding. It would have been the best thing that could have been done in the matter if the brickmakers could have seen it that way.

It was the wedge which will result, or at least partially result, in the Hudson river and Hackensack yards going back to the old way of selling their stock—by agent. To help the manufacturer who had old stock a meeting was held about the 1st of July, and permission was granted to those who held old stock to sell for any price that the manufacturer thought his stock should bring, the price to be made by the shipper, but the sale to be made by the Consolidated Company. At that time the rate was from $5.25 to $6.25 and holding at that figure. Like the muskrat hole in the canal bank, causing a leak that in times has flooded the country on each side, just so the good, sound prices which ruled could not be maintained, and what was done for a help was the primal cause of a break in the established rates. The price asked for old stock became the ruling price for all, and some did not ship strictly old stock, but got in the wrong kiln, etc. It is past and gone, like all other movements which have been formed to put the sale of common brick on a solid basis.

—Too Large Credits Cause Trouble.—

There was a limit to the credit of dealers who bought their brick from the Consolidated Company. The account of one dealer had reached $8,000 for brick bought from the company, then those who had charge of that part of the business gave orders that no more credit should be extended to that party until there was a reduction of the amount then standing on the books. It was supposed that these orders were being carried out, but on examination of accounts it was found that it had reached the sum of $15,000, which seemed to be rather a large sum to be credited to one man. Then the proper authorities gave distinct orders that there must not be any more credit placed to that individual's account until the amount was reduced to $8,000. It seems to be the way of all who have charge of movements connected with the sale of brick to be very free with their credits. About twenty or more years ago there was a combination of brickmakers to advance the price of brick. Everything was going along nicely, when too much credit was given. In this case it happened to be the brickmaker instead of the buyer, and the result was a collapse of the movement. There seems to be in this case something similar to the man who had hold of the hot iron and couldn't let go.

It seems that after the second notice to those who sold the brick there was a further sale of four barges of brick, which would mean one million brick, which, according to the accounts going around, led to a disagreement among the agents. The next move was a notice to the members of the Consolidated Company for a meeting having in view a dissolution of the company. The meeting was held the last week in July, and they agreed to dissolve, which they did. After their agreement to do so, however, they found that they could not do so legally. No doubt some way can be found whereby they can wind up the affairs of the company, and it is to be hoped that if it is done that there will not be a deficiency.

—The Dissolution of the Consolidated Company—

Will mean a return to the same old conditions which have existed in years gone by. It seems that only spasmodic effort and nothing permanent can be made by the manufacturers in this section of the country. A falling market is to be expected, as there will be nothing to sustain prices. Each will try to get the best rate going and ship as freely as they can. The result will be that some time will elapse before there will be any effort made to form some plan to control the sale. As was proved in the year that the Consolidated Company was in existence, the prices could be regulated and controlled up to a figure that would return a profit to the maker of brick and put no burden on those who bought to sell again. No doubt if there is any movement made, those who will be at the head of it will be met with "it is no use," and it seems so beyond a doubt. Why is it? In other sections the brickmakers get together and stay together, and make money.

—The Present Summer—

Is a remarkable one as regards weather; rain nearly every day. August is generally quite wet, but July this year is one long to be remembered by those who work on the yards. Saturday, August 1, was pay day for the two weeks previous. The best time made on one yard (and more time is made on that yard than on any other) was seven days in two weeks, and the man who had that number of days told me that he had made quarter days and one and two hours to get in that amount of time. So much lost time has made men scarce.

—The Brick Market.—

As the result of free shipment and not very free buying, there is a very dull market, from which the dealers can take their choice. How long it will be before the dealer will make the price, is by present appearances, only a question of time, and not a very long time at that. The break in rates on old brick tumbled the market $1 per thousand, which is the forerunner of what they may expect. The top price for the best brick is $5.25, just $1 dollar in one month, a nice profit thrown away. So the price grades down to $4.25, and if they are off in color, below that figure. One of the cargoes from here of good, hard smooth brick brought $4.25, and the light hard $3. With 9 shillings off for freight and 1 shilling for commission, what is left? It is a good thing that the market is left to go to ——, possibly. That will have to go as well as some other things. No doubt the manufacturer is thankful for that small favor.

A. N. OLDTIMER.

Written for The Clay-Worker.

POTTERY NEWS.

THE MONTHS OF JULY and August find the potteries somewhat busier than previously was the case. Orders have been coming in for the past few weeks very briskly and the outlook for the coming half is very good, indeed. The following will show what the different pottery plants throughout the United States are doing.

The East Liverpool Potteries Company are making extensive improvements at several of their plants. At the Wallace & Chetwynd works several new decorating kilns are being erected and other extensive improvements are being made in different parts of the works. Several new buildings are being erected. At the Globe plant several valuable additions are being made in the way of some new mechanical equipment. They are installing a new grog pan and a new sagger pug mill in these works, and when they are through with the new installations the sagger department will present a far different appearance from what it has in the past.

The Harker Pottery Company is making several new additions and building a row of nice-appearing buildings along the side of the plant that fronts on the C. & P. tracks. The company will also make several additions in a mechanical way.

All of the machinery has been shipped from this city for the new Crooksville Art Pottery Company, which is being erected at Crooksville, O. The six kilns for the new works are all up and have the ironwork on the same. The two double decorating kilns are now in process of construction. The buildings are being put up as fast as the supply of brick at hand will permit and the company seems to be in a fair way of getting their output upon the market by the first of the year. The company will manufacture a complete line of dinner and toilet ware and a line of handsome specialties will also be made. The plant will contain a strictly first-class equipment and will be one of the neatest and most up-to-date plants in the United States.

The new Keystone Pottery Company, which is being built at Crooksville, O., is fast nearing completion and will be ready to receive the mechanical equipment by the fifteenth of the month. The plant will make a complete line of stoneware and stoneware specialties. The buildings will be of brick and will have a capacity of one kiln as a starter, which, however, is to be increased as fast as the demand for their goods will warrant same.

The pottery imports for the year of 1902 amounted to $9,004,323, while the whole consumption shows a figure of $31,468,183, which makes the production nearly three times that of the imported goods.

The Barberton (O.) plants of the American Sewer Pipe Company are being overhauled and will be thoroughly repaired and gone over in every detail. The plant is said to be the largest owned by the American Company, having a capacity of over forty kilns.

The Forest City Clay Works, owned and operated by the American Sewer Pipe Company, have opened a new clay mine near their works in Toronto, O., and shows an entry of 150. The mine was opened at great cost. The new works of the Myers Clay Manufacturing Company, located in the same city, is being rushed to completion as fast as is possible. The company expect to have their new works in operation before cold weather sets in.

The works of the Oakland Art Pottery Company, located at Oakland, Cal., just across the bay from San Francisco, Cal., were completely destroyed by fire and caused a loss of several thousand dollars. It is probable that the works will be rebuilt at once.

There is some talk of New Cumberland, W. Va., having another pottery, as the only one located there at this time is owned and operated by the Union Potteries Company, of Pittsburg. Pa. Although the project has been much talked of, it seems to be all talk at the present, as nothing definite has been done as yet.

The Lowery Pottery Company has been incorporated at Crooksville, O., with a capital stock of $10,000, incorporated under the laws of Ohio and taking in the two plants, one of which was owned by Lowery Brothers and the other by their father. No new plants will be erected, as the corporation is simply the outcome of the consolidation of the two plants.

The new plant of the Dresden China Company, which is located at Salineville, O., is progressing as fast as can be expected. The company will hardly get their goods out in time to catch the fall trade, but expect to get them out in time to launch them upon the buying public by the first of the year.

The Wilkes Pottery Company has been incorporated at Toledo, O., with a capital stock of $10,000, and will make a general line of stoneware and stoneware specialties.

The works of the Syracuse Pottery Company at Syracuse, N. Y., has resumed operations in full after a loaf of almost six months. Additional buildings have been erected and a new kiln is being built, so that the capacity of the plant, when complete, will be about double what it was formerly. The output of the Syracuse company consists for the most part of a line of flowerpots and like lines, such as cuspidores, etc.

The Shelton Pottery Company has been incorporated at Paducah, Ky., with a capital stock of $25,000, and will build a stoneware factory at once.

The first kiln of ware at the new Barberton pottery, located at Barberton, O., will be drawn this week, after which the plant will start up in full in every department.

The Spencer & Menke Pottery Company has been organized at Millville, N. J., by the following gentlemen: J. F. Martin, J. N. Menke, T. W. Garrison. The company will be incoporated at once under the laws of New Jersey, with a capital stock of $125,000.

The J. B. Owens Pottery Company of Zanesville, O., has purchased the little Corona pottery plant at Corona, L. I. It is thought that the company will devote the output towards the manufacture of the art ware for which the company is famous.

All of the potteries of Trenton, N. J., report a shortage of coal, and are unable to get out their orders prompty on this account. The Trenton firms seem to have plenty of orders on hand, but on account of the shortage of coal, with which they have been bothered all this year, they are unable to get out promptly. In fact, some of the plants have found it necessary to shut down for several days at a time on this account and at times the scarcity became so great that a coal famine was feared.

The West End Pottery Company, of East Liverpool, has had plans drawn up for the large additions which are to be erected in the near future. Mr. Burgess, general manager of the West End plant, and Willis Cunning, assistant general manager, are said to be interested in the erection of a new pottery supply plant, which will cost in the neighborhood of $25,000 and which is said to be a sure thing. Mr. Burgess and Mr. Cunning have for a long time operated a small stilt works under the name of Burgess & Co., but recently sold same out. No site has yet been selected, although those interested have been published as having closed contracts for the purchase of East End real estate.

The new brick works which were recently incorporated in this city under the name of the East Liverpool Brick Manufacturing Company, are rushing work on their plant as fast as possible. The kilns will be erected at once and the ironwork for same and the machinery for the new works is almost ready, so that they will not be delayed any on this account. The plant will have an immediate capacity of three kilns, but three more will be erected as soon as the company can make the brick to build same out of.

The J. B. Owens Pottery Company has got its big plant in operation once more. The company has had many inconveniences in getting under way, but energy and push will overcome most of the obstacles of to-day and the Owens Company has certainly proved this statement as it is now under full operations and is turning out ware at its usual speed,

Written for The Clay-Worker.

BUFFALO BRICK AND BUILDING NEWS.

The AMOUNT OF BUILDING done in Buffalo during the month of July was the greatest, with one exception, since 1892, that was in July, 1895. The number of permits issued last month exceeded those of one year ago by 150 per cent. The Buffalo Review prints a two-column list of forty-seven new industries and additions that will employ upwards of 16,000 men and capitalized at a total $61,000,000 for the city and vicinity.

Bids will be opened on Tuesday, the 12th inst., for building a new armory for the Sixty-fifth Regiment, National Guard of New York. It will be located on an ideal site, the highest ground in this city; the plot covers ten and one-half acres, and the building will cover three and one-half acres, or 483 feet long and 356 feet wide, with a tower forty-two feet square at the base and 196 feet high, so that it can be seen for miles around.

The new armory will contain all the latest improvements—library, gymnasium, billiard room, swimming pool, bowling alleys, guard room and squad drill rooms. The drill hall will be 336 feet long and 240 feet wide, and Architect Metzger says it will be the largest in the world. The massive tower and battlements resemble the twelfth century Norman architecture. The State has appropriated $550,000 as a starter, while the county assumes the cost of excavating, grading, etc. The Sixty-fifth Regiment is dear to the citizens of Buffalo. It has eleven silver rings on its colors to commemorate the service and battles in which it was engaged.

—Pan-American.—

Amherst street, otherwise known as the Mall at the Pan American grounds, has been restored to the public as a driveway once more. I drove out that way to-day to see the destruction going on. A little over one year ago 5,000 men were busily engaged building up, and now about 350 are just as busy tearing it down. The same high fence still encircles the grounds and both sides of Amherst street to keep out the public, or the souvenir fiends would leave nothing for the contractors. The buildings were purchased by the Chicago Wrecking Company for $80,000 and are being torn down and disposed of as fast as possible. The golden figure that represented the Goddess of Light on top of the electric tower is now no more—only her foot remains on exhibition in the window of a Main-street store. The Cleveland man that wanted her never came, so she was tumbled from her lofty perch to the ground. The steel base, or dome, on which she rested is being taken down piece by piece. It will take some time, as the tower was all steel and bolted and riveted firmly together.

Among the buildings that still remain standing are the Temple of Music, Ethnology, Liberal Arts, Service, Machinery, Electricity, Acetylene, Emergency Hospital and Bismarck Cafe; Alte Nuremberg and most of the north midway are gone.

The infant incubator, on the south side, is still untouched, and memory carries you back to the old gent, with his Prince Albert coat and stovepipe hat, who sat near the gate and saluted you with, "Just this way; only 25 cents to see this highly moral and instructive entertainment. They are living, breathing human beings; just the same as you and I."

Sweet clover and grass are growing where Bostock's, the Scenic Railway, Chiquita and the Indian Congress once held forth. The triumphal causeway, with the four large pillars surmounted by horses and their standard-bearers, still guard the approach to the four courts. This was the spot where many stood night after night to watch the lighting up of the electric tower.

The ruthless hand of winter and severe storms have damaged one of the horses, but they still tower in bold relief and are the first to strike the eye in a drive through our beautiful park.

Brother U. R. Matson, of Falls Creek, Pa., with his Pongee silk suit and Panama hat, all rigged out for sultry weather, dropped in on me one evening about the middle of the month. He was accompanied by his wife, enjoying his vacation by taking a trip up the lakes on the palatial steamer China. I only regretted lack of time to show him where we stood about one year ago and gazed at those "ships of the desert," the camels, in streets of Cairo. I tried hard to get him astride of one, but he demurred. I think if his father-in-law had not been with us he would have consented. Brother Matson is one of those genial, whole-souled fellows who combines pleasure with business and who lives not alone for himself, but for the good he can do others.

When at home he is a very busy man, with two large brickyards to look after and all the orders they can take care of. He tendered me a very cordial invitation to visit his plant, and said if I would do so he would take me over to see Ravenscroft, at Daguscahonda; W. H. Signor, at Ridgeway, and Yates, at Johnsonburg, and the Star Brick Company, at Warren. These plants are all busy filling orders.

Ben Kissinger Sons' yards, at York, Pa., and Dunn's yard, at Erie, Pa., both recently refused to take any more orders, as they could not fill them. I had this direct from the purchasing agent of the American Farm Company, who was trying to stock up some of their branches. This firm is in the market for brick and drain tile at any one of their branches—Corbett, Md., Linesville, Pa., or Carroll, O. Quotations sent to their home office in this city, 68 Coal and Iron Exchange, may result in some business for yards located near any one of the above branches. NORTON.

DETROIT BRICK AND BUILDING NOTES.

A CONSIDERABLE loss, both of brick and of time, has been experienced by the brick manufacturers in Michigan, caused by the frequent and heavy rains during July. Thus far prices remain unchanged, selling at $6 per thousand. It is hoped, however, that before Sept. 1 they will be advanced to $7. The steady demand for brick of all descriptions still continues. Architects report that there will be plenty of work and that the present heavy call will be in order until winter.

The largest deal of July is that of M. L. Smith & Son, who have obtained a permit to build an apartment house of brick on the corner of Dubois and Jefferson, to cost $150,000. The building will contain ninety-eight apartments. Work on the erection of the building will commence this month.

Statistics for July building permits in Detroit show a slight increase over those for June. In June permits were granted for the erection of 203 buildings, amounting in value to 502,900, and for thirty-seven additions, amounting to $21,800, giving a total of 240 buildings, valued at $524,700. During July permits were issued for 155 buildings valued at $536,610, and for twenty-four additions valued at $50,210, giving a total of $586,820, an increase of $62,120 over the figures of June.

The R. H. Hall brick plant is running at full capacity and is daily turning out brick of sterling quality and color. Mr. Hall secured an immense volume of business since the beginning of the season, with no signs of abatement at present. The firm has successfully handled a fair share of the season's heaviest orders along with their large shipments to different points in the State.

J. C. McDonald & Son have been very busy keeping up with orders. Their different plants are working at full capacity and their product is second to none, which, in a measure, accounts for their gaining so ready a market. This firm has been eminently successful; from a modest beginning their business has so enlarged that at present, in order to meet its demands, they have two plants in steady operation, each with an annual capacity of several million.

How to give the people of Detroit good pavements at reasonable prices continues to be one of the problems of the Department of Public Works. Since the introduction here of brick for paving purposes, that material has gained very rapidly in public favor. Year after year the appropriations for brick has been steadily increased. The city now has to its credit 24.85 miles of brick-paved streets, and all in first-class condition. The brick selected by the department as the best for paving purposes are: Wilsonville, Metropolitan, Athens, Buckeye and Union Paver. The paving done with those brick has been distributed in different parts of the city, but that portion that knows nothing but heavy traffic has received the most, and has given entire satisfaction. Nearly all the alleys in the down-town district have had the old-time cobblestone, on sand foundation, torn up and replaced by vitrified brick on concrete foundation, which is a better pavement in every way, more sanitary and easier to keep clean. Appropriations for this year will enable the city to add upwards of three miles of brick-paved streets, and which will be accomplished before the coming of winter. DOROTHY DALE.

Written for The Clay-Worker.

WITH THE CLEVELAND BRICKMAKERS.

THE BRICKMAKING INDUSTRIES of Cleveland, as also the brick machine interests here, were pretty well advertised the first of the year by the N. B. M. A. Convention. Cleveland, however, is developing so rapidly and is becoming such an important financial and industrial center, with such a diversity of manufactures, that every trade journal must contain some items of interest from this city.

While Cleveland ranks high in the number of its paved streets, yet in the consumption of building brick it is far below the average in proportion to population. All the lake towns are mostly built of wood, by reason of their being near cheap lumber markets. A noticeable change, however, is taking place in Cleveland in the more substantial and permanent character of the buildings erected in the past five years, and especially in the increased use of brick, though it will be a long time before one will see such a predominance of brick buildings, especially in residence sections, as is observable in the neighboring cities of Columbus and Pittsburg.

It is well known that the fine red face brick which are used so extensively in high-class buildings throughout the Eastern half of the United States come from Cleveland, and many readers of The Clay-Worker know the man who, realizing that he had a good thing, has pushed it along so successfully, backed by the great Hydraulic Company. Hunt and the brick, "which have made Cleveland famous," need no further comment—they are all right.

This has been a trying season for the poor common brickmaker who must dry his brick on the yard. The unprecedented rainfall of June and July must have made him envy his more fortunate neighbor with steam shovel and artificial dryer.

The largest common brick plant here, that of the Standard Brick Company, was visited by the brickmakers who attended the convention, and those who met the head of this establishment, Mr. H. C. Bradley, will wish to know more of him and hope that he may become a regular attendant at all our annual gatherings.

In a recent visit to this plant I found abundant evidence of activity and prosperity, 100,000 soft-mud brick being made daily. The most interesting feature of the plant to me is the method of drying the brick or more particularly of generating the heat for drying. The generating and tempering apparatus is a brick chamber about 10 feet wide, 30 feet long and 8 feet wide, situated in the boiler room, with a furnace at one end fed by an automatic stoker and a fan near the other end for drawing in the air for combustion, the hot gases from the furnace and the cool air for tempering and blowing it through the dryer.

Though bituminous slack coal is used for fuel, so perfect is the combustion that no smoke can be seen issuing from the stacks at the receiving end of the dryer, nor no soot upon the cars of brick which come from the discharging end. I cannot conceive of a more economical system of drying common brick where waste heat is not available.

Of course, this dryer should be fireproof, as the Standard Company learned to their cost a few years ago. Moreover, where a bright, clean color of brick is desired, the dryer would not be satisfactory, but in Cleveland color does not figure, as it should not anywhere in a common building brick. Strength and durability are the essential requirements in a common brick; if uniformity of color is desired, it should be paid for extra to the manufacturer of face brick.

One day recently, having two or three hours to spare, I went over to the plant of the Eggers Brick Company, which many visited last winter on Hunt's excursion. I was fortunate in finding our friend, ex-President Eggers, on the yard, and met with the cordial reception that he always gives to members of our association. This plant is turning out shale brick for sewers as fast as eight thirty-foot round down-draft kilns can burn them, and evidently a prosperous business is being done. The dryer here was at first a furnace radiated heat dryer, a type said to be popular in the Pittsburg district, but after the down-draft kilns were built it was changed to a waste heat dryer, and now they have hot air to blow away. Mr. Eggers is fortunate in having two stalwart sons of good, industrious habits, who are enthusiastic brickmakers and not afraid of work. One is foreman of the yard and the other runs the large steam shovel.

Our friend and fellow-member of the N. B. M. A., Mr. Frank Many, who was president of the Canton-Cleveland Brick Company, is not now connected with the brick business, his company having sold their two paving brick plants to the combination known as the Metropolitan Brick Company, whose headquarters are at Canton. They also own the well-known Royal and Imperial plants of that city. I visited the old Cleveland plant and met the new superintendent, Mr. William R. Worley, a courteous and interesting young man, who is working hard to keep the factory up to its capacity. His drawbacks are the wet weather and a poorly planned and somewhat out-of-date plant. They are working a fine bank of Bedford shale and turning out a good paving block. They set in kilns, four courses of standard size, not repressed brick, under the repressed blocks and one course on top, which are sold mostly for sewers. The plant is said to be making money, but will always be handicapped by the poor start made by the old company, who built the works for the manufacture of face brick under the direction of a man who didn't understand the business.

Such things, it seems, will always be possible, nay, even common, and the brick business be noted for waste of capital so long as the brick companies are promoted by land speculators and irresponsible salesmen, and are built without any definite plans or by men without technical knowledge. A good business man would not build a store or office building, or even a residence, without employing an architect to make complete working drawings and specifications of every detail, but the same man will put his money into the brick business and allow some interested know-it-all to test his clays and lay out his plant in a haphazard manner. The result is not hard to guess. As a rule such plants are run at a loss till the money has all been spent; then a halt must be called, the directors of the company awake to the situation and begin to seek intelligently and in a businesslike manner for a competent brickmaker to help them out of their trouble, and they are lucky, indeed, if they find the right man.

The time when an honest, expert technicist is most needed is at the start—while the company still has the cash in bank. Such a man, after looking over the situation carefully, may advise an abandonment or modification of their purposes, or will make complete plans and specifications for the proper construction of the plant and see that it is built strictly according to these plans and specifications. When this is done and the works well started they will almost run themselves, but a cheap man at the start is an expensive luxury. But such a course is seldom pursued. Pretty nearly all of us pass through the same experience in brickmaking. The business seems so easy and simple at first that we soon think we know all about it. When we get older and know better our advice is not sought nor our help desired—a young man is required. But as Garfield said of financial subjects, "Men's first opinions are almost always wrong in regard to them, as they are in regard to astronomy, and he who reads the truths that lie deepest is in imminent danger of being taken for a mad man."

A BUCKEYE.

The Kansas City Shale Brick Company, of Missouri, filed papers of incorporation the last of July. The object of the company is to manufacture and deal in brick and tiles. The capital stock is $60,000, one-half paid. The incorporators are: George Witthoff, Claude Hardwicke, George Coomber, J. J. Stogdale and R. W. Stogdale.

The strike of Belleville (Ill.) brickmakers, that has been on since April 1 and has greatly retarded building operations, has been settled. The agreement was reached a couple of weeks ago at a meeting of the brickyard owners and the men. One of the demands made by the men, that the union label be used on the product, was waived. Instead, it was agreed that drivers might affix the label on the brick delivered in the city. The agreement is to be binding for one year.

Written for The Clay-Worker.

PACIFIC COAST NEWS.

NOTWITHSTANDING the large amount of building going on in San Francisco, prominent brick men express considerable dissatisfaction with the summer's trade. For some reason the trade is not nearly so large as some of the dealers had hoped it would be. Brick men are inclined to attribute most of their troubles to the vogue for cement which prevails here now. An official of one of the big companies said the other day that the rage for cement had practically driven brick, as a foundation substance, out of the market, thus cutting off at a blow about half the brick business of the city. The company in which this man was interested is now operating only two of five plants owned by it. The terra cotta people also have their troubles. The use of gas for fuel, which has become so prevalent, has done much to destroy the chimney trade.

The California Mantel Company has been incorporated to engage in business in San Francisco. The capital stock of the company is $50,000, of which all has been subscribed. The directors are: W. J. Pattosien, Charles F. Huitz, Charles Krittendorf, Fred Struven and Charles Strycker.

On July 12 the H. T. Holmes Lime Company sent out word to the trade that it had turned over all its property, good will, etc., to the Holmes Lime Company, Inc., which will hereafter carry on the brick and lime business formerly conducted by the H. T. Holmes Lime Company.

The local bricklayers of San Francisco have served notice on the contractors of this city that they will, after Sept. 1, demand a minimum pay scale of $6 per day, an increase of $1 per day over the present minimum. The same action was taken by the bricklayers of Oakland, Cal. It is claimed that competent bricklayers are so scarce that contractors are in some cases paying as high as $7.50 per day for competent men.

On July 24 construction work was begun on the new tile factory of the Pacific Art Tile Company, at Tropico, near Los Angeles, Cal. The main building will be 385 feet long and 125 feet wide. The power house of the company, which is now nearing completion, will be seventy feet long and fifty feet wide. Both buildings will be of brick with stone trimmings.

The first kiln of 160,000 brick burned at the Alger Oil and Mineral Company's plant at Alger, Wash., was placed on the market a few weeks ago, having been burned in the remarkably short time of eight days, the usual burning being from two to three weeks. Another kiln was ready for the fire as soon as the first was off, and is now burning. Orders to furnish brick have been received and accepted from five towns—Mount Vernon, Anacortes, Sedro-Wooley, Whatcom and Fairhaven. The brick turned out are fine specimens of the clear-cut, machine-made kind, and resemble pressed brick on the weather surface. The company owns a fine deposit of clay near Lake Samish, at Alger.

W. A. Lander, of Moscow, Idaho, is making arrangements to establish a brickyard at Troy, Idaho, and has applied to the railroad company for yard grounds just west of the depot. Mr. Lander has already secured a fine body of clay for brickmaking, and will put in a wire cutting machine and other appliances as soon as satisfactory arrangements can be made with the railroad company.

An immense deposit of clay, which is said to be of the very finest quality, for both brick and pottery, has been discovered near the town of Maple Falls, Wash. This valuable deposit is located on the lands of Thomas Hodge, who has known of it for several years, but owing to lack of transportation facilities did not think it practicable to develop the mine. Lately, however, he has been looking the matter up, with a view to giving the clay a proper test. Samples have been sent east by some people who are interested, and a thorough test of the merits of the clay will be made. It is thought that the clay is equal in body and value to that of the famous beds of the Alger Oil and Mineral Company, at Alger, which is said to be the best so far found on the Pacific coast.

John T. Huetter, of Spokane, Wash., is putting in a brickyard and kilns on the line of the Northern Pacific railroad, three miles west of Post Falls, Idaho. The plant will have a capacity of 30,000 bricks per day.

The John La Pointe Company has commenced the manufacture of brick at Brennan, Wash. The new plant is located on the clay deposits near Brennan owned by C. X. Larrabee and T. W. Gillette. It is on the Great Northern railroad and on the Nooksack river, thus having exceptional transportation facilities.

The brickyards in and near Los Angeles, Cal., are beginning to burn oil in large quantities. The yards that have sheds have been making brick all winter, but there are a number of smaller yards that are in operation only during the summer, as they have no way of protecting the product from the winter storms. To supply these plants it will require about 10,000 barrels of oil a month.

J. F. Fahey, of Portland, Ore., is in Enumclaw, Wash., negotiating with the Board of Trade of that town to establish a pottery, brick and tile works there. Mr. Fahey makes a proposition by which his company agrees at once to establish a pottery and brick works, to manufacture all kinds of pottery, brick and tile on a substantial and permanent basis. In order to establish the plant the company asks for a donation of one acre of ground and a suitable building. They do not ask for a deed of the property until the first kiln of manufactured goods is turned out. Subscription papers are to be started at once.

A company is being organized at Stockton, Cal., to manufacture paving brick made of asphalt obtained in refining petroleum at the Davis Distilling Company's plant, in the western part of town. Mr. Davis, the inventor of the appliance to manufacture the bricks, is about to construct a machine with a capacity of 50,000 brick a day.

A vein of what is claimed to be exceptionally fine building clay, twenty-five feet thick and about 500 feet long, has been found just north of Green Lake, near Seattle, Wash., and C. D. Hillman and C. P. Stone have made arrangements to construct and operate a brickyard there at once. A tract of timber near the clay bank has been purchased and the wood will be used to burn the brick. Mr. Stone is recently from Chicago, and is an experienced brick man. The new company will make white pressed brick, tiling and sewer pipe. The work of getting the plant in running order will be rushed.

San Francisco, Aug. 5. SUNSET.

MAINE BRICKYARD INCIDENTS.

WILLIAM BURKE has shut down his sandstrike brick machines and is again operating his old Hobbs mud machines. Various reasons are given for the failure of the new process.

Hugh O'Brien expects to have his new steam plant in operation in a few weeks' time. The plant promises to be a model of its kind when completed.

Sam Holyoke has made about 100,000 mud bricks thus far.

W. S. Hellier's output to date is over 1,000,000.

It has been the worst season for years, according to the weather clerk. Prices of brick are high, wages of men are high, grub is high, the labor supply is bad, the weather is worse—yet Maine manufacturers were never happier.

DAWN.

Duplicate Copy was Sent and Eisenhart Still Prospers.

Editor Clay-Worker—During my brickmaking career I have encountered a great many difficuties. Some of them appeared as though they were insurmountable, but by sticking to it I have managed to overcome all of them, until this month I find myself plumb against a stone wall, as it were. The trouble is I didn't get a copy of the Clay-Worker. I supposed I could get along without it, but find I can't get through the month without having access to the July edition. You evidently overlooked us, and unless you favor us with a copy of the Clay-Worker I fear that the works will have to be temporarily closed. So help us out, and we will promise to keep a-going.

HORSEHEADS BRICK COMPANY,
R. G. Eisenhart, Treas. and Gen. Mgr.

The manufacturer who gets best results from trade paper advertising is the one who, recognizing the value of such advertising, sees that his announcements are attractive, yet reasonable, and calculated to inspire confidence. Extravagant claims are usually taken for even less than they are worth.—Exchange.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

A Busy and Happy Buckeye.

Editor CLAY-WORKER—Inclosed herewith find check for amount due you for subscription to the CLAY-WORKER. We are a little tardy, but trust you are like most business men—glad to receive what is due you at any time.

We are busy, very busy—in fact, so much so we cannot take time to describe our new tunnel dryer, which the writer constructed last fall and winter and utilized some waste room in the basement of our factory. Also our exhaust steam to heat it up with, thereby drying 25,000 brick each week in space heretofore worthless, and at no expense for fuel, but saving heat we formerly let escape into the air. If the Ohio Brick and Tile Association is alive another year we hope to meet you. We are always

Yours truly,
W. G. WILSON,
Gen. Mgr. Brice Clay Co.

Brice, O., Aug. 12, 1902.

How to Make a Good Paper.

Editor Clay-Worker:

I notice in the current issue of one of your contemporaries, under the title "How to Make Good Paper," a criticism of your review of "Modern Eloquence" in the last Clay-Worker. While I know you are able to defend yourself, still I want to write you my approbation of your action. The fact that we are engaged in the brick business does not argue that we are devoid of high and noble aspirations. As a father, I desire to thoroughly equip my children for a life of usefulness. One of the means to that end is good books. How many of us have time to review the many productions of the press? Very few. Then, is it unreasonable in an editor of our trade journal whose reputation is universal and ability unquestioned to review some of the best works of the age for the benefit of his readers? I think not.

"Modern Eloquence" is a grand work, containing some of the best productions of the literary world of to-day. None of us can fail to realize how great books broaden the comprehension, quicken the perceptions and elevate the principles of our children. It is by mental culture that the scope of view is widened, the objects of interest are increased, the subjects of thought multiplied and man is raised in the scale of creation.

Many other things I could say, but it is unnecessary. As to the drink cure (which is also mentioned), if there is any place on earth where a cure for the drink habit should be advocated it is in our trade publications, for it is our laborers and tradesmen that are most injured by it.

R. N. ALLEN.

Ferris, Tex.

All Quiet in the Strike District.

Editor CLAY-WORKER.—Inclosed find check for $2 in payment for subscription to the CLAY-WORKER. I have been very busy this season considering that I am in the region of the anthracite miners' strike. I have been increasing my plant in order to keep up with orders. There are no new works in this immediate vicinity and some of the old ones have gone out of the business which partly accounts for the rest of us being busy. There has been a new terra cotta works, under the name of the American Clay Product Company, started at Forty Fort, about four miles from here. Also a new brick plant started by the Pocono Brick Company, at Crescent Switch, on the Wilkesbarre & Eastern railroad, about forty miles from here. They are making brick with a Chambers machine.

I do not know of anything else of interest to you. We have had a long strike of the miners, but everything is very quiet and orderly in this neighborhood. With best regards, I remain.

GEORGE T. DICKOVER.

Wilkesbarre, Pa., Aug. 11, 1902.

Patent-Suit Decision—A Correction.

Editor CLAY-WORKER—Our attention has been called to the notice on page 43 of the July CLAY-WORKER of the patent suit decision in the case of Chisholm, Boyd & White against the Anderson Foundry and Machine Works. We think you should have stated that Judge Baker dismissed the case for *want of equity*, and that the plaintiffs have given notice of appeal. Please make the correction and oblige, yours truly,

ANDERSON FOUNDRY AND MACHINE WORKS.

Anderson, Ind., Aug. 8, 1902.

Information Wanted About Burning With Coal.

Editor Clay-Worker:

Would some of the readers of The Clay-Worker give me a few pointers in burning brick and tile with soft coal? We have always used wood here, but as it is getting scarce we are going to try coal. We have two round, down-draft kilns, something similar to the Pike kiln. I want to know if we could use coal from start to finish, and if the kiln or furnace would have to be rigged differently, and how brick are set in the kiln.

I visited a yard a few miles from here which has been using coal for the last two years, and I am told by the proprietor that he leaves his furnace doors and dampers open from start to finish, as he can get the heat down to the bottom better. But I can't get much satisfaction here; one has to find out for himself. I have two kilns similar to the Pike kiln, about fifteen feet apart, with stack in center of kilns, running underground to it (down-draft). Can any of the readers tell me how I can use the waste heat from No. 1 kiln, which is burned, and water-smoke No. 2 kiln with waste heat from No. 1, which is cooling?

A. R. McCUTCHEON.

Reply to Burning Questions.

Editor CLAY-WORKER—Your Canadian correspondent who has two round down-draft kilns, in which he has been burning brick and tile with wood as fuel, wants to know, first, whether he can burn with coal from start to finish, and, if so, what change in furnaces will be necessary, and any other information pertaining to the change in fuel that your readers may give him; second, how he can use the heat of a cooling kiln to water-smoke the other, the two kilns being fifteen feet apart, with stack midway between them.

I will endeavor to answer his question briefly and as definitely as I can from the data furnished: (1) Soft coal can be used from start to finish, and good, hard, sound ware obtained, though perhaps not all as clean and bright in color as with wood. It would be advisable, however, to use wood for water-smoking, at least for a time, until he learns how to use coal without clogging the kiln with soot. Knowing nothing of the size of his kilns, nor the number, form or size of the furnaces, I cannot advise just what change to make for coal. The most common type of furnace, however, for this purpose in the States is very simple, consisting of a box about eighteen inches wide, thirty-six inches long and thirty inches high, lined with fire brick, formed by an arched chamber in the wall of the kiln through the hub to the bag. The front of this furnace is bricked up from an arch about sixteen inches from the bottom to a height of about thirty inches, with an eight-inch wall, their height being to the top of the steel band around the hub of the kiln. The better practice, however, is to make this front easily removable for access to cleaning out firebox between burns. On top of the box, and just inside of this front wall, is an opening about six inches wide, extending across the width of the furnace into which the coal is fed. This opening is never closed, except with coal, most of the air for combustion being drawn down through the fuel. This box may either have no grate bars or may have bars of iron or old pipe about thirty inches long, extending from the fuel opening at the top at an angle, so that the bars will reach within about a foot of the bottom, the bars being hooked over the kiln band or a bearing bar at the top and resting upon a bearing bar near their other ends. Fires are started on the bottom of the ash pit and built up until the coal must be fired from the top. If grate bars are used they are not so much for the purpose of admitting air to the fire as to hold up the fire in the front part of the furnace. Ashes are only taken out to make room for more fuel, the furnace being chiefly down-draft. With such a furnace a good burner with wood will soon get as good or better results with coal.

(2) The simplest way to get the heat from the cooling

kiln into the other kiln in your case will be to make an opening in the top of each crown, about two feet in diameter, and connect these with an iron pipe, placing in the kiln under the discharge end of pipe a spreader of tile or wood to distribute the hot air over the top of ware. The problem then is simply one of producing enough suction to draw the hot air from one kiln down through the other. Unless the stack has a good draught and the connection is made as soon as the kiln is burned, while the stack is hot, there may be some difficulty in doing this successfully. There is no question about the success of the operation if a fan or exhauster is used. The fan may be placed in the engine room or machinery room, belted from engine shaft or line shaft, or at any convenient place, run by a separate or direct-connected engine. If enlargement of the plant with more kilns is contemplated, the fan system is altogether the best. Any competent brick-works engineer will make plans for doing this properly if sufficient data are furnished. AN EX-BURNER.

A Small Missouri Brick Plant.

My Dear Randall:

I spent a part of a day at Bowling Green, Mo., recently and took occasion to look over the brick plant there. The name of the firm operating the same is James & Sisson. The yard is located near the west end of the city. The company owns a small tract of land, which is underlaid with clay and shale. The surface of the bank to a depth of from three to six feet consists of black loam and reddish brown clay, having in some places small bowlders and pebbles of granite, flint and other foreign rock. The greenish blue shale underneath has a thickness of at least forty feet. The thin beds are not entirely uniform in composition, there being thin layers of sand rock at various levels in the bank. With the exception of these sandy layers, the shale breaks down, upon weathering, into a soft, plastic mass.

At present the company is using only the surface clay. This is plowed on a ten-degree slope, dried and hauled with wheeled scrapers to the shed. The large pebbles and bowlders are removed, only the smaller ones passing into the dry pan.

All the machinery, including dry pan, screens and the three-mold brick press, are from the Chisholm, Boyd & White factory. The owners express themselves as being well pleased with the machinery. The brick press is speeded up to 17,000 a day of ten hours' work. The clay is used very wet and the brick come out of the molds in good shape.

The brick are burned in scove kilns, and it requires about seven or eight days to watersmoke and as many more to burn the brick, wood being used as a fuel. The brick burn various shades of red, depending upon their position to the kiln. A greater part of the brick, however, are of a uniform and pleasing red color. The company expect to manufacture 1,000,000 brick this season. They sell at a price of from $6.50 to $8 per thousand. I. T. INERANT.

A Good Beginning—Baltimore Builders Busy.

Publishers Clay-Worker—Inclosed you will please find $2 to cover subscription to Clay-Worker.

The Chesapeake Brick Company was organized May 6, 1901, and after buying, in fee, about eighty acres of best clay land adjacent to the city of Baltimore, on Curtis bay, proceeded to erect machinery, build racks, sheds, kilns, wharves, railways, etc., and on the 26th of July, 1901, commenced the manufacture of brick. Our first Martin machine was in operation sixty-six days during the latter part of the season of 1901, and we made and sold about 1,500,000 brick. The company was sufficiently encouraged by the end of the first season to put in a second machine, which doubled our capacity for the season of 1902. So we now have two machines in operation making 70,000 brick per day, with four kilns, which enable us to turn out and market from 300,000 to 400,000 brick each month. Of course, we have had difficulties to overcome and experiences common to new brickmakers everywhere, and are constantly making improvements at our plant, but our brick sell readily, and our greatest trouble this year has been to furnish brick as rapidly as they are needed. We could have sold 10,000,000 this year if we had had them manufactured. Quite a number of large buildings are in course of construction in and about Baltimore, and brickmakers generally in this section are quite busy.

In developing our clay banks, besides ordinary building-brick clay we have discovered in almost unlimited quantities a superior quality of white and red clays, suitable for tiling and terra cotta, and also fire-brick clay. Have sent samples of the white and fire clay to some of our potteries in the city, and also to New Jersey, to be tested, and have had very favorable reports from them. We feel encouraged with our prospects and think it only a question of time when our enterprise will prove a success. We read the Clay-Worker with considerable interest, and frequently get valuable information from it. CHESAPEAKE BRICK COMPANY,

Per J. A. Bass, Secretary.

Baltimore, Md., Aug. 12, 1902.

The Situation in Chicago.

Editor Clay-Worker:

There is at this time perhaps as much work upon the boards in the architects' offices in Chicago as at any time during the last two years. Much of it is intended for factory and manufacturing uses. There seems to be less doing in the line of apartment buildings and residences than has been the case during the last year, but there is still quite a large aggregate of the latter class of structures.

According to the statistical reports Chicago makes a showing of about 10 per cent. increase in the amount of building permits for July, 1902, over July of 1901, with a small decrease in the number of buildings.

Prices of building brick, which are furnished largely by the Illinois Brick Company, are delivered at the building sites inside the city limits at from $5.50 to $6 per thousand. This price is at an average of about 50 cents per thousand below last year's prices. The prices are certainly so low as not to cause any just complaint of extortion to come from builders and contractors or the owners whom they represent. With the increase in wages of employes and the increase in the cost of coal, as well as in all other items of expense that go to make up the fixed cost of production in the manufacture of brick, certainly leaves the Illinois Brick Company free from the claim of their having manifested any of the proclivities which are usually attributed to the avariciousness of combinations and trusts.

The prices of front brick are unchanged, although, owing to the inability of the manufacturers to keep ahead of their orders for immediate delivery, the situation has stimulated the dealers to a maintenance of their regular prices.

The manufacturers of architectural terra cotta are enjoying the fruits of a prosperous business. Among the later contracts of the American Terra Cotta and Ceramic Company is one for the Elgin Watch Company building, at Elgin, Ill. During the last week or ten days one of the largest and most prominent show windows of Marshall Field & Co.'s new store, at State and Washington streets, has been filled with a beautiful display of the new "Teco" ware, manufactured by the American Terra Cotta and Ceramic Company, and which was well illustrated in the July Clay-Worker. This ware is proving to be very attractive to the lovers of the beautiful in art, and has called forth sincere praise and approval and a hearty indorsement from artists.

Among recent contracts let in Chicago for important structures are the Thomas Chalmers building, 307-9 Wabash avenue, terra cotta, brick and stone to be used in its front elevation. Among manufacturing plants there are six large buildings to be erected for the Deering Harvester Company, costing about $150,000, and of brick construction. Another for the Grand Crossing Tack Company, at Grand Crossing, $50,000; Armour & Co., a large refinery in the stockyards district, costing $80,000; a large manufacturing building owned by the Newberry Library, pressed and common brick in facades. The United States Express Company are constructing a large stable, pressed brick front, with terra cotta trimmings.

The roofing tile people are busy these days, and have all the tile they can make this fall sold ahead, and are not booking orders for less than two or three months' future delivery.

Chicago, Aug. 9. SCRIP.

ANTICIPATORY.

Among the good things we will serve our readers next month is an article entitled "Fuel Oil for Clayworkers," written for the Clay-Worker by Herr Schwennicke, of Moscow, Russia, translated by George J. M. Ashby. The latter, in transmitting the manuscript, says: "A few years ago I wrote several articles upon this subject myself, but this paper of Mr. Schwennicke's is by far the best thing I have met with. The practical and scientific knowledge which the writer possesses, and the clear and convincing way in which he conveys information, should be an incentive to improvement upon the spittings and sputterings of the rule-of-(thick)-thumb brotherhood."

THE CLAY-WORKER

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

NINETEENTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
27 Monument Place.] T. A. RANDALL & CO., Indianapolis.

XXXVIII. AUGUST, 1902. No. 2.

CURRENT COMMENT.

How to make a good paper is a problem that, naturally, troubles the journalistic tyro. We have been doing this nearly a score of years, but do not know it all yet.

* * *

A contemporary watches our pages so closely that it professes to count the words and shows a deep feeling of some kind in regard to us, which is rather flattering than otherwise, though not difficult to understand.

* * *

Objection was raised to a two-page review in the July Clay-Worker, of "Modern Eloquence," edited by ex-Speaker T. B. Reed. This is said to be 4,000 words in length. If any one will take the trouble to count the words, he will see that our contemporary, probably due to the habit acquired from statements of circulation, has made it about 1,000 more than it is.

* * *

We have many personal friends that it is no little honor to possess, and may, in this instance, have been influenced by feelings of friendship in giving an extended notice. Our contemporary may not understand this, for, judging from what we have heard of their methods, personal friendships do not greatly trouble them. We believe that *our readers* are not unwilling to know the character of Speaker's Reed's book. To say that clayworkers are not interested in such literature is to indicate that they are dolts and plodders, with no ambition above that of workaday affairs of life, which is not true of our readers.

* * *

As for the cure of the drink habit, it is a lamentable fact that some of the best, as well as the worst, some who have the love of all their fellow-men, are afflicted with the dreadful curse of strong drink. There is no one who cannot recall the names of men of their own acquaintance, some of them brilliant men, possessing good and lovable qualities, everything to make them splendid citizens, husbands and fathers, but for the one weakness, the inability to resist the temptation to drink. We can but wish that, if the Dickey remedy affords a cure for this malady—for such we believe it becomes—it may be placed within the reach of every unfortunate clayworker.

* * *

Never, within the memory of ye oldest inhabitant, has there been such a mild, moist summer as this. The resorts and resorters may suffer, but the working masses are enjoying the season of ethereal mildness.

* * *

This is a growing season; crops have grown as never before. Prices have grown to an unprecedented figure, and the honest farmer, the fountainhead of all our prosperity, has grown in wealth and in wisdom, too, and has formed a trust—a million-dollar trust—and after harvest time he may decide to make it a billion-dollar trust. Forsooth, nothing is too good for the producer this year.

LABOR-SAVING MACHINERY.

A bricklaying machine is being exploited. If it is anywhere near as successful as the item going the rounds of the press indicates, the task of the bricklayer will be lighter in the future than it has been in the past.

If this bricklaying machine will, as it is claimed, greatly cheapen brick construction, brickmakers ought to encourage its general introduction. It is the cost of laying brick, and not the cost of the brick, that leads to the erection of frame structures. Brick buildings at present cost are more economical in the long run than those of wood. The latter are built because they can be put up cheaper.

The general use of the bricklaying machine may for a time be prevented by the bricklayers, but if it does the work well and cheaply, it is only a matter of time until it will come into common use, and this may ultimately prove a benefit to the bricklayers, for as cost of construction is reduced, the amount of brick building will be increased. The sewing machine proved a boon to the seamstress. The bricklaying machine may lighten the labor and increase the earning capacity of the bricklayer.

HAS THE PRICE OF BRICK INCREASED SINCE 1899 IN CHICAGO?

The leading editorial in the July number of our Chicago contemporary, The National Builder, says that the cost of a home in Chicago has advanced 37½ per cent. since 1899. From that statement the writer argues that this increased cost is largely caused by the advances in price of material. As most of our readers are interested in the manufacturing and selling of brick, we have taken some pains to ascertain the facts in regard to their prices in Chicago prior to and since 1900. The editor of The National Builder quotes from what he considers excellent authority as follows:

"Brick combine's annual profit sought now, 75 per cent.; profit in 1899, 30 per cent."

It would scarcely need an analysis of this statement to disprove its truth. From authority we know can be depended upon, and which is susceptible of proof, we find that the price of building brick in Chicago in 1899 was $6 per thousand, delivered. In 1900 the price was $5.75, delivered, and in 1901 $5.50, while in 1902 $5.25 has been the maximum price, and for the greater portion of this year $5 has been the asking price, with occasional sales (generally large ones) at $4.75 per thousand, delivered.

The cost of manufacturing has materially increased in the two principal items of labor and fuel, but the increase of cost by reason of the almost continuous rains has been still greater. It would appear from the statements of The National Builder that in 1899, when brick was selling at $6 per thousand, the seller made a profit of 30 per cent., or $1.80 per thousand, and that at present, while selling at $5, he seeks a profit of 75 per cent., or $3.75 per thousand, leaving for cost $1.25 per thousand, as against $4.20 in 1899. Whatever may have been the cause of increased cost of building homes in Chicago, we are satisfied, from our investigations, that no part of it can be charged to the brickmaker, and that the so-called combine has tended to lower, rather than increase, prices. We were rather astonished to find that more than one-third of the building brick made in Chicago was produced by the firms outside of the Illinois Brick Company, and that the competition was never livelier than at present. The prejudice existing at first against a so-called "trust" is fast wearing away, and many contractors who refused to trade with the Illinois Brick Company now find it to their advantage to do so. The Clay-Worker has never advocated the formation of monopolies, but it believes that, properly managed, the large manufactory can afford to sell cheaper than the small one. However that may be, it is manifest that the people of Chicago are not suffering on account of the high price of brick.

CLAYWORKERS AND THE WORLD'S FAIR.

What are we clay men doing? The Hoo-Hoos are moving and the time is flying, for the opening day is but twenty months away. "Who are the Hoo-Hoos?" may be a question that many will ask, to which the answer is that the "Ancient Order of Concatenated Hoo-Hoos" is an association representing the interests of the lumbermen of this country. It is an organization instituted, we believe, for pleasure only, but it has, somehow, attracted to itself all the possible influences that serve the interests of lumbermen, among others, the presence of a number of railway officials.

The plan for the house of Hoo-Hoo at the World's Fair of 1904 has been approved by the fair authorities. It will be at once a clubhouse and an exhibit of the timbers of the country. The floors, ceilings, wainscotings, mantelpieces and the furniture of the rooms will all be exhibits.

What are we clay men doing?

OUR CLAYWORKING INDUSTRIES IN 1901.

The statistics of the clayworking industries of the United States for 1901, compiled by that very energetic and able officer of the Geological Survey, Jefferson Middleton, have just appeared, and as we go through the seventy-eight pages of matter a glow of satisfied feeling is kindled by the evidence of prosperity for our craft. Speaking of the brick-manufacturing division, Mr. Middleton makes the very significant remark that brickmakers were wise in maintaining lower prices. The paragraph is worth quoting:

"* * * The large demand was felt at the beginning of the season, and by early summer there was, in many localities, almost a brick famine, manufacturers being frequently compelled to refuse orders. Notwithstanding this enormous demand, and contrary to the general law of supply and demand, the price of brick advanced but slightly, as is shown in this report. The brickmakers were wise in maintaining the lower prices, as these probably tended to prevent a large increase in the number of new yards, thus cutting off much competition, not only for the time being, but for the future. The number of firms reporting brick tile and tile production decreased from 5,914 in 1900 to 5,887 in 1901, a decrease of twenty-one, or 0.45 of 1 per cent, but the product reported by these operators increased from $76,413,775 in 1900 to $87,747,727 in 1901, a gain of $11,333,952, or 14.83 per cent. It thus appears that while the number of producers of brick and tile decreased slightly, the product increased largely."

A gratifying item is the great increase of 43 per cent. in enameled brick. This should indicate that we are nearly, if not quite, independent of foreign sources of supply. The increase of 42 per cent. in ornamental terra cotta tells its story of improvement in the public feeling for art. The steady increase in pottery manufacture—a little over 13 per cent.—gives us hope, too, that the time is not far distant when we shall cease importing inferior German plates and saucers bearing the inscription "Made in England." Mr. Middleton returns thanks in general for aid and information, but he received so much assistance from D. V. Purington in securing the returns for Cook county, Illinois, that D. V. is specially mentioned. To be "specially mentioned" in dispatches of peace should be a greater honor than in those of war.

THE INSTABILITY OF WOOD.

The beautiful city of Venice is, in an artistic sense, the property of the whole world, and it must have occasioned feelings of sincere regret in every lover of art and antiquity to learn of the destruction of the Campanile, at Venice, through the rotting of the wooden piles upon which it was built. Worse than this, other more beautiful and more valued structures are in grave danger from similar causes. Perhaps of all building materials wood is the worst. Below ground it rots and above grounds it burns and rots, too. The wooden structure goes up in a whiff of flame and smoke, and there is an end to it. The loss is not so great if it makes way for something better, but it is deplorable when priceless monuments, that can never be replaced either in feeling or in fact, are built on such frail foundation. The tradition that so long as the piles are below the water line they will remain sound is, evidently, untrue. Many of our modern sky-scrapers are on no better a footing, and though it may be urged that if the piles these are built on last as long as did those of Venice that will be more than enough, yet we have high office buildings that are really beautiful, and it is quite possible some of them may retain their usefulness for centuries, becoming more cherished monuments, as the years roll by, of the new order of building that America gave the world in the later years of the nineteenth century.

BRICKMAKER VICTIMS OF APPENDICITIS.

Frank B. McAvoy, of Philadelphia, Pa., who is very popular in N. B. M. A. circles, recently fell a victim to appendicitis while engaged in superintending the laying of some brick streets at Atlantic City, N. J. He was on a fair road to recovery when last heard from.

George Drew, for many years connected with the Purington-Kimbell Brick Company, of Chicago, is spending the summer in the Adirondacks, recuperating from a successful operation for appendicitis. His vacation, though enforced, was well earned, being the first he had taken in fifteen years, excepting a week each winter at the N. B. M. A. Convention. Mr. Drew severed his connection with the Chicago company in the spring, and expects to get "in harness" again now soon, though he has nothing definite in view at present.

We regret to announce the death of Mr. R. E. Farnham, which occurred at Cleveland, O., July 30. Mr. Farnham had been employed by the American Clay-Working Machinery Company for several years past, and was formerly engaged in the brick and tile business in Ohio. The cause of death was pernicious anemia. He leaves a wife and two children.

WRITTEN FOR THE CLAY-WORKER.

ST. LOUIS BRICK AND BUILDING NEWS.

BUSINESS IS BETTER just at present with the brick and terra cotta manufacturers than it has been at this time of the year for many years. Nearly every one of the brick and terra cotta manufacturers is having all the orders wanted and the salesmen are not soliciting orders. Most of the demand is for big buildings, such as stores and office buildings, few private dwellings being erected just at present. Several of the recent contracts have been for hotels, one recent permit being issued for a seven-story hotel, to cost $300,000.

The building commissioners' report on building operations for the month of July, 1902—last month—shows an increase of building permits issued, as compared with the month of July, 1901, but a decrease in total value of permits issued. In July, 1901, 322 building permits were issued, the aggregate of the buildings to be erected being $1,498,283. During the month of July, 1902, 346 building permits were issued, the aggregate value of the buildings being $1,178,233.

An unobserving citizen was heard to remark the other day: "Is it not remarkable that so little building is going on in St. Louis, though we are to have the World's Fair in less than two years, and already the demand for houses is great?"

This citizen and many others will be surprised to learn that the following figures, which do not lie, show what is called an "unprecedented boom" in building has been in progress the past year and a half.

The following are the figures referred to:

1900—2,513 permits, average.........$	2,354
1901—3,722 permits, average..........	3,548
1900—New buildings, cost.............	5,916,984
1901—New buildings, cost.............	$13,207,991

Increase in year, 110 per cent.

These figures show that St. Louis building investments in the year 1901 exceeded those of any other city in the United States. St. Louis was first, Chicago second and New York third.

More houses were built in St. Louis last year and more money invested in their construction than in either New York or Chicago, both of which cities are several times larger in population. The figures are taken from a bulletin just issued by the United States Geological Survey, devoted to the clayworkings of the United States.

Clay products, which include brick, tile and pottery, in 1901 were valued at $110,211,587, a gain of nearly 15 per cent., Missouri ranking sixth among the States.

Statistics from forty-two cities show that the number of building permits issued in the year was 85,871, a gain of more than 25 per cent. over 1900.

The money invested in those 85,871 buildings was $241,516,585, a gain of 54 per cent. over 1900.

For St. Louis the figures are given above.

From present indications 1902 will show an increase for St. Louis over 1901.

Prices of brick continue to be the same as last reported, viz: Merchantable brick, $7.25; ordinary brick, $7.75; strictly hard, $8.25; red pressed brick, $17.50; sidewalk and paving brick, $8.50.

Mr. Scott, vice president and general manager of the Fernholtz Brick Machinery Company, just back from a Texas trip, reports that his company is doing a big business and he has orders enough booked to keep the new shops busy for some time.

The Williams Patent Crusher and Pulverizer Company are very busy. Though continually enlarging their plant and putting in new and improved machinery, they find it very difficult to keep up with the demand for Williams pulverizers and disintegrators.

Anthony Ittner and his sons, three of whom are associated with him in the brick business, are getting their full share of trade. Both the Ittner yards at East St. Louis are running to full capacity.

TABLE OF CONTENTS.

The Montgomery Land Company a Successful Brick Company.......... 117
Light and Heat.......... 118
The World's Biggest Kaolin Deposit.......... 120
Cost of Production.......... 122
The Usefulness and Economy of Tile.......... 123
Portland Cement.......... 124
A Prosperous Pennsylvania Firm.......... 126
Wisconsin Brick and Tile News 127
A Handsome Brick Street.......... 128
A Woman Potter.......... 129
The Philadephia Brickmakers Are All Happy.......... 130
Loyalty a Crowning Virtue.......... 132
A Great Fire Brick Manufactory 133
Brick and Building in Washington.......... 134
Buttonhole Talks.......... 136
Foreign Scrapings.......... 137
Oil Drying and Burning System 139
Obituary.......... 140
Importance of the Pottery Industry.......... 141
By The Light of the Kiln Fire. 142
A Prosperous Wisconsin Enterprise.......... 166

CORRESPONDENCE :

The New York Brick Market.. 143
Pottery News.......... 152
Buffalo Brick and Building News.......... 153
Detroit Brick and Building Notes.......... 153
With the Cleveland Brickmakers.......... 154
Pacific Coast News.......... 155
Maine Brickyard Incidents.......... 155
A Busy and Happy Buckeye... 156
How to Make a Good Paper.... 156
All Quiet in the Strike District 156
Patent Suit Decision—A Correction.......... 156
Information Wanted About Burning With Coal.......... 156
Reply to Burning Questions... 156
A Small Missouri Brick Plant. 157
A Good Beginning—Baltimore Builders Busy.......... 157
The Situation in Chicago.......... 157
St. Louis Brick and Building News.......... 160

EDITORIAL:

Current Comment.......... 158
Labor-Saving Machinery.......... 158
Has the Price of Brick Increased Since 1899 in Chicago?.......... 158
The Instability of Wood.......... 159
Brickmaker Victims of Appendicitis.......... 159
Clayworkers and the World's Fair.......... 159
Our Clayworking Industries in 1901.......... 159
Editorial Notes and Clippings. 162

MISCELLANY:

The Use of Roofing Tile Abroad. 119
Good Machinery and a Good Advertising Medium.......... 127
Perpetual Motion or Perpetual Draft.......... 136
What One Expects in Chicago 141
Proposed Pottery for Wabash, Ind.......... 141

Index to Advertisements on Front Inside Cover Page.

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Washington, D. C.

For Sale, Wanted, Etc., Ads. Continued on Pages 167, 168, 169.

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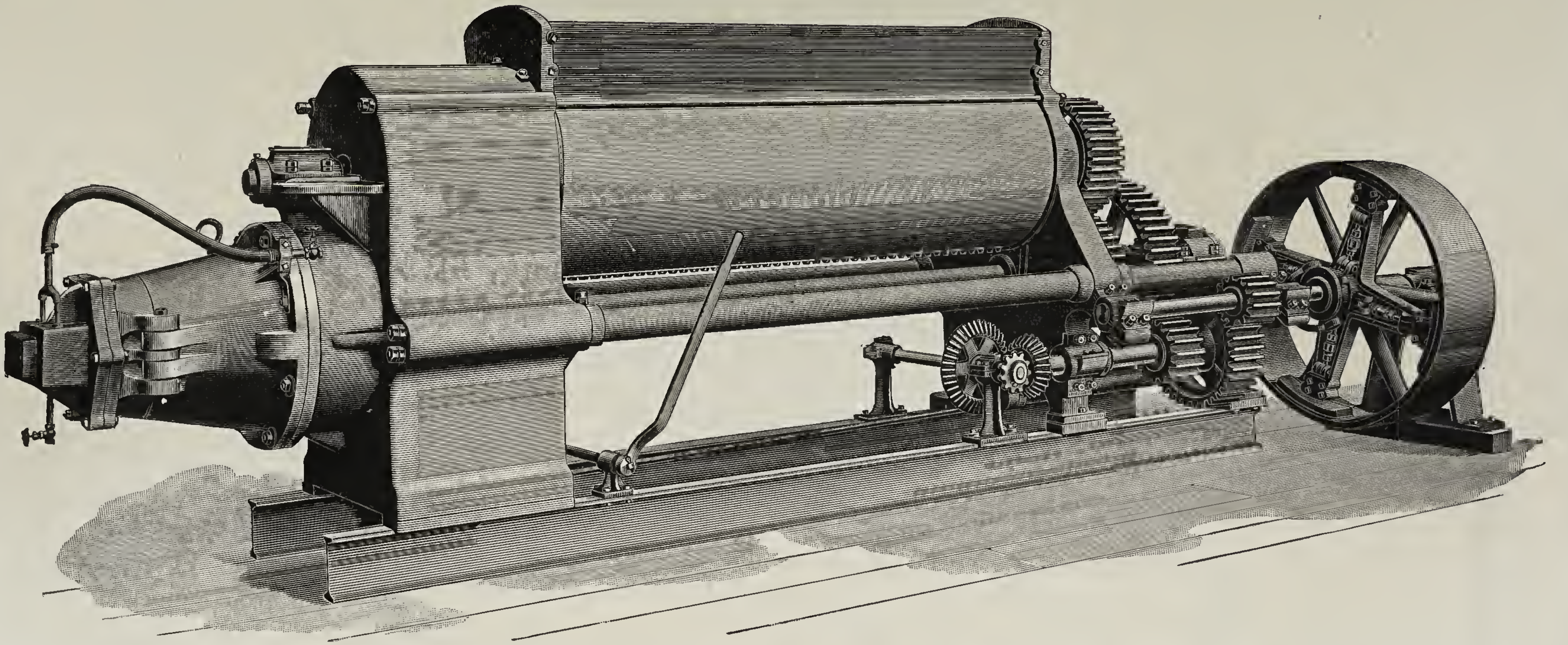

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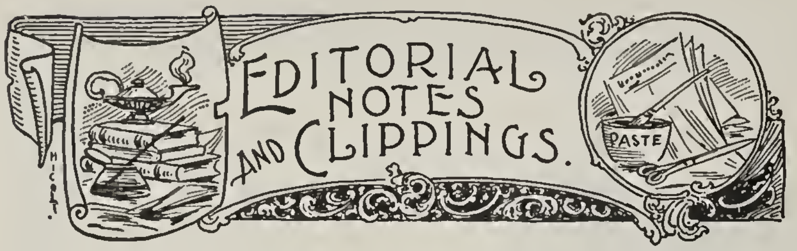


EDITORIAL NOTES AND CLIPPINGS.

Belleville, Pa., is to have a new brickyard.

Joseph Wild has bought the brickyard of M. G. Foley at Arlington, Minn.

Joseph Welty, of Colorado Springs, will establish a brickyard at Pueblo, Col.

C. W. Ward has purchased the brick and tile factory of J. C. Flanding, at Rantoul, Ill.

The Montclare (Pa.) Brick Company has been chartered with $20,000 capital stock.

J. G. Holmes will erect a pottery plant at Boone, Ia., on the site of the plant recently burned.

John Schroeder, a well-known brick manufacturer of Davenport, Ia., died in that city July 18.

The Greenfield (Ind.) Brick Works has been incorporated for $15,000 by F. G., Laura M. and Elmer J. Binford.

The Diana Brick Company, with $50,000, has been organized at Beaumont, Tex., to manufacture brick and tiling.

The firm of Kimple & Flood, brick manufacturers, of Ritzville, Wash., has been succeeded by Flood & Hayden.

C. P. Anderson, A. Z. Clark and others have organized the Cashion (Tex.) Brick and Oil Company with $20,000 capital.

H. W. Wiltten, of Norfolk, Va., has purchased a tract of land near Berkley, Va., on which he will erect a large brick plant.

The Fulton Brick Works, Richmond, Va., advise us that they are in the market for 150 good second-hand angle rack cars, standard gauge.

The Pocantico Brick and Fireproofing Company has been organized at North Tarrytown, N. Y., by R. M. Nugent, R. J. Moriarty and B. R. Selby.

J. D. Whittel & Son have purchased the brick plant of Andrew Jenson at Edgerton, Wis. They will make a number of improvements in the plant.

The Phoenix Brick and Construction Company, St. Joseph, Mo., has purchased fourteen acres of land adjoining their plant and will at once enlarge the works.

The brick works of Miller & Sons, at Allegheny, Pa., were completely destroyed by fire recently. The loss was covered by insurance and the plant will be rebuilt.

The Jackson Fire Brick Company has been organized at Jackson, Tenn. The company has one hundred acres of fine clay land and a plant will be erected at once.

The C. W. Raymond Company, Dayton, O., advise us that they have located an agency at 1117 Third avenue, Seattle, Wash. J. E. Ballou will have charge of same.

Gilbert Rieder, Sr., one of the pioneers of Chillicothe, O., died at his home in that city Aug. 6. Mr. Rieder had for many years been engaged in the brick business.

H. P. Bird has discovered a deposit of clay on his land at Wausaukee, Wis. He will have tests made, and if the clay proves all right he will at once erect a brick plant.

A miniature cyclone passed over Perkiomen, Pa., recently and demolished a large drying shed at the plant of the Perkiomen Brick Company, causing a loss of several hundred dollars.

C. H. Connor has sold his brick and tile plant at Ivesdales, Ill., to B. B. Wirwatz and Otto Seibert. The new proprietors will put in new machinery and increase the capacity of the plant.

In a recent letter, inclosing subscription to The Clay-Worker, Chas. H. Crowell, Goshen, Ind., writes: "The outlook for the brickmaker in northern Indiana was never so good as at present. There is virtually a brick famine in this section, and I don't believe the brick manufacturers will get caught up with their orders this season."

L. B. Hurst and M. L. Jones are erecting a new brickmaking plant at Chillicothe, O. They will have a capacity of 20,000 brick per day and expect to have their product on the market this fall.

The Texas White Brick Company, of Paris, Tex., is a new concern recently incorporated by W. R. Eubanks, George F. Hicks, D. H. Scott, B. J. Baldwin and H. S. Bettes. Capital stock, $50,000.

R. C. Purdy has resigned his position as superintendent of the Buckeye pottery at Macomb, Ill., and has accepted a position in the ceramic department of the Ohio State University at Columbus, O.

D. B. Gideaul, yard foreman for the Kanawha and New River Fire Brick Company, at Charleston, W. Va., was killed and Elijah Stern, superintendent, badly injured, July 31, by the overturning of a motor car.

The Sardis Brick Company, a new concern of Sardis, Miss., is running up to its full capacity of 20,000 per day. Mr. J. R. Buchanan, the manager, is a practical brick man and predicts a successful future for the company.

Mr. Asabel Clark Geer, of Washington, D C., the vice-president of the New York Architectural Terra Cotta Company, died at his summer home, Williamstown, Mass., July 23. Mr. Geer is survived by a widow and two sons.

Mr. Max Mattes, a well-known citizen of Newton Falls, O., died suddenly from heart trouble July 27. Mr. Mattes was sixty-eight years old and had been engaged in the manufacture of hollow brick and tile for a good many years.

The National Brick, Stone and Terra Cotta Company has been chartered at Yonkers, N. Y., with $100,000 capital. The directors are C. H. Burke and H. Huennekes, of New York City, and F. Ohlemacher, of Michigan City, Ind.

Business is lively at the Purington Paving Brick Company, Galesburg, Ill., as is usual at this season of the year. They recently shipped in one day two carloads of brick to Bismarck, N. D., and a large shipment to Memphis, Tenn.

The Louisville and Portsmouth Fire Brick Company have filed articles of incorporation. The incorporators are L. P. Haldeman, Portsmouth, O.; W. A. Connolley, Soldier, Ky., and John H. Sale, Louisville. The head office is at Portsmouth, O.

The new plant of the Lafayette (La.) Brick and Tile Company commenced operations August 1. They have an up-to-date plant with a daily capacity of 30,000 brick, and already have enough orders on hand to keep them busy for some time to come.

Harry Kohl, G. E. Eis and A. L. Cruzen have formed a company with $5,000 capital stock, and will build and operate a pressed brick plant near Centralia, Ill. A large hill of fine clay has been purchased and it is expected that the plant will be in operation in sixty days.

The plant of the Union Brick Company, at Fort Edward, N. Y., has been overhauled, new machinery put in and the capacity increased to 75,000 brick daily. The office of the company is located at Sandy Hill and the directors are W. J. Gallagher, B. G. Higley, John Sullivan and P. Malan.

Wm. Wirt Clarke & Sons, Baltimore, Md., advise us that the District Commissioners at Washington, D. C., have been so well pleased with the Kraus brand of American Portland cement that they have been furnishing at the Government

[CONTINUED ON PAGE 164.]

Pennsylvania Lines.

Annual Excursions to North Michigan Resorts.

$10 to Petoskey and Traverse City. $11 to Mackinac Island.
Sept. 2d, 6th and 10th. Return Limit Thirty Days.

For particulars call on ticket agents, No. 48 West Washington St., Union Station, or address

W. W. RICHARDSON, D. P. A., Indianapolis.

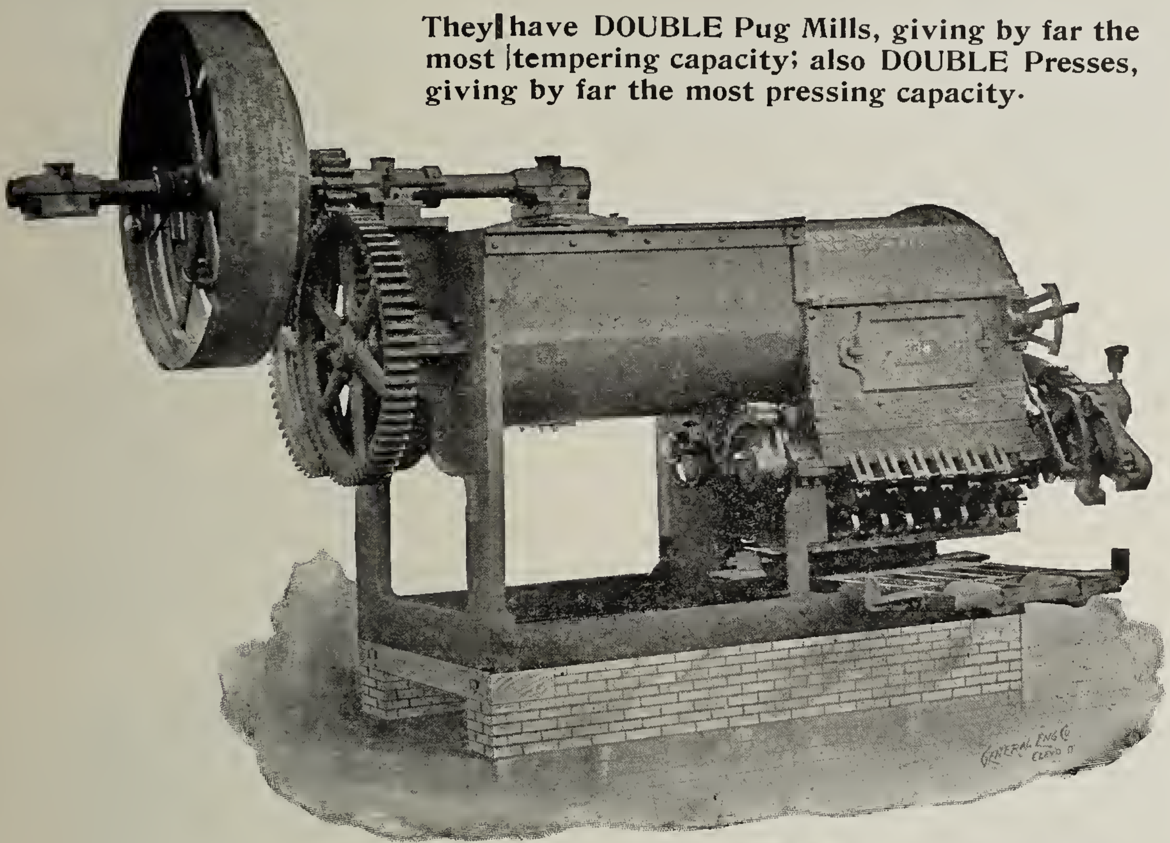
LIGHT HOUSES

Do not have to hire bands or fire cannon to call attention to their shining—**THEY JUST SHINE.**

Thus it is with the two "soft-mud" machines we manufacture (one horizontal and one upright). **Each** is at the head of its respective class, and the number of each in use, (note the figures) **tells the whole story.**

Over 125 "MONARCH" BRICK MACHINES in use.

They have DOUBLE Pug Mills, giving by far the most tempering capacity; also DOUBLE Presses, giving by far the most pressing capacity.



READ THIS.

A Fresh one Every Month.

◆ ◆ ◆

Ashtabula, O., Oct. 5, 1901.
The Wellington Machine Co.,
Wellington, Ohio.

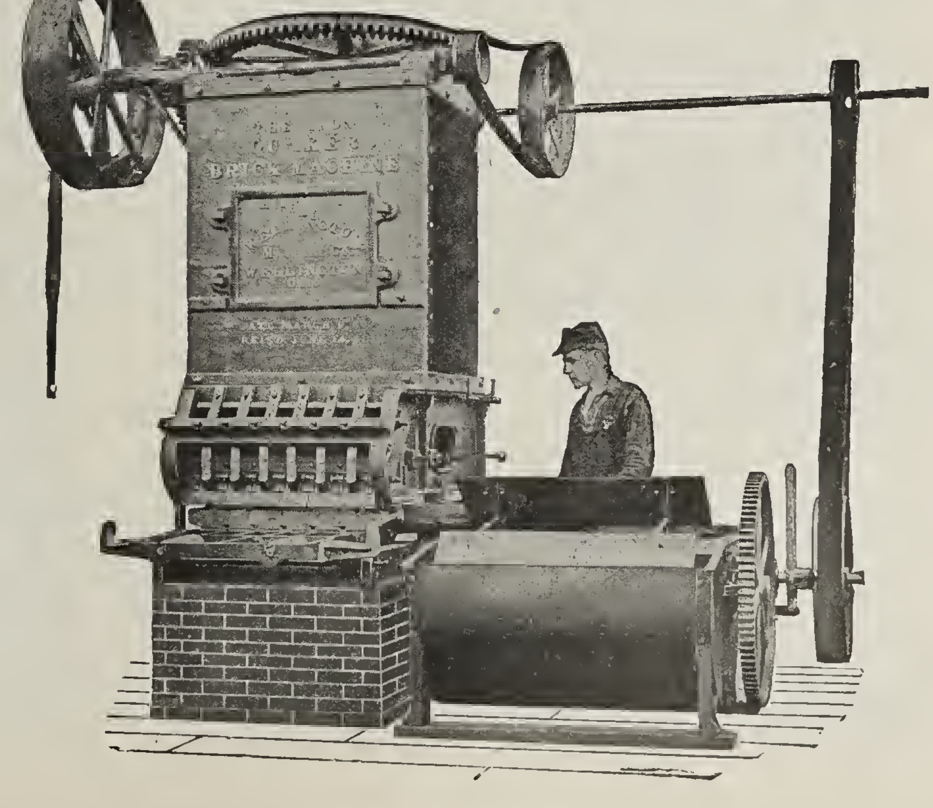
Gentlemen — This is the fourth year that I have used the ten-year old "Monarch" Machine, and it has made about 1,500,000 each year since I came into possession of it. The past year it has worked better than any of the four previous years, and has given very good service.

Yours very respectfully,
C. W. Simonds.

OVER 500 "QUAKERS" in use, both Horse and Steam Power, now made entirely of Iron and Steel.

OUR MOULD-SANDER is the BEST, SIMPLEST AND CHEAPEST.

WITH our ROLLER-BEARING BRICK BARROWS you can wheel 20 per cent. more load and do it as easily. Order one subject to approval.



ALL OTHER SUPPLIES. **Send for Catalogue.**

The Wellington Machine Co.,
WELLINGTON, OHIO.

EDITORIAL NOTES AND CLIPPINGS—Continued.

printing office the past two years that they have given Messrs. Clarke an order for 400,000 barrels of the same cement for Government use the next twelve months, but they were only able to accept half the order.

B. C. Killen has discovered an excellent deposit of clay on his land at Kiowa, Col. Mr. Killen is a practical brick man and will in all probability organize a company to develop the clay.

Evansville, Ind., is to have a pottery. Mr. Aaron M. Weil has organized a company, to be known as the National Pottery Company, the plans for the factory are being pushed as rapidly as possible.

The works of the Kier Fire Brick Works, at Salina, Pa., were burned to the ground July 29. The loss was estimated at $10,000, partially covered by insurance. The plant has been running up to its full capacity for several months, but were behind with their orders. The works will be rebuilt at once.

The Empire Brick and Supply Company is the name of a new enterprise recently incorporated at Stockport, N. Y., to manufacture and deal in building materials. The directors are John T. Charlton, Noel Gale, E. H. Warren, E. S. Thurston and F. S. McGrath, of 40 Wall street, New York City.

The Detroit Red Pressed Brick Company, which was organized last year to manufacture brick in Detroit, Mich., with a capital of $25,000, have decided to increase the capital stock to $100,000 and equip the plant with a dryer and more modern machinery. The work is to be done this fall, and the company expect to be ready for operation in the early spring.

In a recent letter Alfred Yates, manager of the Johnsonburg Vitrified Brick Company, Johnsonbury, Pa., says: "Trade is very good with us, and can readily sell all the brick and paving block we can make. We have just completed our third new Yates kiln, which is in addition to our former capacity, and we hope this fall to begin operating for further developments.

The Eau Claire (Wis.) Vitrified Brick Company has been incorporated by George T. Thompson, James Patrick and C. T. Bunday. About half the capital will be furnished by outside parties. F. E. Dickinson, of Kendallville, Ind., will be largely interested. The company will manufacture paving brick, fire brick, building brick, fireproofing, building blocks and sewer pipe.

The business of the Pacific Clay Manufacturing Company, Riverside, Cal., is at present so rushed that the force of employes is inadequate to complete the contract work without working over hours. Manager Findlay is at all times inconvenienced by a shortage of help. Owing to the demand for laborers he has so far been unable to secure an additional force of men.

John J. Sabin writes that he is tearing down his brick and tile plant at Shelby, O., and selling off all the machinery and as soon as same is closed out will move to Washington, where he will start another brick plant. Mr. Sabin says that Shelby, O., will be a good location for a brick and tile plant, as he has been running his plant for a long time and has never been able to supply the demand.

A slight wreck, causing a damage of $50, occurred at the Brick and Terra Cotta Company's plant at Corning, N. Y., recently. A switch engine backed onto the switch to pull out three empty cars from the brickyard. The engine came in with such force that the cars were derailed. The signal to go ahead was given and the cars were dragged, damaging the trestle and some molds which stood near.

The four hundred employes of the Purington Paving Brick Company, of Galesburg, Ill., were made happy a couple of months ago when they drew their month's pay to find that their wages had been materially increased and that same would maintain until Oct. 1. A member of the company, in explaining the increase, said: "It has always seemed to us better that we should voluntarily vote an increase of this kind than that our men should have to ask for it. We feel that the men should share with us in the profits of the business. This advance came without any request from the men. In fact, they knew nothing about it until we paid them their checks. Another thing that we took into consideration was the increased price of living. It costs the men more to live than it did a couple of years ago. The prices of things have advanced. We felt like helping them out some in this regard. The advance means an increased outlay of $1,400 a month to the company, and covers the time from June 1 to Oct. 1. The men make the brick and we thought that they were justly entitled to the increased compensation."

A charter has been granted to the Guthrie (Okla.) Brick and Tile Company for twenty years to do business in Guthrie, to establish a big plant for the manufacture of pressed brick and tile. The capital stock of the company is $5,000, and the incorporators are C. P. Anderson, R. E. Bobier, O. E. Stickel, M. L. West and A. Z. Clark, all of Guthrie. Messrs. Bobier and Anderson will manage the plant. They are experienced brick and tile men, having one of the largest brick manufacturing plants in the Southwest at Asher. They will establish a big plant on the Jamison farm, where an extensive bed of shale was discovered recently.

Once more we have rumors of a consolidation of the New England brick manufacturers. This time the company is known as the Interstate Brick Company, of which William A. Lombard, of New York City, is the head. Mr. Lombard proposes to combine the brick manufacturing interests of Long Island, southern Massachusetts, Connecticut and Rhode Island. The backers of the combine, it is said, have put $500,000 in cash into it, and the owners of plants will receive first-mortgage bonds and common and preferred stock. The Interstate Company will be on friendly relations with the New England Brick Company, of Boston, but will not be connected in any way with it.

The explosion of a ten-ton flywheel at the plant of the St. Louis Vitrified and Fire Brick Company, at Maryland Heights, Mo., near Delmar Garden, wrecked a large building and scattered debris for two hundred yards around the plant without injuring any one of the one hundred employes of the company. The damage is estimated at $3,000. Men working within one hundred feet of the wheel when it collapsed fled for their lives, dodging huge timbers and broken pieces of iron that plowed the earth around them, and escaped without a scratch. In the history of flywheel accidents the escape of this number of men so close to the scene of the accident is said to be without parallel.

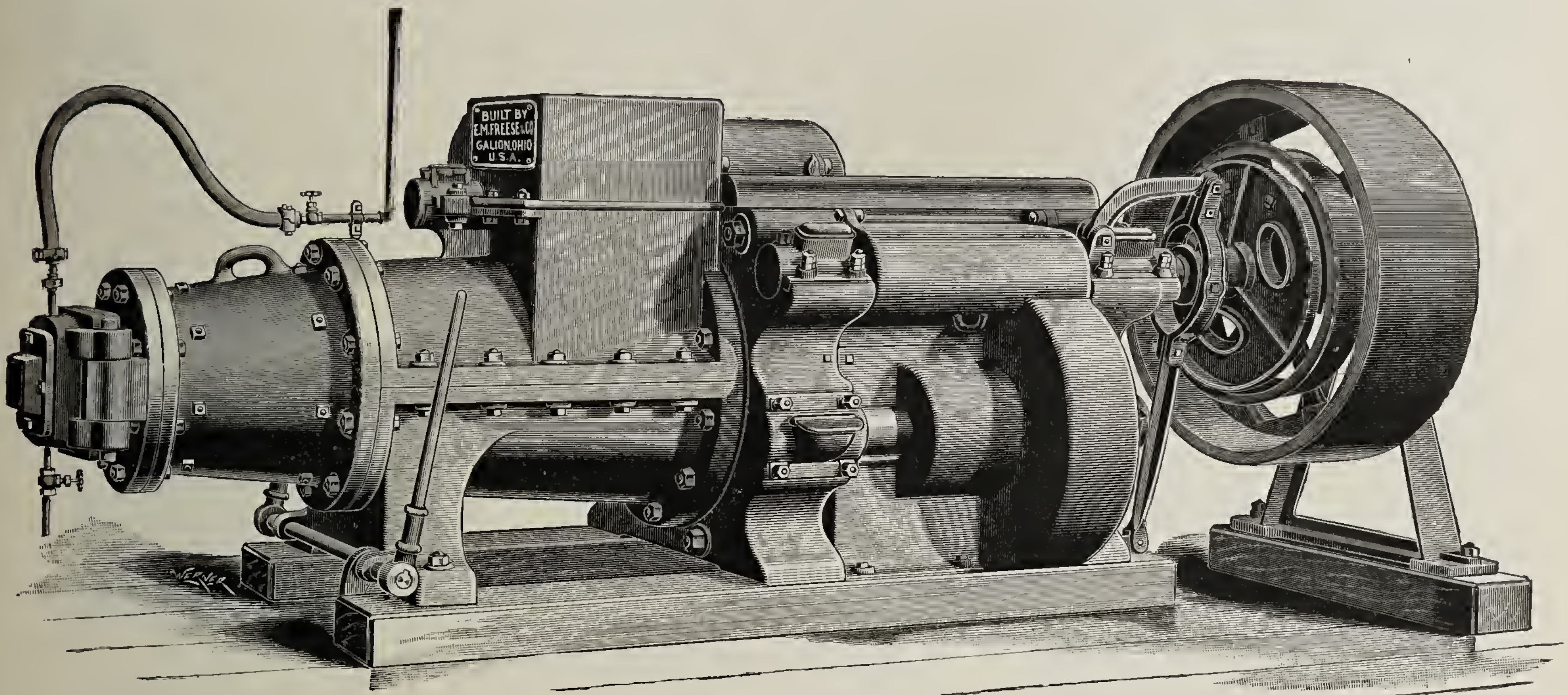
The Fiske Brick Company's plant at Dover Point, N. H., is rapidly approaching completion, and the company will probably begin making brick very soon. The first load of clay was hauled to the plant from the company's banks July 29. The Boston & Maine railroad has a contract to deliver a certain

[CONTINUED ON PAGE 166.]

A MIDNIGHT IDYL.

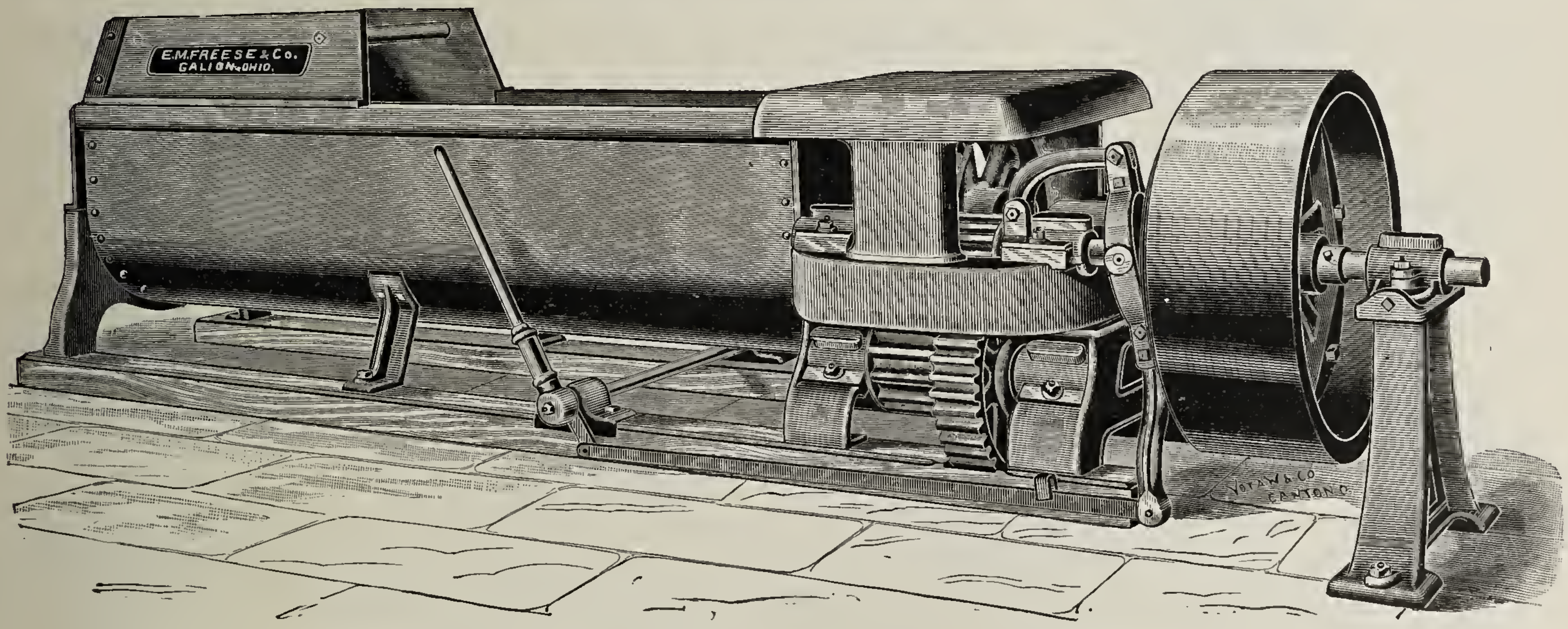
Burglar—"Nuttin' doin' here, Bill. —Judge.

Our Mammoth Brick Machine


BUILT BY
E.M.FREESE & CO.
GALION, OHIO
U.S.A.

THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug=Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.

THESE PUG=MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitted for making a fine quality of brick.

E. M. FREESE & CO., = = Galion, Ohio.

Mention The Clay-Worker.

EDITORIAL NOTES AND CLIPPINGS—Continued.

quantity of sand and clay at the plant every morning. Coal will be burned instead of wood, and when the plant is in operation the management expects to be able to turn out a kiln of brick every day. This will be one of the largest brickmaking plants in the United States, and will be equipped with the most modern appliances. The company will employ upward of two hundred hands.

Lemuel B. Platt, brick manufacturer of Winooski, Vt., was stricken with apoplexy early in the morning of August 3 and died that evening. Mr. Platt was sixty-one years old and leaves a wife and three daughters.

The Kissel Fire Brick Company has recently been organized at Kittery, Me. The president is Horace Mitchell, of Kittery, and the treasurer A. M. Maloon, of New Castle, N. J. George M. Goodwin and Willard E. Atwood, of Haverhill, Mass., are directors.

James A. Wilson, of Paw Paw, Ill., who has been looking for a good site for a brick and tile plant has decided to locate at Spencer, Ia. Ground for the new plant will be broken at once.

J. C. Vanatta has purchased the Chenoa (Ill.) tile factory and will at once take charge of same.

The Haydenville (O.) Mining and Manufacturing Company has been reorganized and will henceforth be known as the Haydenville Company. J. W. Jones, formerly general manager, is president of the new company, James H. Perley vice president, Henry J. Woodworth secretary and treasurer, and John Reuter factory superintendent.

The Miller-Barnes Fire Brick Company has been chartered to manufacture fire brick at Chattanooga, Tenn. F. L. Miller, G. H. Miller, J. M. Barnes, C. C. Ellis and J. D. Rust are interested. The company is incorporated at $100,000 and is given the right to make fire brick and all other kinds of brick, as well as tile, gas retorts and other articles of such material.

A PROSPEROUS WISCONSIN ENTERPRISE

A great impetus will be given to the manufacture of brick at Manitowoc, Wis., as a result of extensive new developments that are being made by the Manitowoc Clay Company. The capital stock of the company has just been increased to $100,000, and the plant is being renewed and enlarged so as to provide for a greatly increased output of brick. Three new machines are being put in place of the one formerly used, and a 250-horse-power engine and 300-horse-power boiler installed. The blower system will be applied to the dry kilns, with a capacity of 100,000 brick a day. The Manitowoc Clay Company owns large tracts of splendid clay grounds, tapped by two railroads and bordering on the Manitowoc river, which gives them lake as well as rail shipping facilities. They propose to supply brick to all the lake points in Wisconsin, as well as many interior points, and have even commenced the shipment of some consignments to Milwaukee. A little later the manufacture of tile and other clay products will be commenced.

If you want experienced help read the "Want" ads. in the Clay-Worker.

THE DRINK HABIT CURED.

Home treatment for $15. A cure guaranteed or your money refunded by Dickey's liquor cure, nerve strengthener, blood purifier, manhood restorer, all in one. We make it, we sell it; we guarantee it to cure any case of the drink habit on earth. We send it to any address in the United States upon receipt of $15 and guarantee a cure or refund your money. Best bank reference given. Our business strictly confidential. Address DICKEY REMEDY CO., or P. O. Box 44, Shelby, Ind. 7 3 cm

$50.00 (VALUE) PRIZE CONTEST.

What does this man have in common with a Platt Triple Draft Round Kiln, about to be finished burning?

To the first one giving the correct reply to this question, we will give a Single Kiln Right—not transferable—with plans for solid bottom or perforated floor Platt Triple Draft Kiln.

CONDITIONS.

Contestant must be contemplating the erection of a kiln or kilns for burning paving, pressed, common or fire brick, tile, hollow block or sewer pipe. He must be looking for a rest from trouble and wanting a kiln that will work like a good clock—regular, even and quick, every burn. Replies must be in by September 5, 1902.

This kiln has been well tested in operation. Large diameter kilns burning off with same fuel required to burn same material in smaller kiln with 30,000 less capacity. It is simple, positive and inexpensive to build and keep in repair.

PLATT TRIPLE DRAFT KILN CO., Van Meter, Iowa.

Scott Dibert, President. John H. Waters, Treasurer.

Savage Fire Brick Co.,

MANUFACTURERS OF

High Grade Fire and Silica Brick.

Main Office
KEYSTONE JUNCTION, PA.

Sales Office
810 Park Bldg., PITTSBURG.

Also Make a Special CLAY PLOW.

Write us Now for full particulars.

Do you want to save MONEY? If so, use the

"Quincy" Improved Dry Clay Gatherer,

The best and most economical method of gathering Clay for Brick and Tile Manufacturers.

Will save at least 50 per cent. over any other method.

Manufactured by

Central Iron Works,

QUINCY, ILL.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than $1.00.

WANTED—Experienced kiln setter in terra cotta factory. State qualifications.
Address TERRA COTTA,
81c Care Clay-Worker.

WANTED — Experienced traveling salesmen, with a thorough knowledge of brick machinery, to sell brickyard supplies. None but first-class salesmen with good references need apply. Address BRICK,
81d Care Clay-Worker.

WANTED—A thorough, up-to-date superintendent for a machine shop making a specialty of wire-cut brick machinery. State experience and salary wanted. Address ATTENDANT,
81d Care The Clay-Worker.

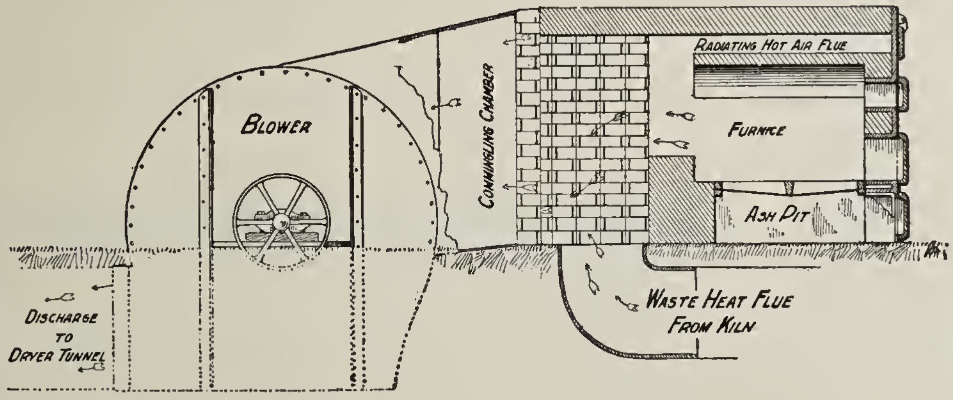
WANTED—PAVING BRICK BURNER. First-class paving brick burner can get good position, all the year employment. Party applying must give satisfactory references as to ability, experience and sobriety, and be willing to come on trial. Brick are made from shale and burned in Eudaly solid bottom kilns. Address
COALDALE PAVING BRICK CO.,
81d Birmingham, Ala.

WANTED—An experienced brick and tile works superintendent desires re-engagement. Stiff mud or press, down-draft or continuous kilns preferred. Can set out new plant or reorganize old ones. Will accept stock as part payment of salary, or will take yard by contract. Can give the best of references. Address
SATISFACTION,
81lp Care Clay-Worker.

Continued on Next Page.

Economy Waste Heat and Radiating Floor Fire Proof Dryers and Oil Burning Systems are Constructed on Scientific and Economical Principles.

ECONOMY DRYERS
Will Dry Brick
and Tile at
LESS COST
than any other
DRYING SYSTEMS
ON EARTH.



ECONOMY OIL
BURNING SYSTEM
Will Burn Fuel
Oil More ECONOMICALLY than
any other OIL
BURNING SYSTEM.

If you want an up-to-date Dryer or Oil Burning System write to the

ECONOMY DRYER AND OIL BURNING COMPANY,

ST. LOUIS, MO.

☞Our illustrated catalogue, A, gives full information. Write for it, mentioning the Clay-Worker.

WANTED, FOR SALE, ETC.—Cont.

WANTED—First-class sewer pipe burner. State references and wages.
8 2 d BOX 13, Clay-Worker.

FOR SALE—One J. C. Steele single-die repress, in good condition, $150 cash.
F. O. B., Lake City, Fla.,
7 2 d Columbia Brick Co.

WANTED—Position by a first-class face brick setter. Can give good references as to ability. Address G. L.,
8 1 cm Care Clay-Worker.

WANTED—At once, 100 (more or less) good second-hand double-deck dryer cars, with transfers. Write, giving description.
GOODWIN BRICK & TILE CO.,
8 1 c Grand Junction, Ia.

FOR EXCHANGE—Good farm here to exchange for brick and tile plant or merchandise. Also have some choice timber tracts for exchange. W. E. HODGES,
8 1 d Tullahoma, Tenn.

WANTED—A superintendent for a china clay plant about to be started in the North. Give references, age and experience, as well as wages expected.
Address G. W. C.,
8 1 cm Care Clay-Worker.

FOR SALE—A large number of cast iron and steel, single-deck brick cars. These cars are equipped with anti-friction bearings and are in perfect condition. Of modern construction. Address CARS,
8 4 d Care Clay-Worker.

FOR SALE—One 4-mold second-hand dry press brick machine of standard make. Also one new 2-mold dry press, all in first-class order. They must be sold at once at a bargain. Address D. P. M.,
8 1 d Care Clay-Worker.

WANTED—To sell one-half or quarter interest in a brick plant manufacturing soft mud, red brick. Total value of plant $24,000. This is for sale only to a practical man, who is competent and willing to take entire charge of the making, burning and grading of the brick. Address
8 1 d RED BRICK, care Clay-Worker.

FOR SALE—An up-to-date Edison Mimeograph for duplicating letters, statements, etc. Used but little and guaranteed in perfect condition. A bargain for anyone desiring a machine of this sort. The equipment cost $16; will be sold for $10, cash on delivery. For full particulars, address
7 2 p COPYIST, care Clay-Worker.

FOR SALE—Eagle repress. Same has been thoroughly overhauled and practically good as new. Has mold boxes for making blocks and fancy sidewalk brick. Only reason for selling is we have discontinued repressing our brick. Will sell reasonably for cash. Address EAGLE,
8 1 d Care Clay-Worker.

FOR SALE—Seventeen thousand and five hundred brick pallets, 34x10x5-8. These pallets are as good as new, having been used about three months. We are changing our process of making brick and cannot use them. They will be sold at a bargain to one who can use them.
Address BENNETT BRICK CO.,
8 1 d Muncie, Ind.

FOR SALE.

One Monarch Brick Machine (horizontal).
One Iron Horse Power Brick Machine.
One Martin Steam Power Machine, with pug mill.
One Anderson Soft Mud Brick Machine.
One Brewer Crusher.
One Iron Pug Mill.
One Wood Pug Mill.
One Anderson Disintegrator.
One Hand Cutting Table.
One 20-h.-p. Tubular Boiler; used about three months.
One Eagle Hand Brick Machine, with steam power pug mill; good order.
Address THE HORTON MFG. CO.,
8 1 d Painesville, O.

See Wanted, For Sale ads. under Table Contents.

COLOR!
Clinton Hematite Red
Makes Rich Red Brick.
The largest brick manufacturers use it.
Write for particulars and prices.
Manufactured Only By
CLINTON METALLIC PAINT CO.,
Clinton, N. Y.

Brick Pallets.

It is the opinion of the best Manufacturers that the Pallet System is the most economical method for making bricks. White pine lumber is conceded to be the best and most economical material for pallets. We make them. A word to the wise is sufficient. Send postal card for circulars.

Mershon, Schuette, Parker & Co.,
Saginaw. East Side Mich.

The Best Brick Drier

Is the Drier which dries the Brick safely, quickly and thoroughly in the shortest time and with the least cost and labor. This the **Phillip's Fan Dryer** will do. The first cost of construction is moderate and cost of operation is much less than old style dryers. Soft Mud, Stiff Clay or Dry Press Brick dried speedily and economically. The **PHILIP'S DRYER** is no experiment but is now in successful operation in a number of plants in the U. S. and Canada. **Phillip's Inside Fan Heater and Dryer,** proves to also be a "Condenser."
Relief from back pressure guaranteed.
Exhaust steam alone ample for heat supply.
If you are interested in the drying problem don't fail to write for circulars.

S. G. PHILLIPS, Agent and Patentee, 126 Church St. Rahway, N. J.

Evens & Howard Fire Brick Co.

ST. LOUIS, U. S. A.

Sewer and Culvert Pipe. Locomotive Tile.
Furnace and Boiler Tile. Fire Brick and Cupola Blocks.
Flue Lining and Chimney Pipe.
Sanitary Earthenware. All kinds of Fire Clay Products.

The Crown Fire Clay Co.,
Akron, Ohio.

HIGH GRADE FIRE BRICK,

For Lining Kilns, Etc., a Specialty.

Also Hollow Blocks, Flue Linings, Wall Copings, Etc.

When writing for prices, state for what purpose brick are to be used.

——Catalog Free.

Too Many Brickmakers

Use Cheap Brick in Kiln Construction. The Best is the Cheapest no matter what it costs. We can supply your wants in strictly

High Grade Fire Brick,

At MODERATE PRICES.

SEVEN WORKS in two States on THREE COMPETING TRUNK LINES.

Reese-Hammond Fire Brick Co., General Offices, BOLIVAR, PA.

Correspondence Solicited. Annual Capacity 100,000,000.

ORIGINAL
GANDY STITCHED Cotton Duck BELTING.

Unequalled in strength and durability, especially adapted for heavy work, and for all places where belts are exposed to atmospheric changes, heat, steam, water, oils, alkalies, etc. Every belt bearing our trade-mark "ORIGINAL GANDY" absolutely guaranteed. BEWARE OF IMITATIONS. Manufactured solely by

The GANDY BELTING COMPANY,
Head Offices and Factory: BALTIMORE, Md.
Write for New Catalogue.

FOR SALE—Ten thousand feet of 1-inch steam dry-kiln pipe, in good order.
COLUMBIA BRICK CO.,
7 2 d Lake City, Fla.

NO DRY PRESS BRICK PLANT complete without the Carmichael Clay Steamer.
T. W. CARMICHAEL,
Inventor and Manufacturer,
6 d tf Wellsburg, W. Va.

DRAUGHTSMAN WANTED—Familiar with architectural terra cotta work. Apply by letter.
PERTH AMBOY TERRA COTTA CO.,
7 2 d Perth Amboy, N. J.

FOR SALE—Swift's Wonder of the Age Grateless Furnace Kilns. Cost of construction less than ½. Write for particulars.
F. E. SWIFT,
7 tf d Washington, Ia., U. S. A.

WANTED—To contract with a responsible party to take entire charge of brick plant having capacity of 1 million per month; both pavers and building brick, stiff mud process. Must be capable of taking plant and contracting to make output at so much per thousand. Address
GARRISON PAVING BRICK CO.,
7 2 d Garrison, Tex.

FOR SALE—New plant, with capacity of 30 M brick per day, with ten acres of good clay land, located near the largest interior town in Florida. Will be sold on account of lack of capital to operate it satisfactorily. Address
NEW PLANT, care Clay-Worker.
7 2 dm

WANTED—Position as superintendent by a practical brick maker and burner; stiff mud and repress plant in South preferred; can handle negro labor; at present superintendent 30-M capacity plant; good recommendation from present employers.
W. K. C., Box 239, care Clay-Worker.
7 2 dm

BRICK MAKERS WANTED—This is a splendid opportunity for brick makers as we guarantee steady work the year round, and no cold weather. Wages to first-class men as follows: Burners, $2.50 per day; pugmill men, $2.50 per day; setters, $2.25 per day; drawers and general brick handlers, $2.25 per day.
SAN FRANCISCO BRICK CO.,
7 2 d San Francisco, Cal.

FOR SALE—Sinker & Davis 14x20 engine; Sinker & Davis 54-inch, 65-horse-power boiler; Potts wood brick machine; dirt elevator; sander and attachments; winding drum and attachments; 75 feet 2⅞-inch line shafting, belts, pulleys, etc.; 30,000 brick pallets; 10,000 feet T and street car rail; iron transfer and dirt cars, oil tanks, wheelbarrows; 200,000 old brick; gas pipe; forge and drill.
SHERIDAN BRICK WORKS,
WOODS & VICKERY,
7 2 b Sheridan, Ind.

FOR SALE.

One 9-foot Dry Pan, iron frame.
One 4-mold Semi-Dry Press, almost new.
One Arnold Steamer.
One Revolving Screen.
One Miller Hand Press.
One 15-H. P. Portable Engine and Boiler.
One 20-H. P. Ajax Engine.
One 25-H. P. Boiler.
THE T. B. TOWNSEND BRICK & CONTRACTING CO.,
2 tf d Zanesville, Ohio.

FOR SALE—Books for brickmakers. Inexperienced workmen will find them a source of valuable information. Brickmakers' Manual, $3.00—a practical treatise on the everyday details of brickmaking; Clay Glazes and Enamels, $5.00; tells how to glaze and enamel brick and gives valuable recipes; Vitrified Paving Brick, $1.00, tells all about the best materials for and methods of manufacturing paving brick; Tables of Analyses of Clays, $1.00, gives the analyses of many American and European clays. Any or all of these mailed, postage prepaid, on receipt of price. Write for lists of other valuable books for clayworkers. Address
T. A. RANDALL & CO.,
3 tf r Indianapolis, Ind.

See additional ads. under Table of Contents.

W. D. RICHARDSON.

Brickworks Engineer.

2717 Warner Road. Cleveland, Ohio.

Expert investigation of brickmakers' troubles. Mechanical devices and implements for special purposes.

Smokeless furnaces for boilers, dryers and kilns.

Plans and specifications for improved dryers and kilns to conform to special conditions and requirements.

Radiated heat, direct heat and waste heat dryers.

Up-draft, down-draft and continuous kilns.

Clay properties examined and clays tested.

New plants planned and constructed.

Terms reasonable. Correspondence solicited.

COLORIFIC.

For coloring Brick, Mortar and all clay products a deep and permanent red. Most, if not all, colors in the market, are artificially prepared. Colorific is a natural color. References and directions furnished for use. Samples free. Ask for price of WELLS & HALL,

Successors to WESTBROOK & WELLS,

53? Ogdensburg, N. Y.

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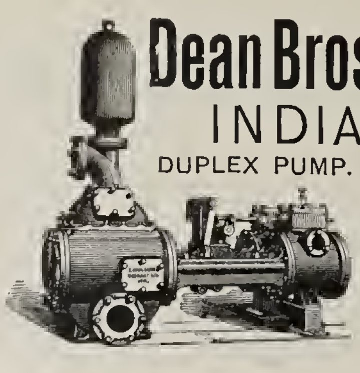

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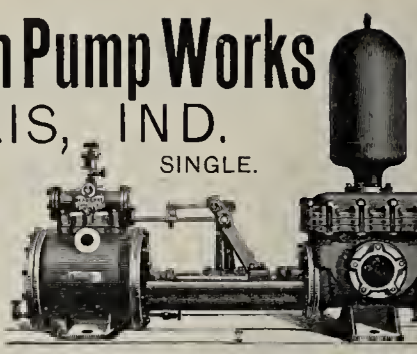

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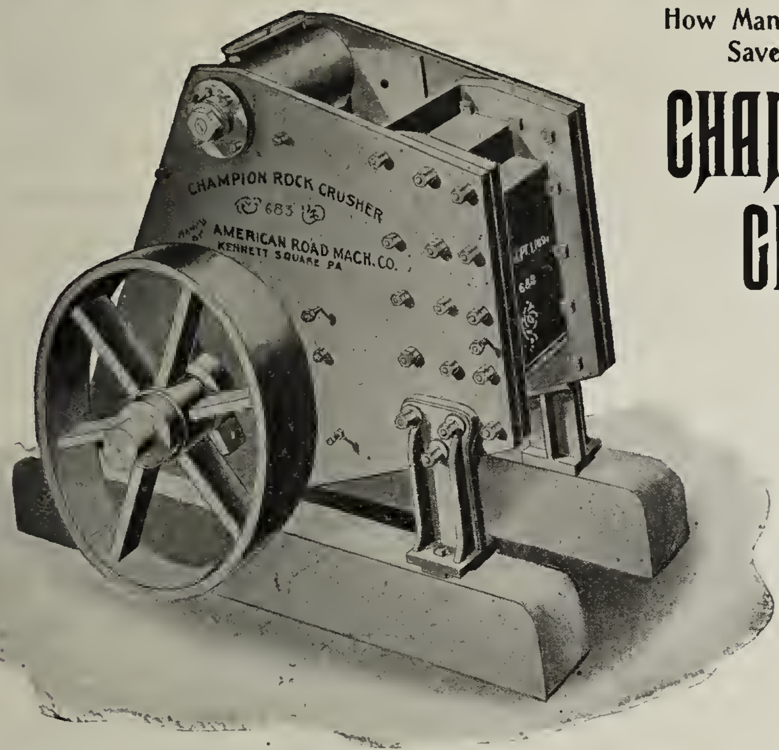

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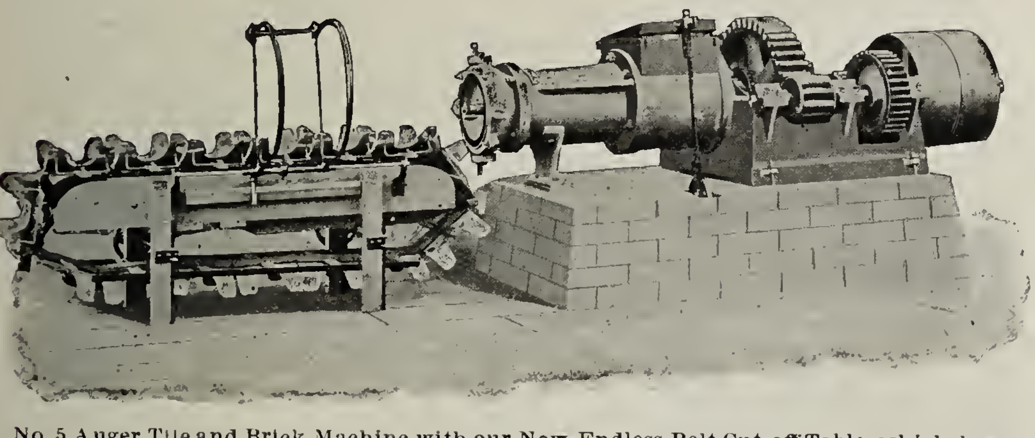

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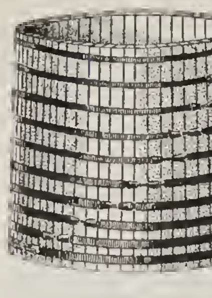

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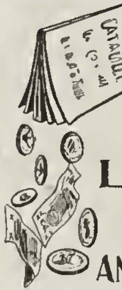

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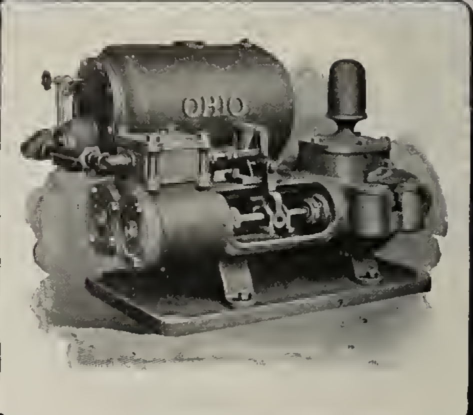

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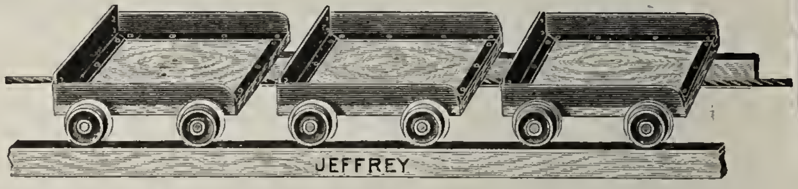

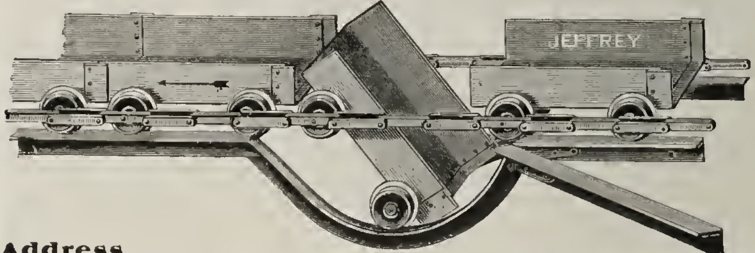

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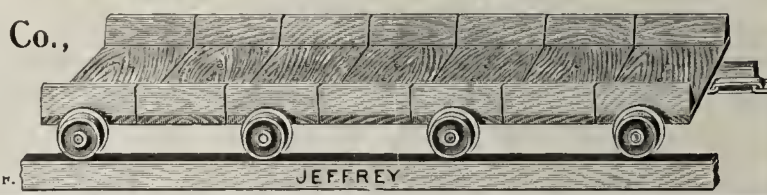

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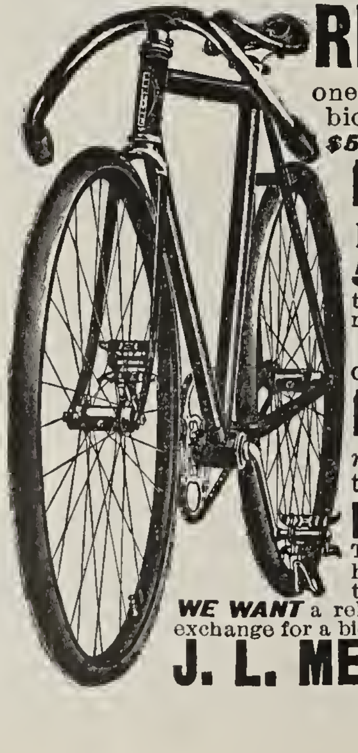

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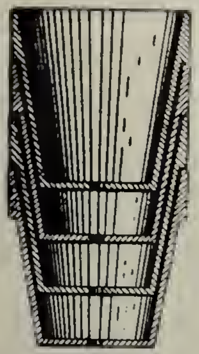

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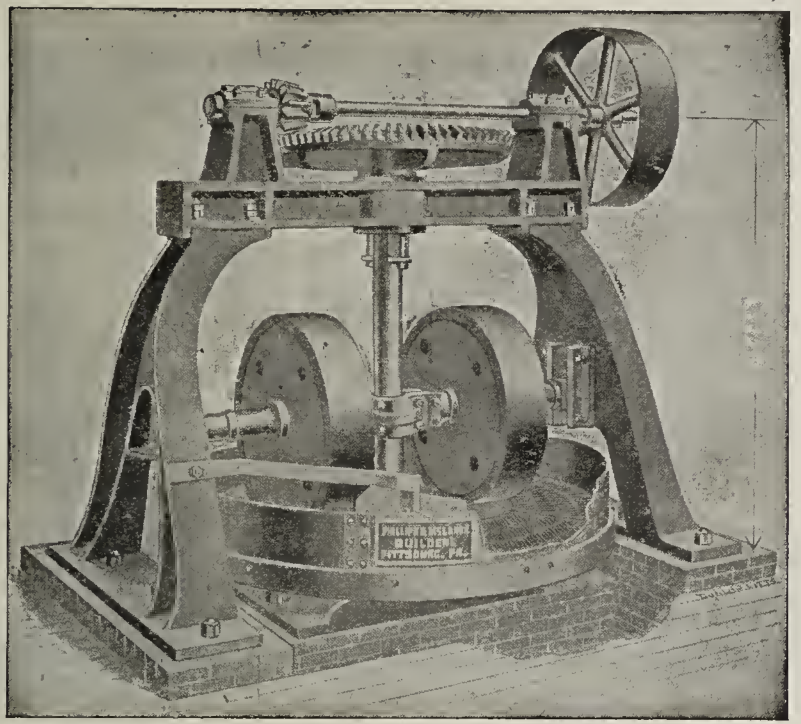

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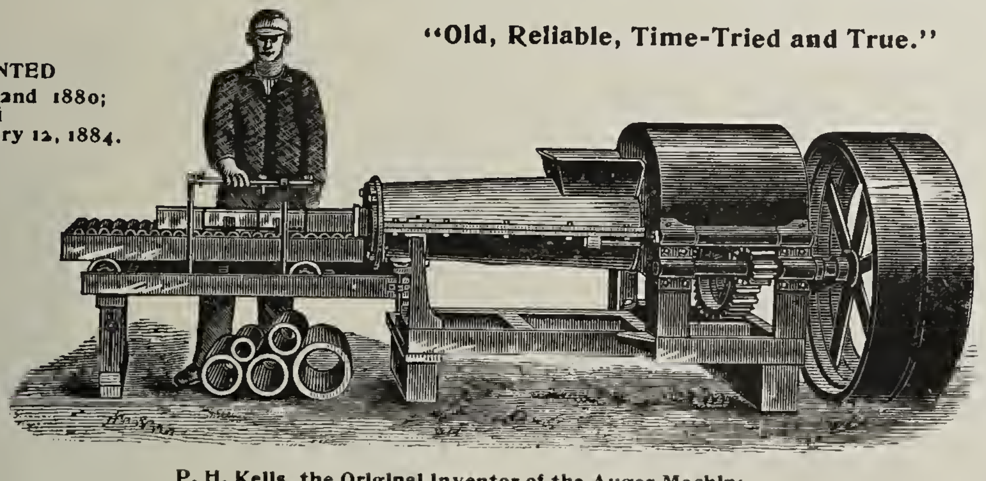

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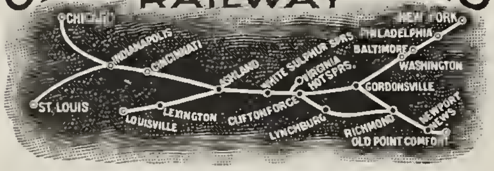

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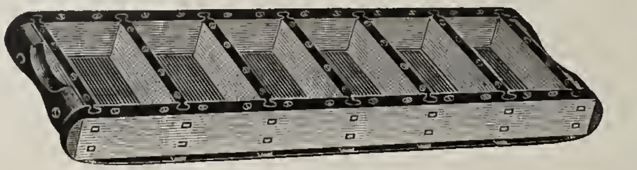

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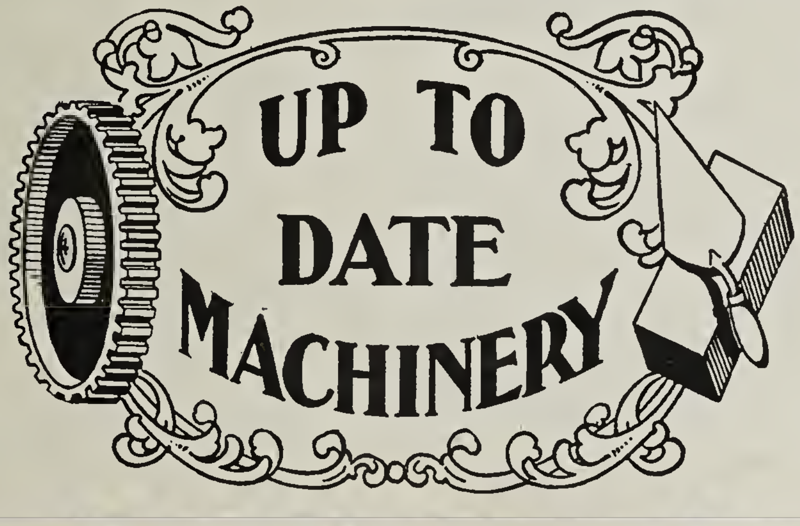

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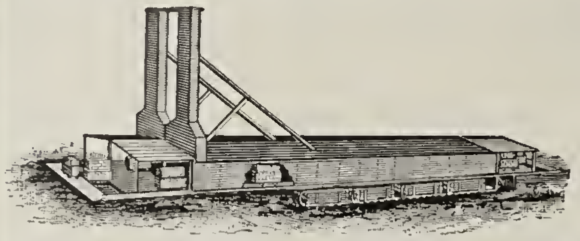

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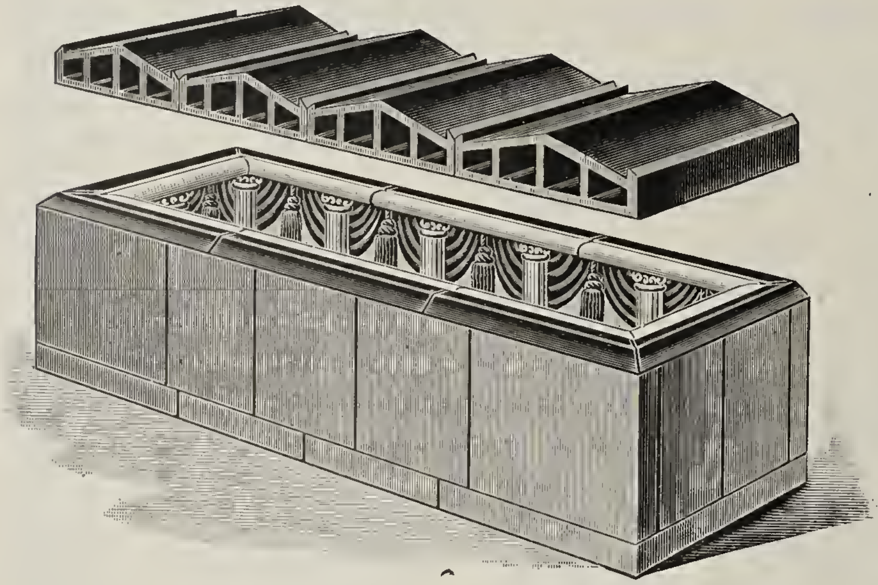

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The Kaufman Burial Vault.

It is a vault made from clay on your ordinary brick or tile machine, and burned in your ordinary kiln.

ITS OBJECT—To supersede the cheap pine box, the expensive stone or steel vaults now in use, and to furnish a sealed resting place for the dead. The price of the vault places it within the reach of all, and its beauty and neatness removes half the terror of interment. It is as lasting as the hills and as free from decay as the pyramids. This is not an experiment, but a well-tried and assured success.

OUR OBJECT—To interest good manufacturers in our business with a view of disposing of territory not already occupied.

Why will you wear your life out making tile or brick at a small profit when, with the same effort, you can make big money in a few years making the Kaufman Burial Vault?

We are thoroughly protected by patent. For further particulars address

KAUFMAN BURIAL VAULT CO., London, Ohio.

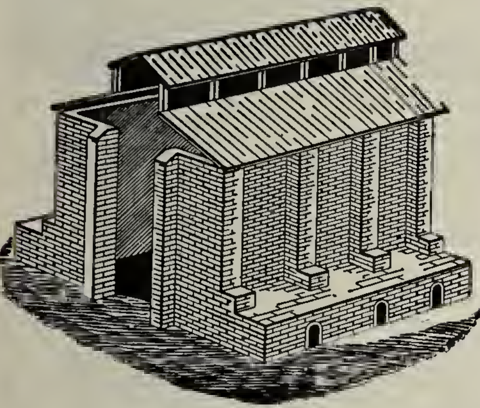
H. C. DUNN,
Patentee.

THE DUNN CONTINUOUS BRICK KILN.

Burns 8000 brick with one ton of coal.
Requires only two men to operate it.
Is in full operation daily.
Absolutely the most successful kiln of its class ever offered American Brickmakers.

Write for Description and full Information.

I. M. JUSTICE, Sole Agent, **Erie, Pa.**

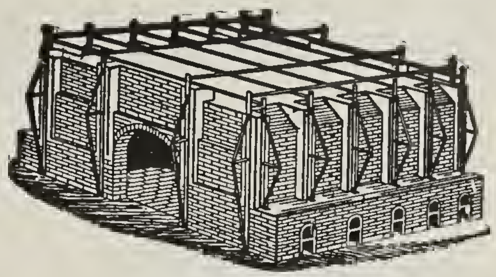


Up-Draft Kiln.

LOUIS H. REPPELL'S

IMPROVED-KILNS

For Burning all Kinds of Wares.



Down-Draft Kiln.

Having had years of practical experience in the management and actual burning of all kinds of kilns, claim it to be THE BEST Up-Draft KILN IN THE MARKET.

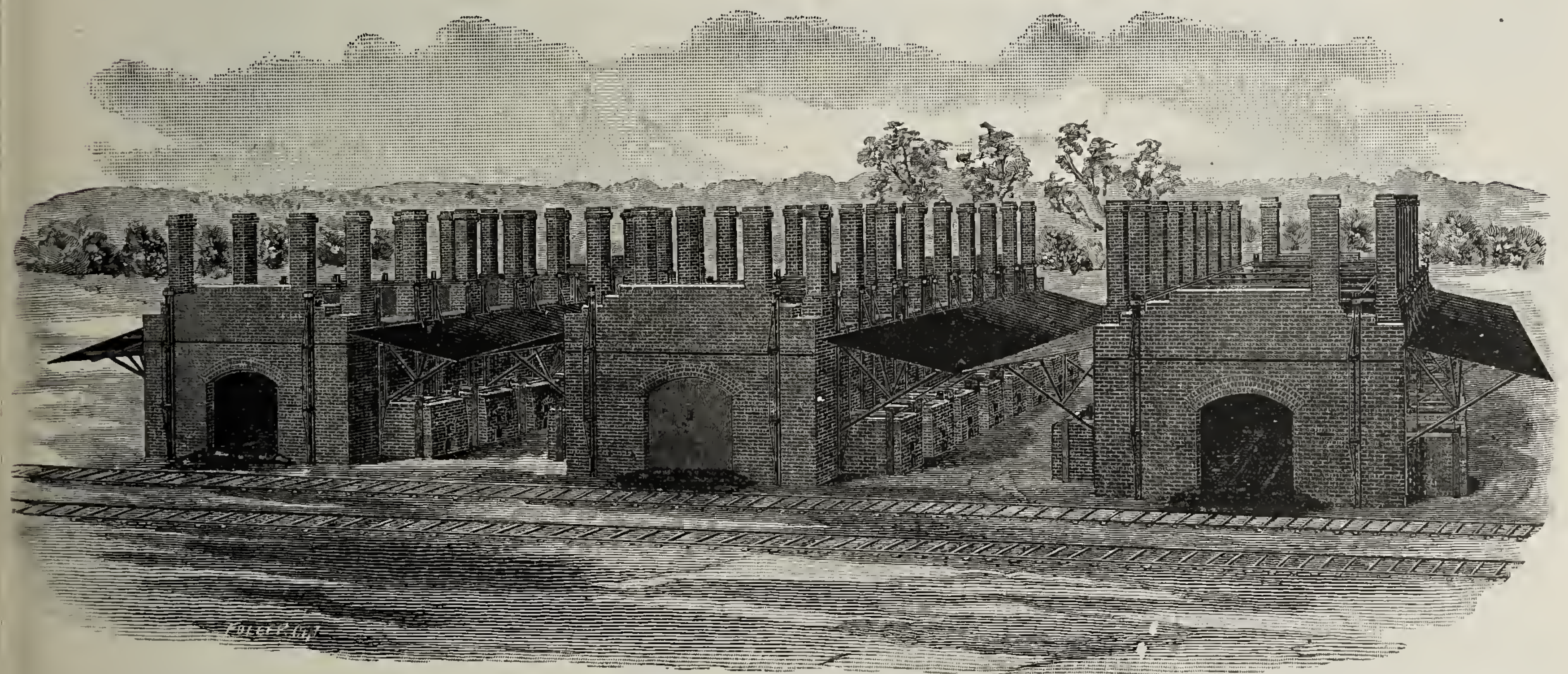
The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns.

For further particulars and full explanation, address

LOUIS H. REPPELL, 2,422 Chestnut St., ***Kansas City, Mo.***

The EUDALY DOWN DRAFT KILNS.

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM.



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

W. A. EUDALY, 509 Johnston Bldg. **Cincinnati, Ohio.**

Mention The Clay-Worker.

SMIDTH BALLMILLS and DAVIDSEN TUBEMILLS

UNEQUALLED FOR GRINDING.

ARE NOW USED IN OVER **200** OF THE LARGEST

PORTLAND CEMENT FACTORIES IN THE WORLD.

For descriptive catalogue address **F. L. SMIDTH & CO.,**

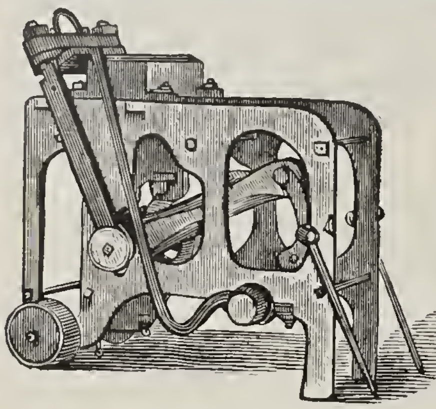
Engineers,
66 Maiden Lane, Cor. William St.,
NEW YORK.

COPENHAGEN
Vestergade 29

LONDON
9 Bridge St., S. W.

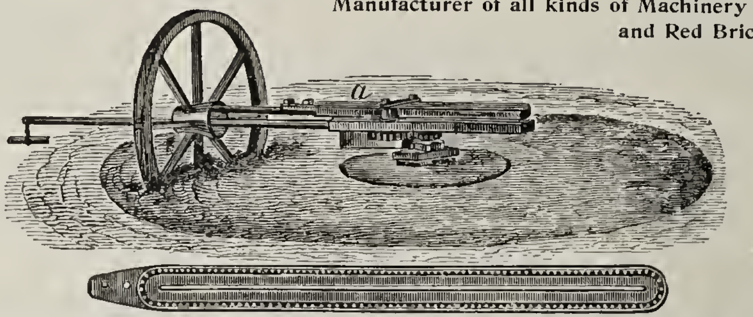
Philadelphia Brick Machine Works.

Fire and Red Brick Presses all Sizes. Machinists and Engineers.



RED BRICK PRESS.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.

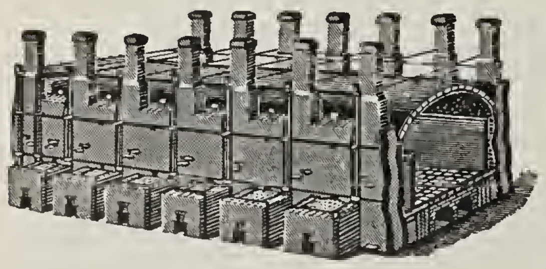


These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

☞Send for Circular and Price-List.

GEORGE CARNELL, 1819, 1821 and 1823 Germantown Ave. and Fifth St., PHILADELPHIA, PA.

The Bushong Down Draft Kiln.



PATENTED JUNE 1896.

BURNS any kind of fuel.
USES less fuel than any other Kiln.
RESULTS are uniform.
NO damaged wares.
SAVES time and labor.

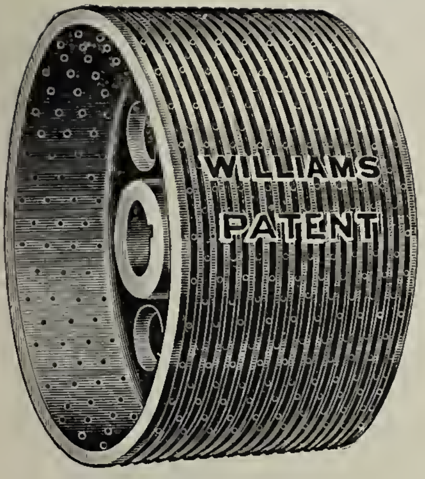
USED by some of the largest plants.
NO experiment.
IT'S success has been proven.
FULL control of drafts.
ONLY Kiln built that has Double Draft.
REDUCES burning time 24 to 48 hours.
MOST economical in construction.

Streator, Ill., October 3, 1900.
M. M. BUSHONG, Esq.,
Phoenixville, Pa.

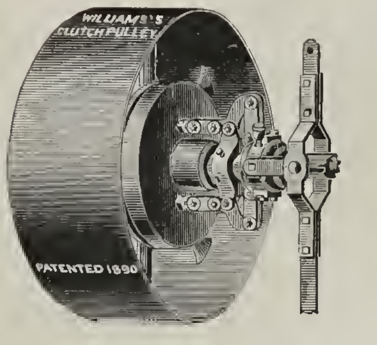
Dear Sir:—Answering yours of September the 27th, we have been using one of the Bushong Down Draft Kilns the past fifteen months and are well pleased with it. We get a larger percentage of No. 1 pavers with a little less fuel than any other kiln on the yard.

Yours truly,
THE BARR CLAY CO.,
Per C. C. Barr, Treas.

M. M. BUSHONG, - Phoenixville, Pa.



PNEUMATIC PULLEY.



FRICTION CLUTCH PULLEY.

Williams

IS HEADQUARTERS FOR

WILLIAMS Cyclone Clay Pulverizers.
The Fernholtz Patent Mold Box for all Brick Presses.
WILLIAMS Brick Trucks. Brick Barrows.
WILLIAMS Clay Elevators.
WILLIAMS Clay Screens. Clay Mixers.
WILLIAMS Sizing Machine for Arch Brick.
WILLIAMS Keeps Brickyard Supplies.

M. F. WILLIAMS & CO.,
Broadway and Montgomery Sts.,
ST. LOUIS, MO., U. S. A.

Read This...It Will Repay You.

The Simplest. The Least Expensive. The Best

Brick Hacking and Trucking System.

The practical man will see at a glance the advantage which this system has over any other, new or old. It is equally as efficient in large or small yards. One man can take 25,000 to 40,000 green brick from the machine and place them upon the hacks to dry, and the same amount from the hacks to the kilns, and place them in easy position for the setters to handle them. It has been thoroughly tested. It costs less than one-half the money to equip a yard with my system than any other efficient system. Drying capacity unexcelled. By using my complete system 100,000 brick can be hacked in a space 25′ x 160′. If you are using any of the old systems of open air drying such as the rack and pallet system for instance, the change can be effected with very little expense.

Write me for full information. Infringements will be prosecuted.

B. E. BECHTEL, Waterloo, Ontario.

The
ROESSLER-HASSLACHER
CHEMICAL COMPANY,
100 William Street,
NEW YORK.

As a Preventative of Scums Use

CARBONATE OF BARYTES

R. & H. PRECIPITATED.

Oxide Tin,
Oxide Cobalt,
Red Oxide Iron,
Green Oxide Chrome,
White Oxide Antimony,
Black Oxide Manganese
and all Chemicals used by the Clay Trades.

The NATIONAL DRIER

Is One of the Best Investments Ever Made at Our Plant.

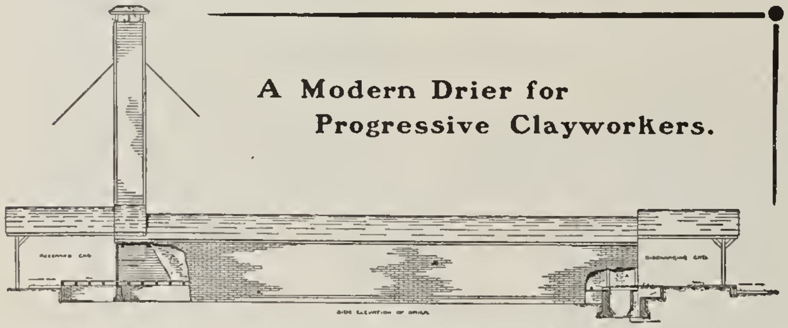
CHRISTY FIRE CLAY CO.
ST. LOUIS.

THE NATIONAL DRY KILN CO.,
33 West South St.,
Indianapolis, Ind.

May 14th, 1902.

GENTLEMEN—We take pleasure in giving you the result of our experience with the Tunnel Drier System recently purchased from you. We find that the use of exhaust steam during the day time with about 40 lbs. pressure of live steam at night, dries our product thoroughly in 48 hours, and in view of the fact that our former system required an average of 120 hours, you can readily imagine that we are very much gratified. The economy of labor, saving of fuel, and increase of capacity resulting from the installation of your system, make the expenditure one of the best investments we have ever made at our plant.

Yours truly,
W. C. MORRIS, V. P. & G. M.



A Modern Drier for Progressive Clayworkers.

C. H. BEALE, Mangr. Southern States, MONTGOMERY, ALA.
JNO. McKAY, Representative at Large.

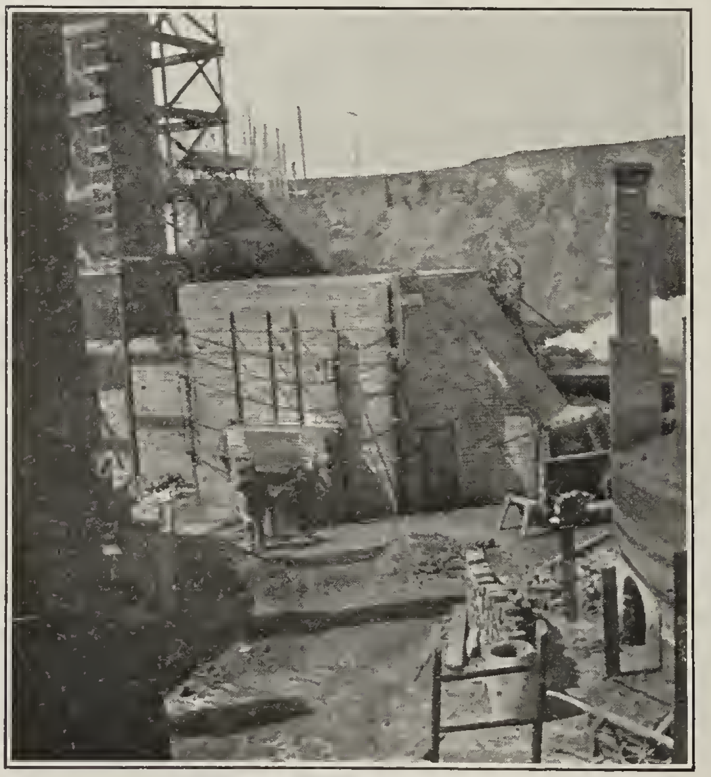
Is free from complicated Features. If you want IMPROVED METHODS, put in the modern up-to-date

NATIONAL DRIER

Our Steel Roller Bearing Cars are Unequalled.
Let us send you a circular, it will interest you.
Our guarantee protects from all chances.

The National Dry Kiln Co.,
1118 East Maryland St., INDIANAPOLIS, IND.

THIS IS IT.



Tricks in all Trades

NO TRICK AT ALL.

The man who dries his brick in the BEST, QUICKEST, MOST ECONOMICAL MANNER has simply discovered the *proper way*. He has been *wise* and installed a

CROWN DRYER.

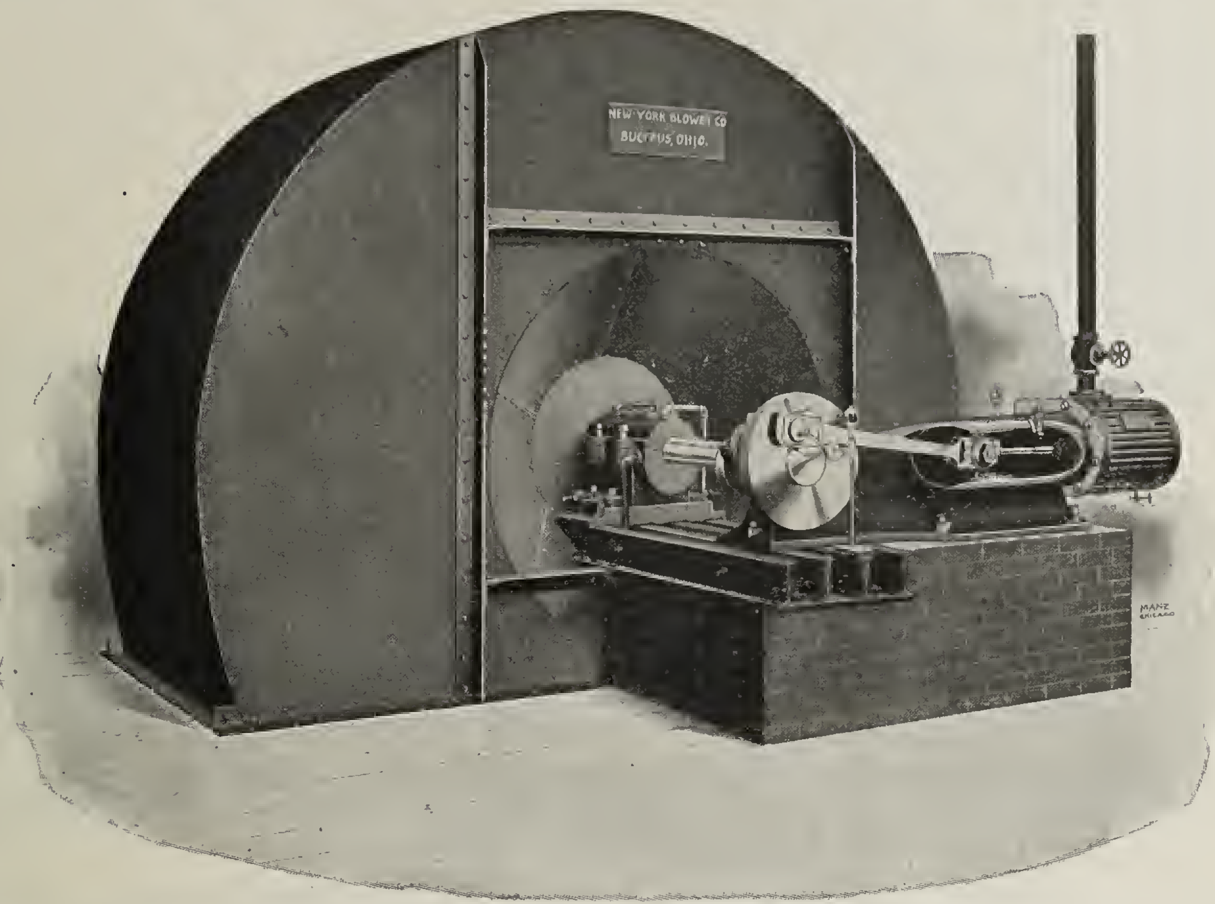
Go and do likewise.

The Crown Dryer Co.,
New England Bldg. CLEVELAND, OHIO.

DRYING ECONOMY.

Our Dryer is superior to others by reason of improved methods, low cost of construction and economy of operation. If you're interested in dryers write for particulars. Ours will prove a good investment.

We also manufacture Conveyors, Exhausters, Heaters, Fans, Engines and Mechanical Draft Apparatus.

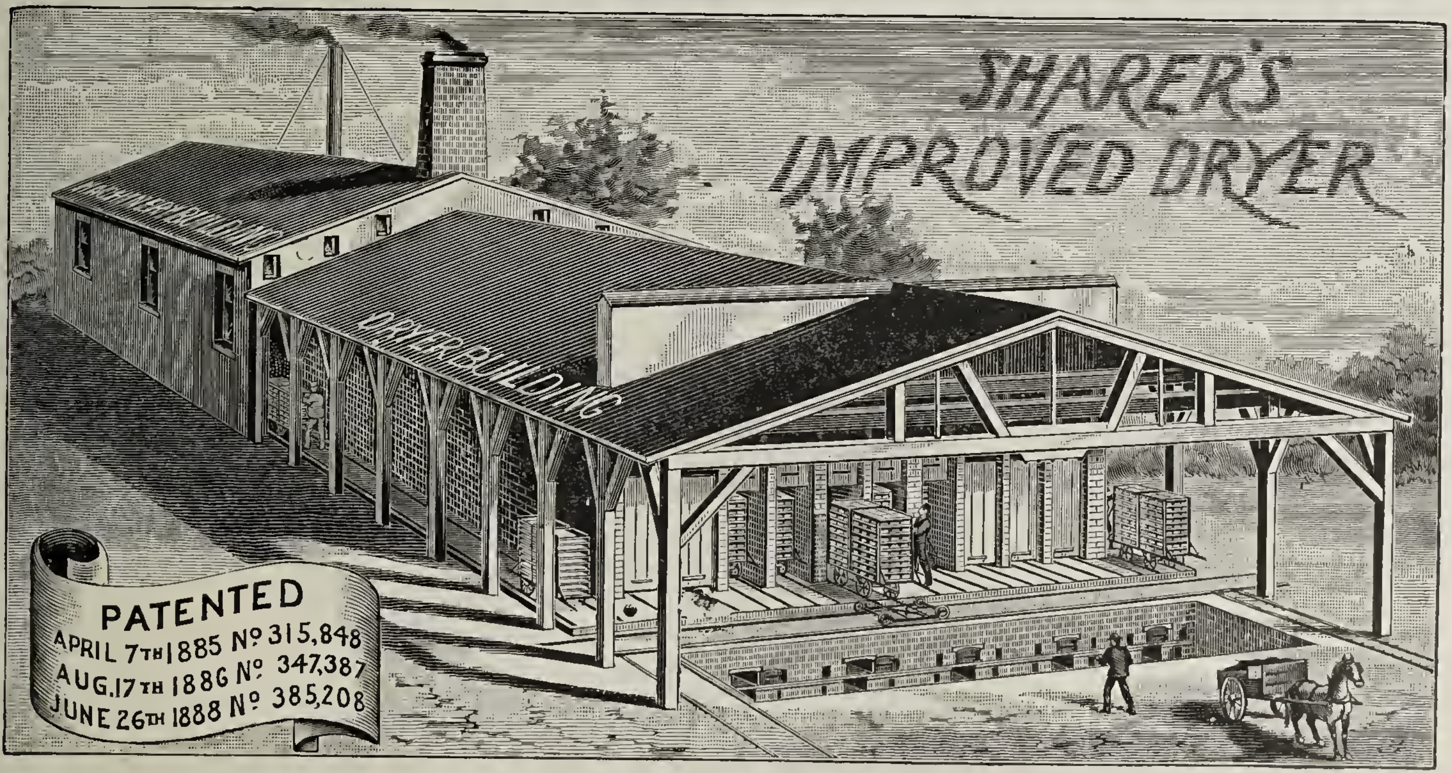


The New York Blower Co., Bucyrus, Ohio.

New York Office, 39-41 Cortlandt Street, New York.
Boston Office, 185 Sumner Street, Boston, Mass.
Chicago Office, Merchants' Loan and Trust Building.
European Office, Cathedral Corner, Fennel Street, Manchester, England.

Geo. W. Sharer,

Brick Manufacturing Expert,
Constructing Engineer,
Contractor and Builder.


SHARER'S
IMPROVED DRYER
DRYER BUILDING
PATENTED
APRIL 7TH 1885 Nº 315,848
AUG. 17TH 1886 Nº 347,387
JUNE 26TH 1888 Nº 385,208

COMPLETE Dryer and Kiln outfits, and Complete Plants a specialty. Address **Geo. W. Sharer,** 2228 Tioga St., **Philadelphia, Pa.**

A STEAM SHOVEL

MODEL "G," 2½ YD

Is the most economical appliance for excavating clay.

Never strikes, and is therefore more reliable than hand labor.

Will work in all kinds of weather, insuring regular supply of material.

More thoroughly mixes the different stratas than is possible to do by hand.

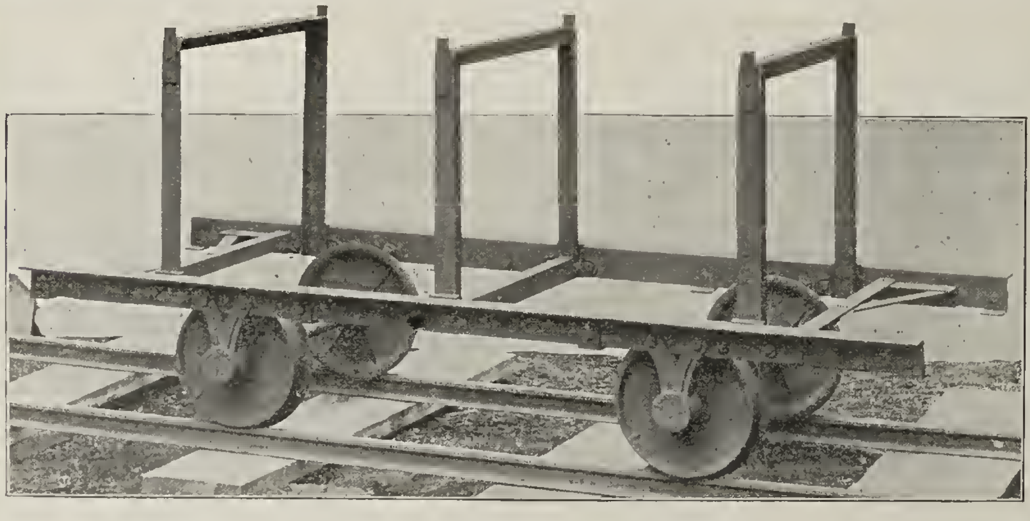
Will prove a paying investment in any yard where the material is taken from a face.

For many years we have supplied Steam Shovels for Brick Yards, and our machines are in successful use in the yards of many of the largest and most succcessful brick manufacturers of the country. We build machines having dipper capacities from ¾ cubic yard up to 4½ cubic yards, and can supply them with friction feed on boom or with independent engine feed.

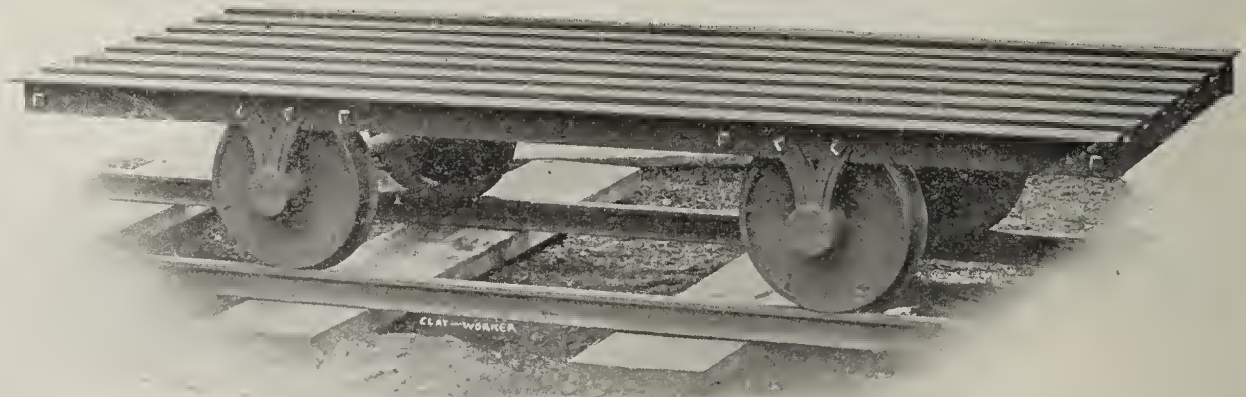
If interested write us for illustrated catalog.

STYLE "C," ¾ YD.

THE MARION STEAM SHOVEL CO., 610 West Center Street,
MARION, OHIO.



No. 245.
DOUBLE DECK CAR.
FOR WOODEN DECKS.
Angle Frame.

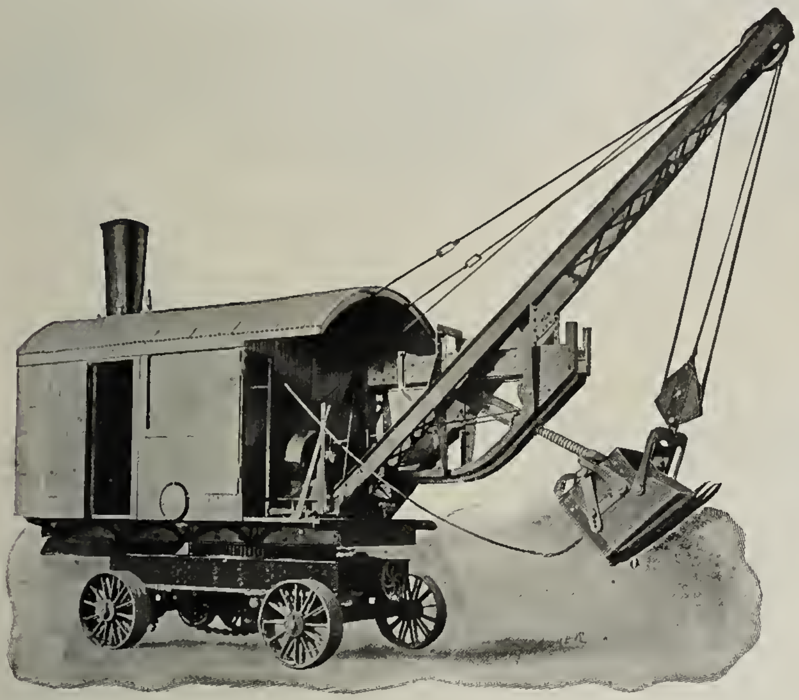


No. 222,
STIFF MUD
FLAT CAR.
Steel Deck,
Angle Frame.

The Cleveland Car Company, 148-152 Scranton Ave.,
CLEVELAND, OHIO.

Handle Your Clay With One Man and

The Thew Steam Shovel.



The Thew Improved No. 1 Shovel.

• • • • • • • •

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

• • • • • • • •

Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

• • • • • • • •

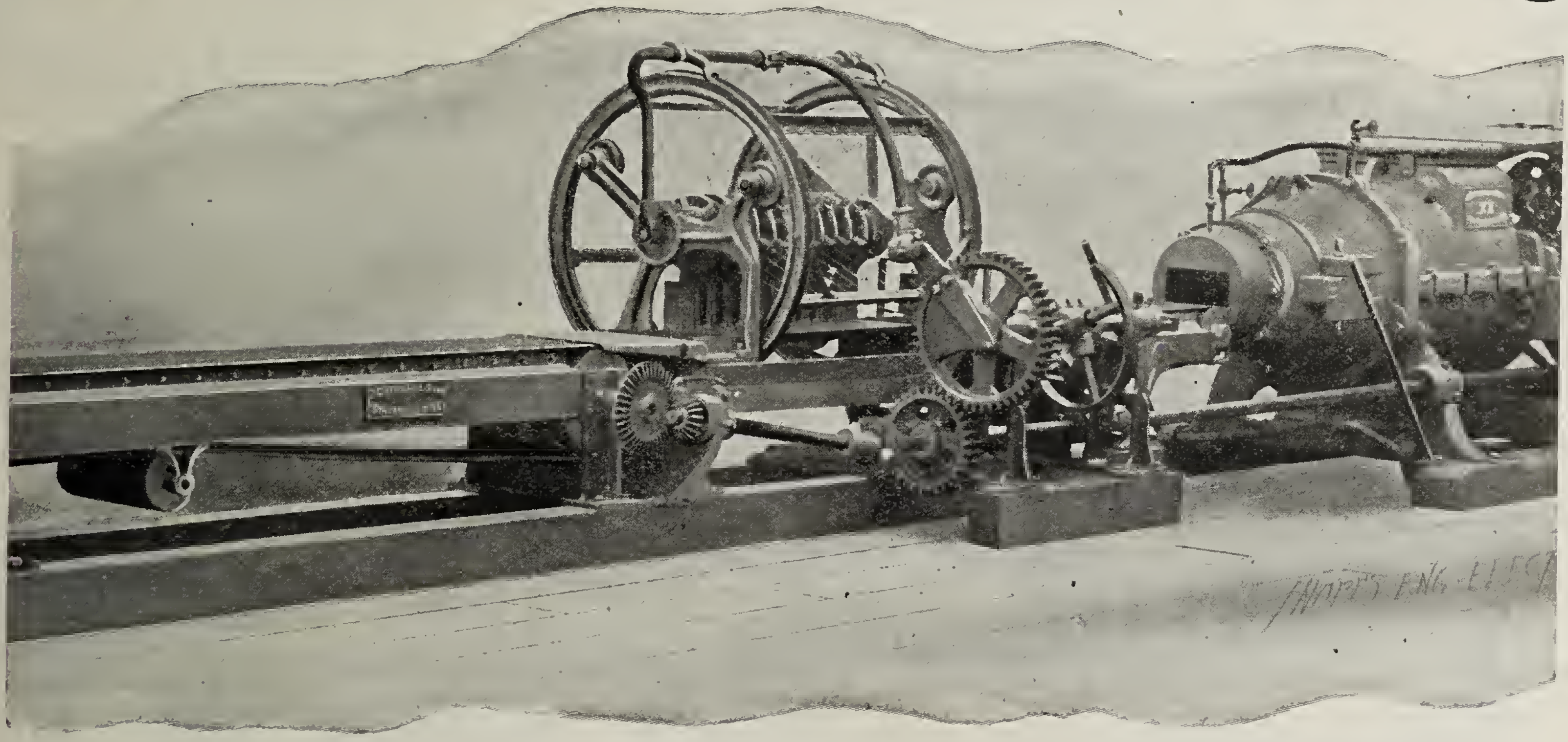
Made in all sizes.
Mounted on Car Wheels
or Traction Wheels.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 150,000 brick per day.

WRITE US FOR CATALOGUES OR INFORMATION.

The THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.

Highest Development IN THE ART OF Brick Making.

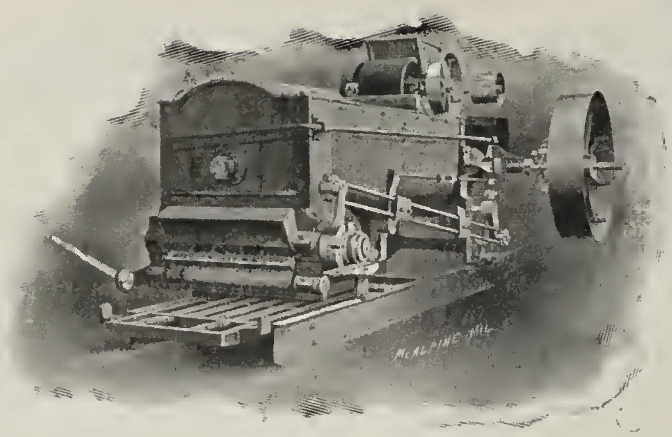


Steele's Improved Brick Cutter.

BRICK MACHINES.—Three sizes, capacities ranging from 12,000 to 50,000 per day. Complete equipments for the most economical yards. All kinds of brickyard supplies. Write for Catalogue and Prices.

J. C. STEELE & SONS,

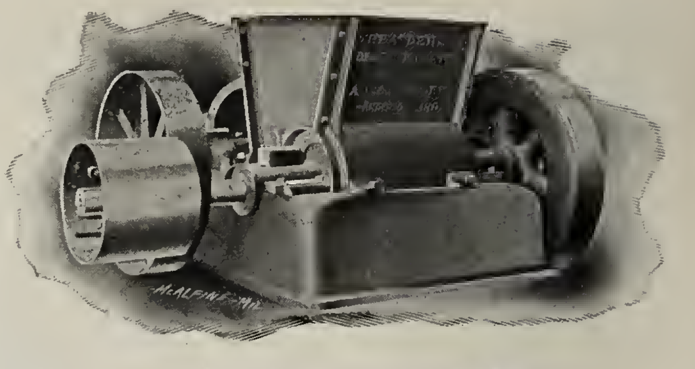
Manufacturers "NEW SOUTH" Brick Machinery,
STATESVILLE, N. C.



Horizontal Anderson Brick Machine.

DON'T PURCHASE UNTIL YOU WRITE US.

We can save you money.



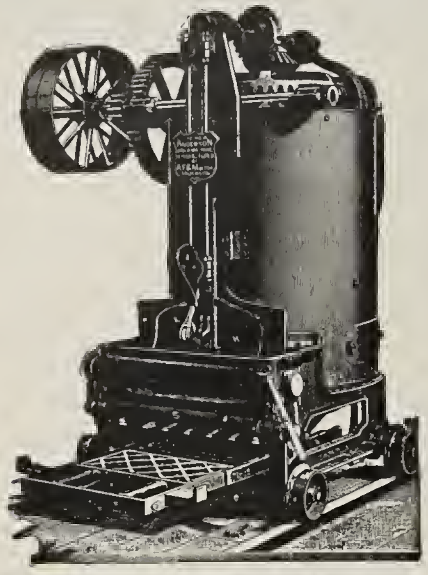
Best Disintegrator on the Market.

* * *

MANUFACTURERS OF . . .

New Departure Tile Machine,

The only machine for making Tile
from 3 to 24-inch Diameter.



Steel and Iron Upright Stock Brick Machine.

Pug Mills, Molds, Trucks and Barrows,
And all Brickyard Supplies.

1899 Horse Power Machine.

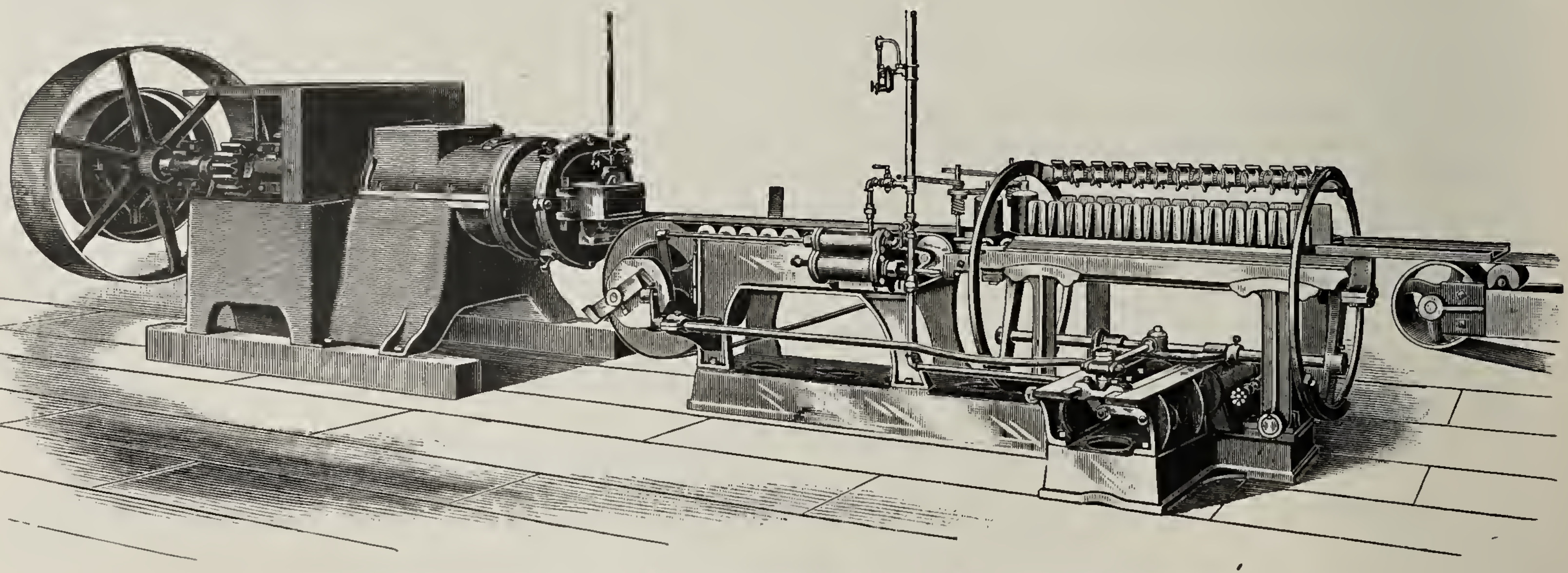
* * *

The Anderson Foundry and Machine Works,
Anderson, Ind.

NOT BETTER THAN THE BEST!

But Better Than the Rest!

AND THE PRICE IS RIGHT!

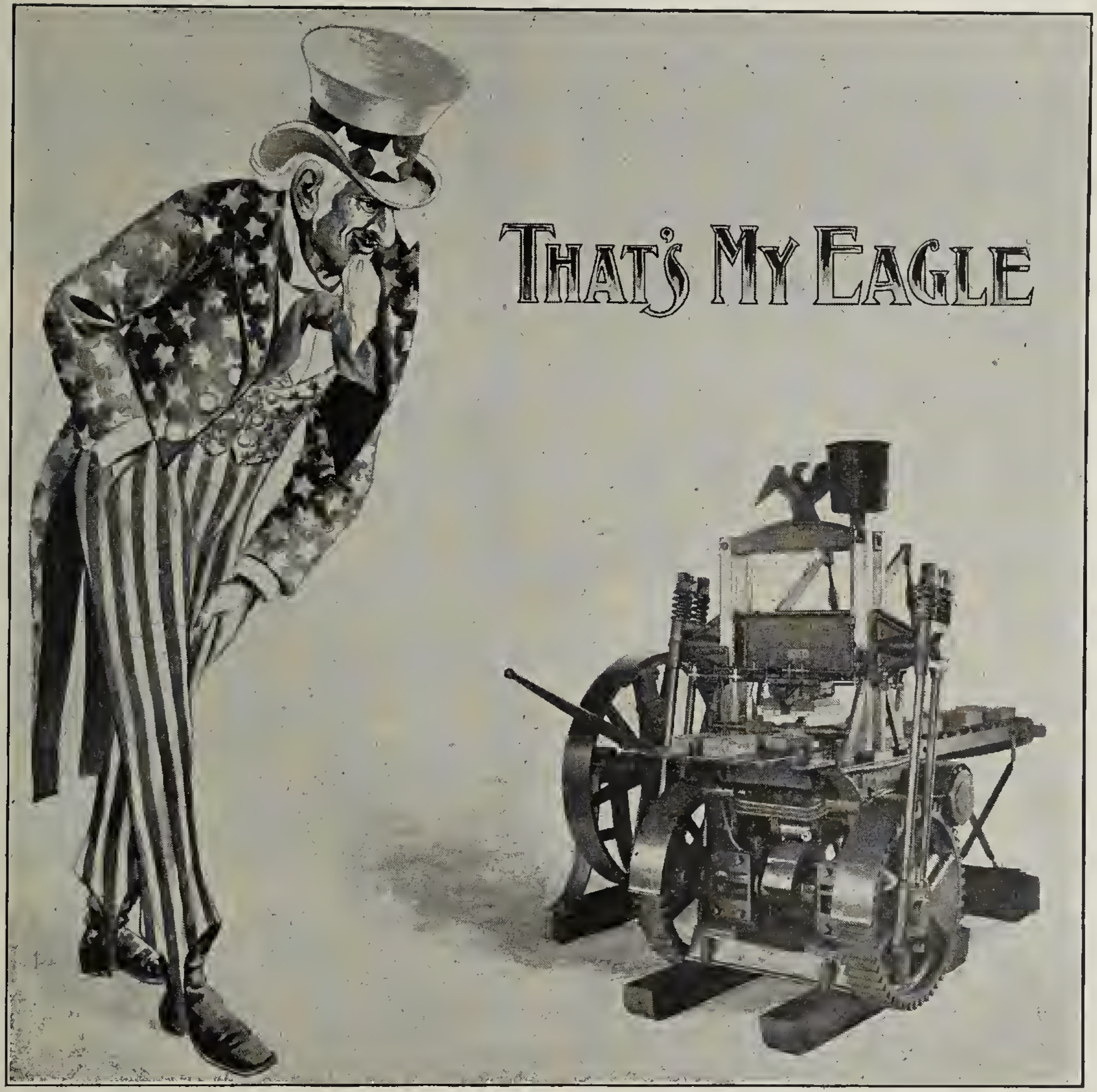


LEADER No. 25, With Side Cut Die and Automatic Cutter.

LEADER MANUFACTURING COMPANY, = Decatur, Ill.

Mention The Clay-Worker.

UNCLE SAM is proud of the Eagle. So are we. So are all the clayworkers who have bought Eagles. Why is it? People are never proud of a poor thing or a disappointing investment. They all like the Eagle because it is a fulfiller of guarantees, because it stands for quality, because it's a willing worker, because it saves its cost in repair bills, because when the whistle blows it's ready and able to run, and is willing and able to run overtime, or all the time, without complaint. If you're going to buy a repress and are willing to buy on a business basis of economy, you'll be safe in investigating the record of the Eagle. We'll send you facts and figures for the asking, and a list of users. Wire or write.



We also build the only complete line of clayworking machinery in the various processes. Every machine a winner because it's **"Built Right and Runs Right."**

The American Clay-Working Machinery Company,

Bucyrus, Ohio, U. S. A.

New York Office,
39-41 Cortlandt St.
Chicago Office,
Merchants' Loan and Trust Bldg.
European Office,
3 Gore St., Picadilly, Manchester, Eng.

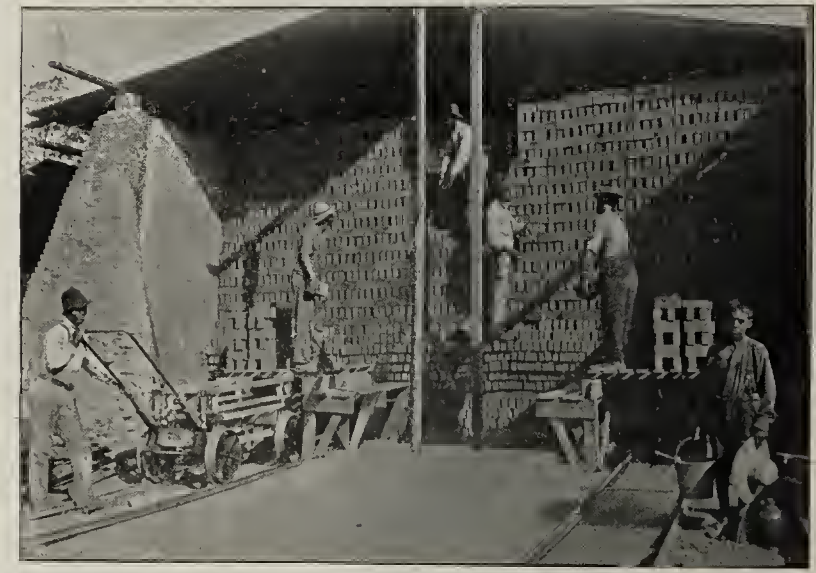
See Ad. on Page 194.

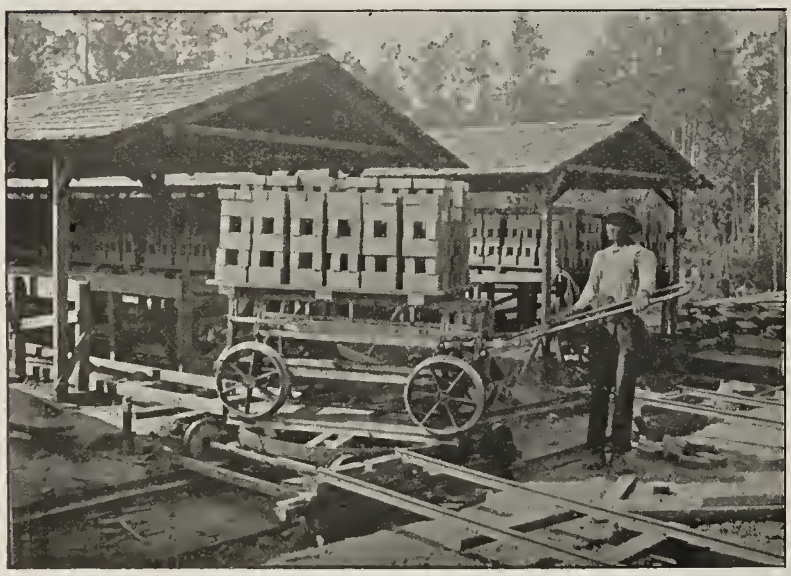
A PERFECT CAR SYSTEM

For Either Soft or Stiff Mud.

With only TWO CARS
One man will handle 40 M brick per day.

No Fan to Run. No Boiler to Steam.
No Pipes to Burst. No Fireman to Pay.
No Dryer. No Fuel.





We Guarantee This to be the cheapest, best and only out-door car system ever offered the brick manufacturer. We guarantee to handle from the machine and put on the yard in good condition, from thirty to forty thousand green brick per day, with one man, and same amount to kiln. We guarantee our patent car and system to perform the work for which they are built, and all the workmanship and quality of material to be first class. Our Covers and Storm Curtains give absolute protection from rain and storms and also protects tender clays.

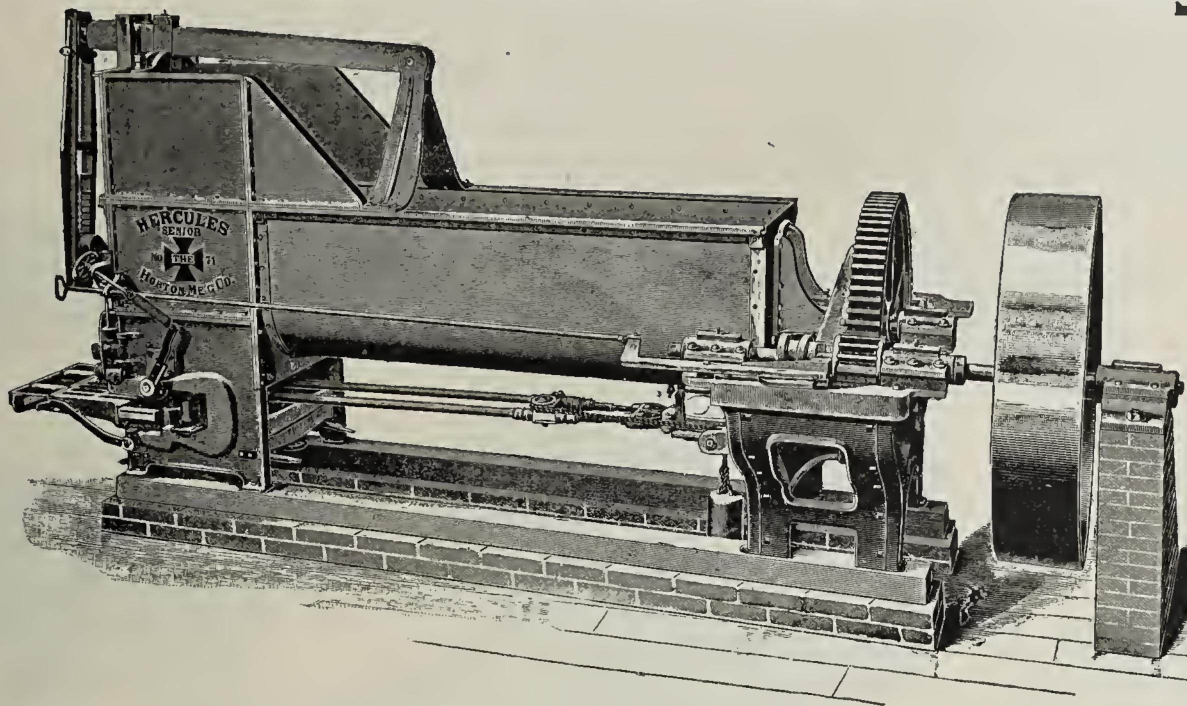
THIS SYSTEM consists of two elevating and lowering brick cars for a thirty to forty thousand capacity brick plant; these take the place of several hundred common cars. The car is made of channel steel, with movable deck, which is raised and lowered by a compound lever. From two to five hundred brick are taken from the machine and placed on a pallet, the lever lowered, raising pallet off the rests. The load is then on car, which is run on the yard to the rests along each track; the lever is again raised, thus lowering deck of car which places load on the rests.

Scotts Patent Brick Car Co.,

Write for catalogue and plan showing method of handling soft mud brick, also the nearest point you can see our system in practical operation.

Knoxville, Tenn.

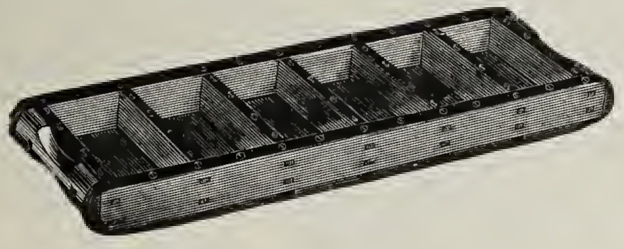
The HERCULES Works the Clay Stiff.

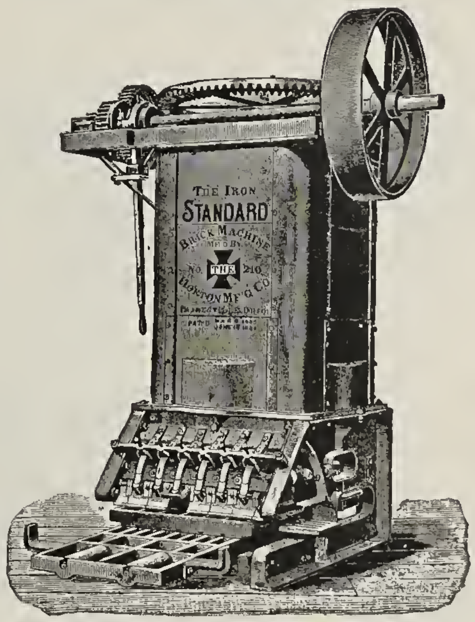


MOLDS.

Is one of our Specialties. Either Hand, Machine or Shapes. We have a shop full of Special Machinery for the Manufacture of these as well as Trucks of all kinds, Wheelbarrows. Dump Cars, and Carts. In fact everything used on a Brickyard.

Iron Standard Horse Power Brick Machine—The Leader of all Horse Power.

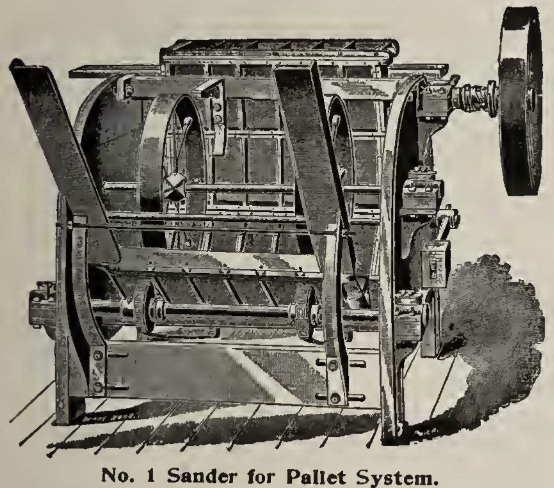




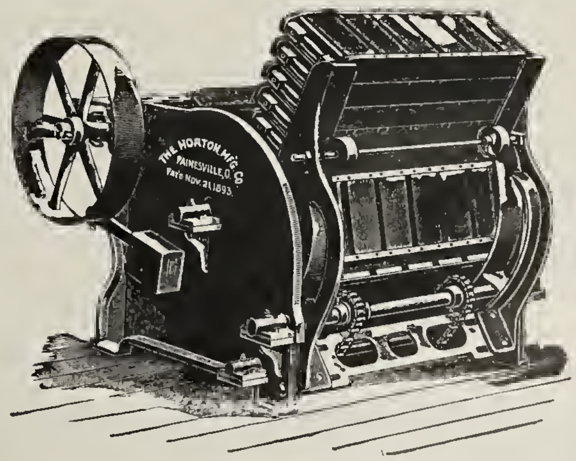
Standard Steam Power Brick Machine—Just the Machine for Medium Sized Yards.

The Mold Sanders That "Sand"

TWO STYLES.



No. 1 Sander for Pallet System.


THE HORTON MFG. CO.
PAINESVILLE, O.
PAT'D NOV. 21, 1893.

No. 2 For Open Yards.

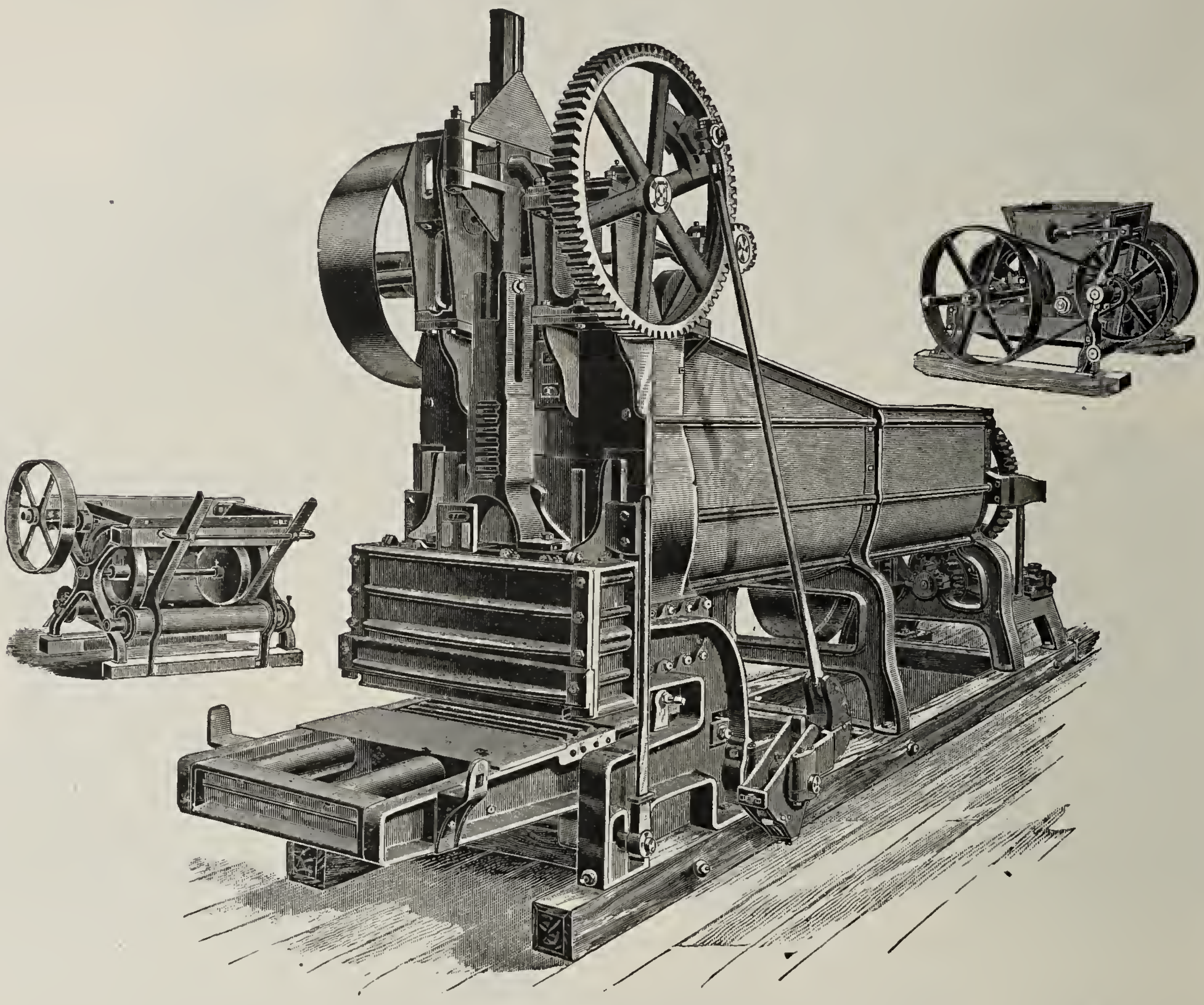
THE HORTON MANUFACTURING CO.,

Mention The Clay-Worker.

Painesville, Ohio, U. S. A.

THE POTTS Horizontal Brick Machine

With a Potts Disintegrator on the rear end and a Potts Mould Sander along the side



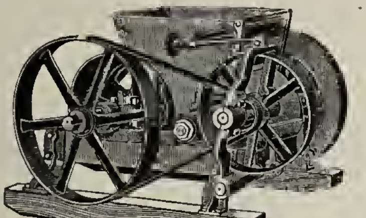
makes an outfit which will give pleasure to every brickmaker using them. With the above outfit the clay can be worked direct from the bank, and brick made which will have no equal for **CLEAN**, sharp corners and smooth surfaces. For **STENGTH, DURABILITY, SIMPLICITY, QUALITY and QUANTITY of MATERIAL** used in their construction and **WORKMANSHIP** they have no equal.

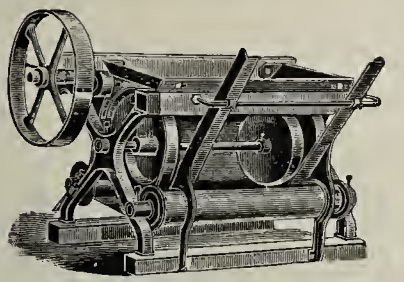
Don't be mislead by claims made by competitors that their machine is just as good as the Potts. That machine is yet to be made.

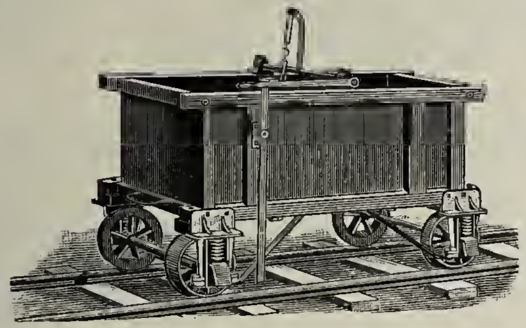
Write for Prices.

C. & A. POTTS & CO., - Indianapolis, Ind.

BRICKMAKING MACHINERY.







Pug Mills,

Disintegrators,

Mould Sanders,

Trucks and Barrows,

Winding Drums,

Clay Cars
(any style)

Cherry Brick Moulds,

Elevators,

Granulators,

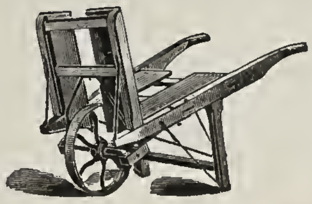
Pulleys,

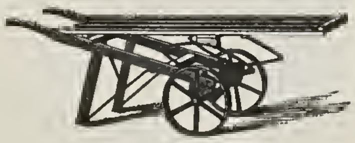
Shafting,

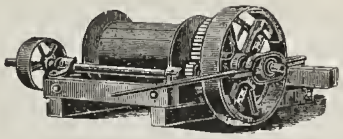
Hangers,

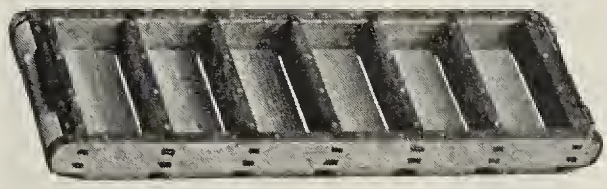
Belting,

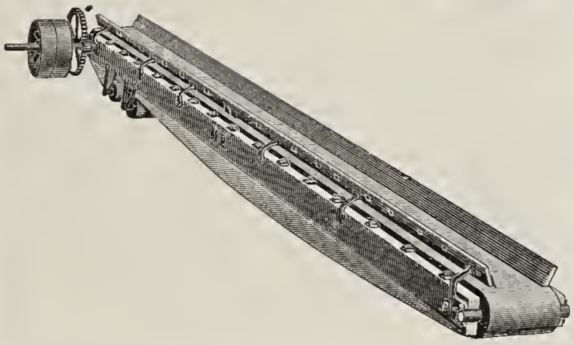
Kiln Castings.











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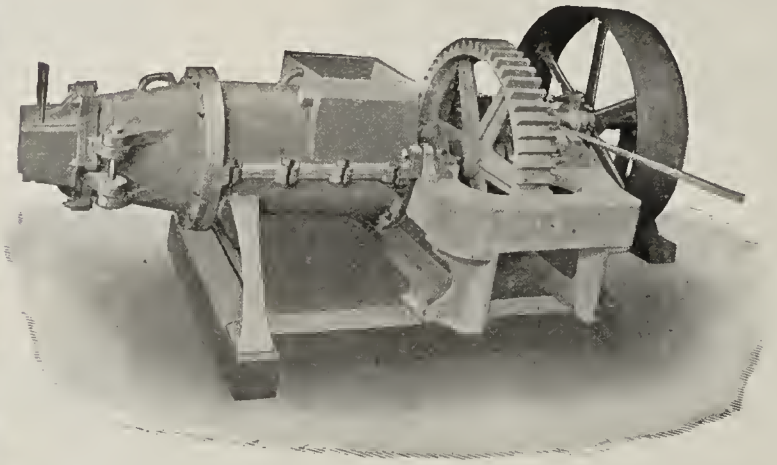

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Our No. 2 Auger Machine is especially suited for drain tile, hollow brick, etc.

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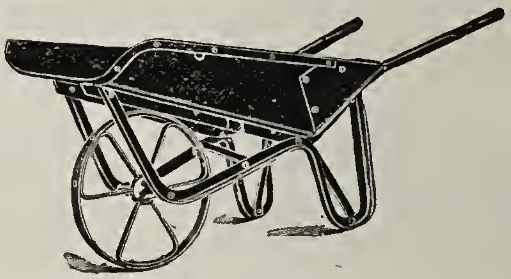
Have you seen our new Steel Dump Barrows? They are just the thing for handling clay, sand, ashes, etc.



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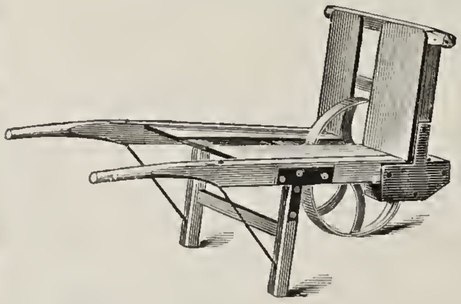
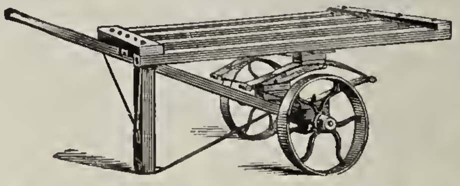


Brick plants equipped complete in every detail, including all the machinery, dryer and engine and boiler.

Send us a sample of your clay. We will examine it without charge.

We furnish everything a brickmaker needs.



IT CUTS

Brick and cuts them right, all of a size, all of the time, and as many as your machine can make. It is smooth and quiet in its operation, and doesn't jerk itself to pieces, or rattle itself into the scrap heap.

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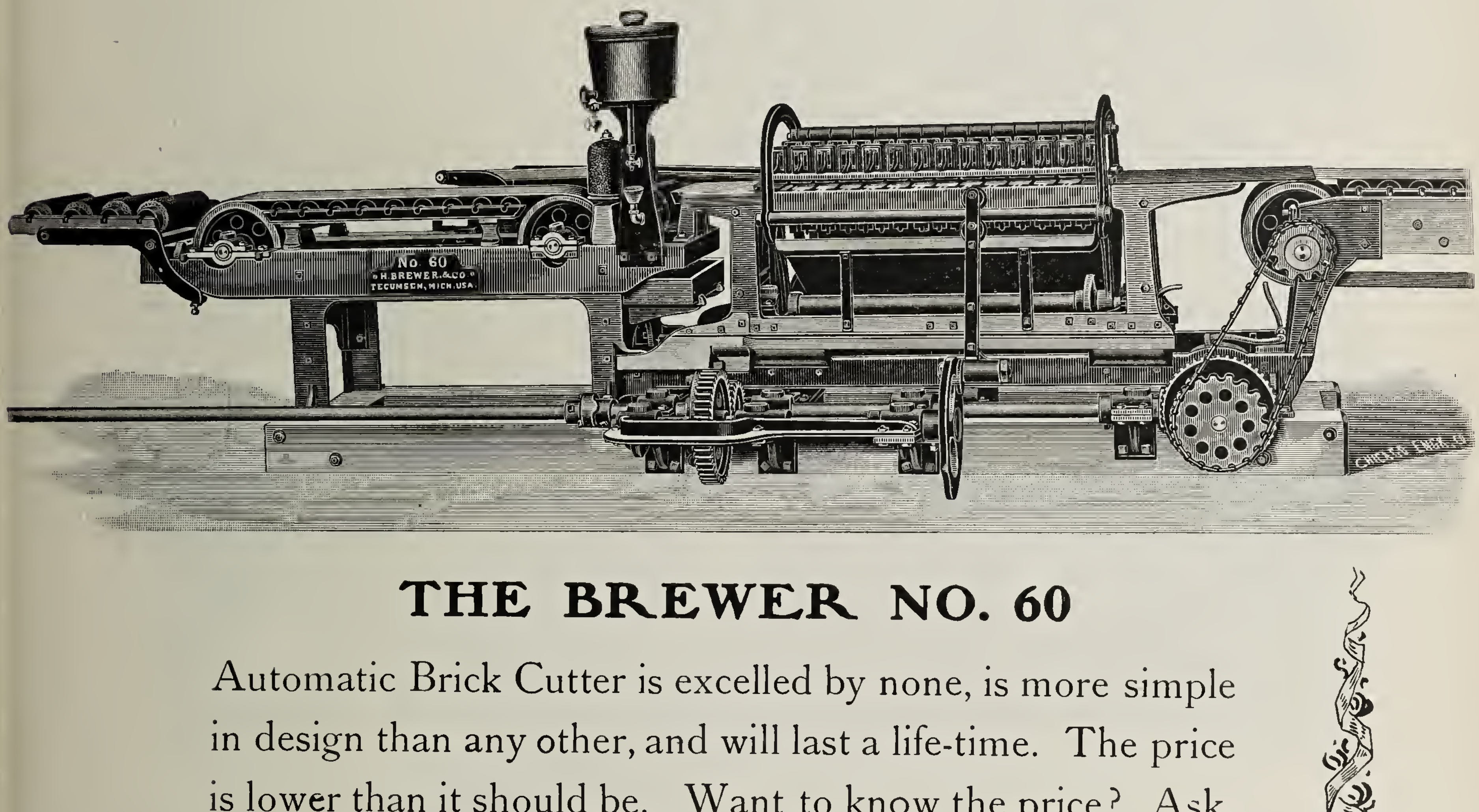

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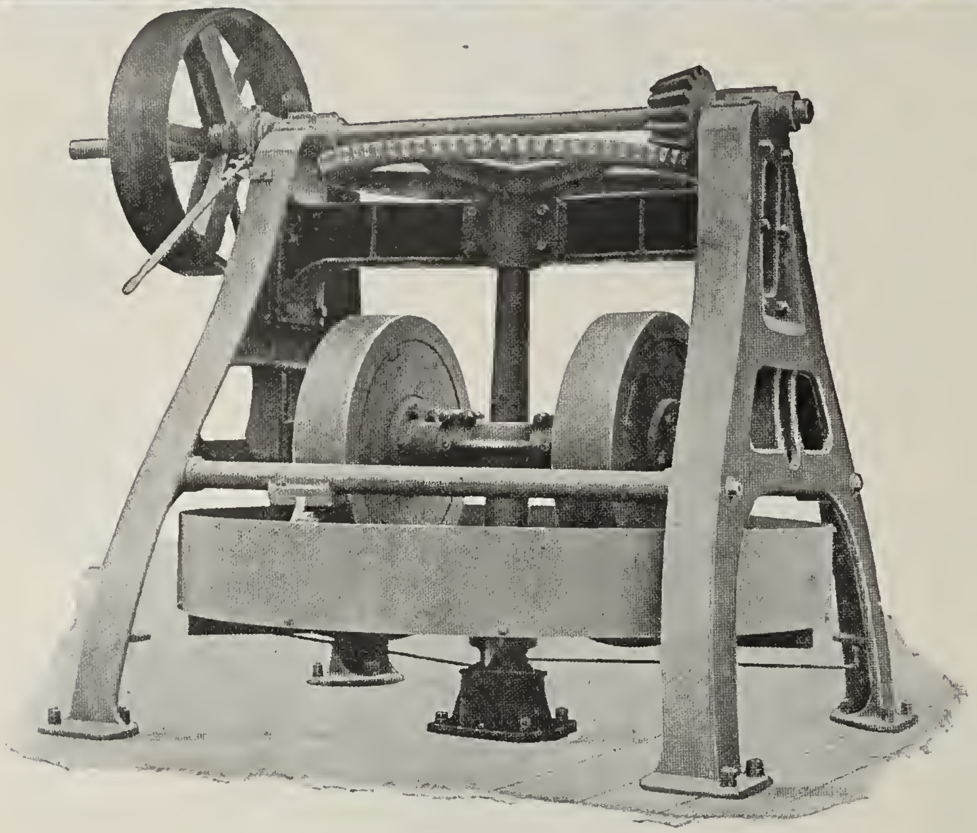

9-Foot Iron Frame Dry Pan.

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MANUFACTURERS OF
The Royal Block and Iron Rock Street Pavers,
Building, Fire, Sewer and Sidewalk Brick.

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Gentlemen—Our works are equipped throughout with Bonnot Machinery and we are pleased to say that it is satisfactory in every way. We have your No. 1 Brick Machine and Automatic Cutting Table and have made as many as 65 000 brick in ten hours, although you only guaranteed the machine for 50,000. The table does not give us the slightest trouble and requires very little attention.

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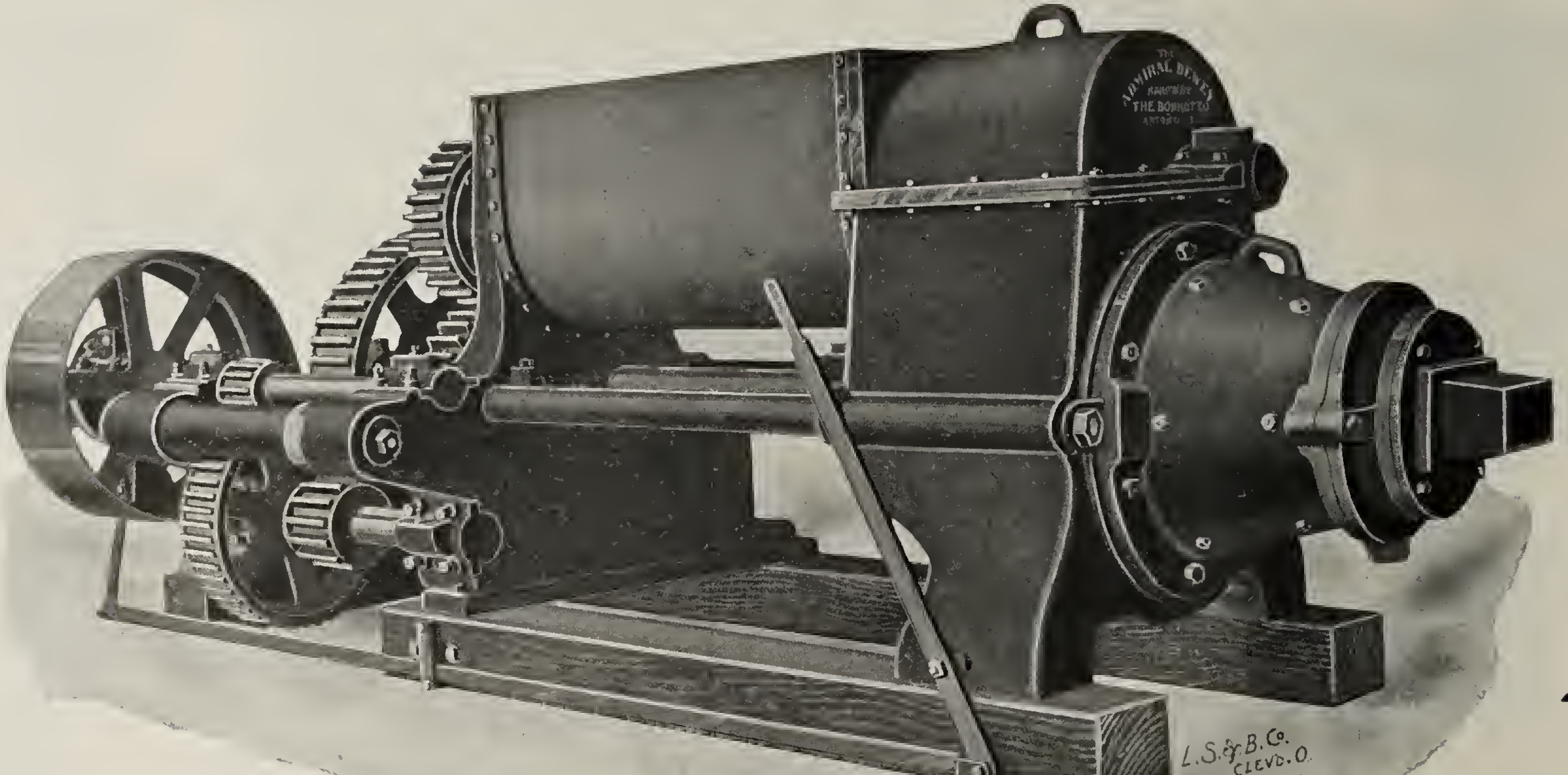

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Brick Machines of any capacity from 10,000 to 100,000 daily.
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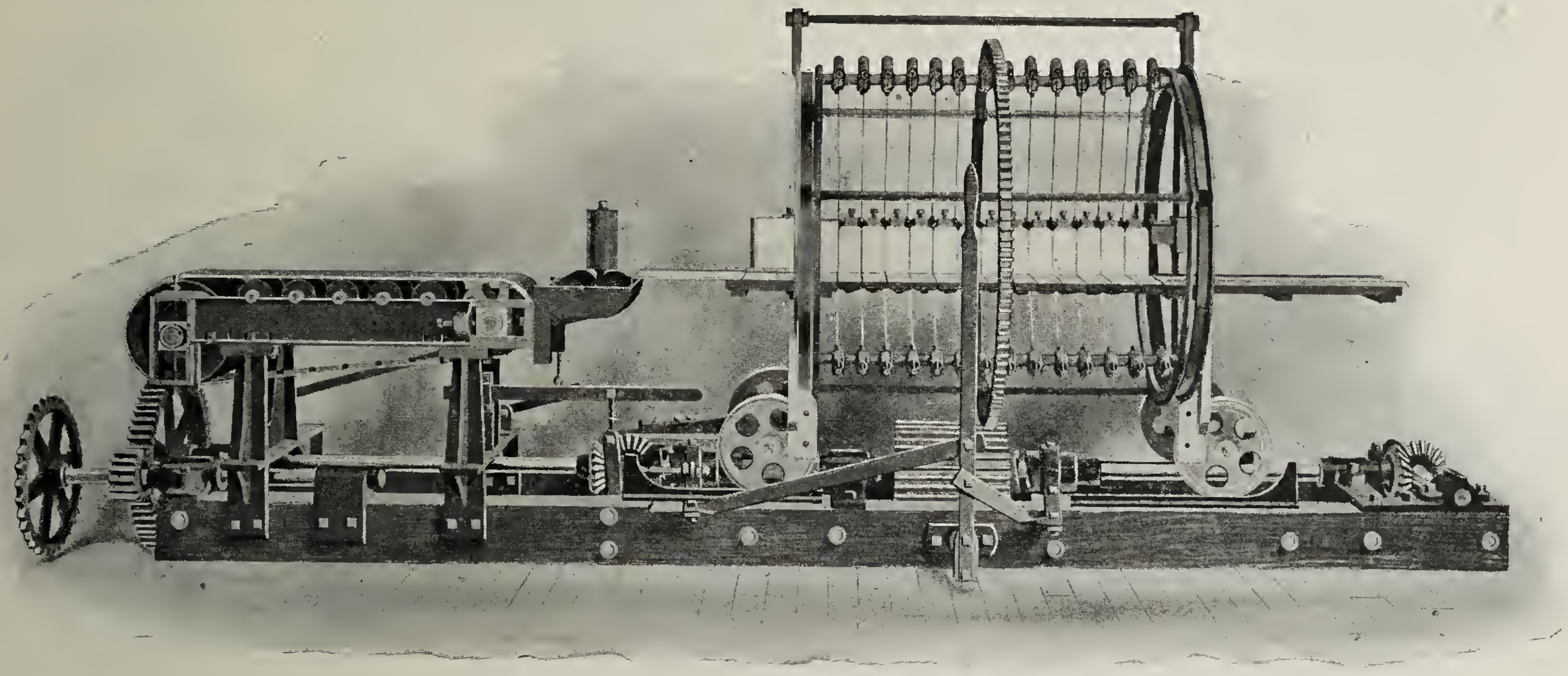
THE CUTTER THAT EXCELS

IS THE

Wonder Semi-Automatic Side Cut Brick Cutter.

Works Clay Where Others Fail.
Makes Brick Equal to Dry Press Brick.



SEMI-AUTOMATIC SIDE CUT BRICK CUTTER.

This Cutter is simplicity itself, and is a success in every particular.
Is operated with one-half the expense of an Automatic.
No feathered edges—no cracked or crooked brick.
Absolute down cut. Nothing on the market like it.
Detailed information cheerfully given. Write us.

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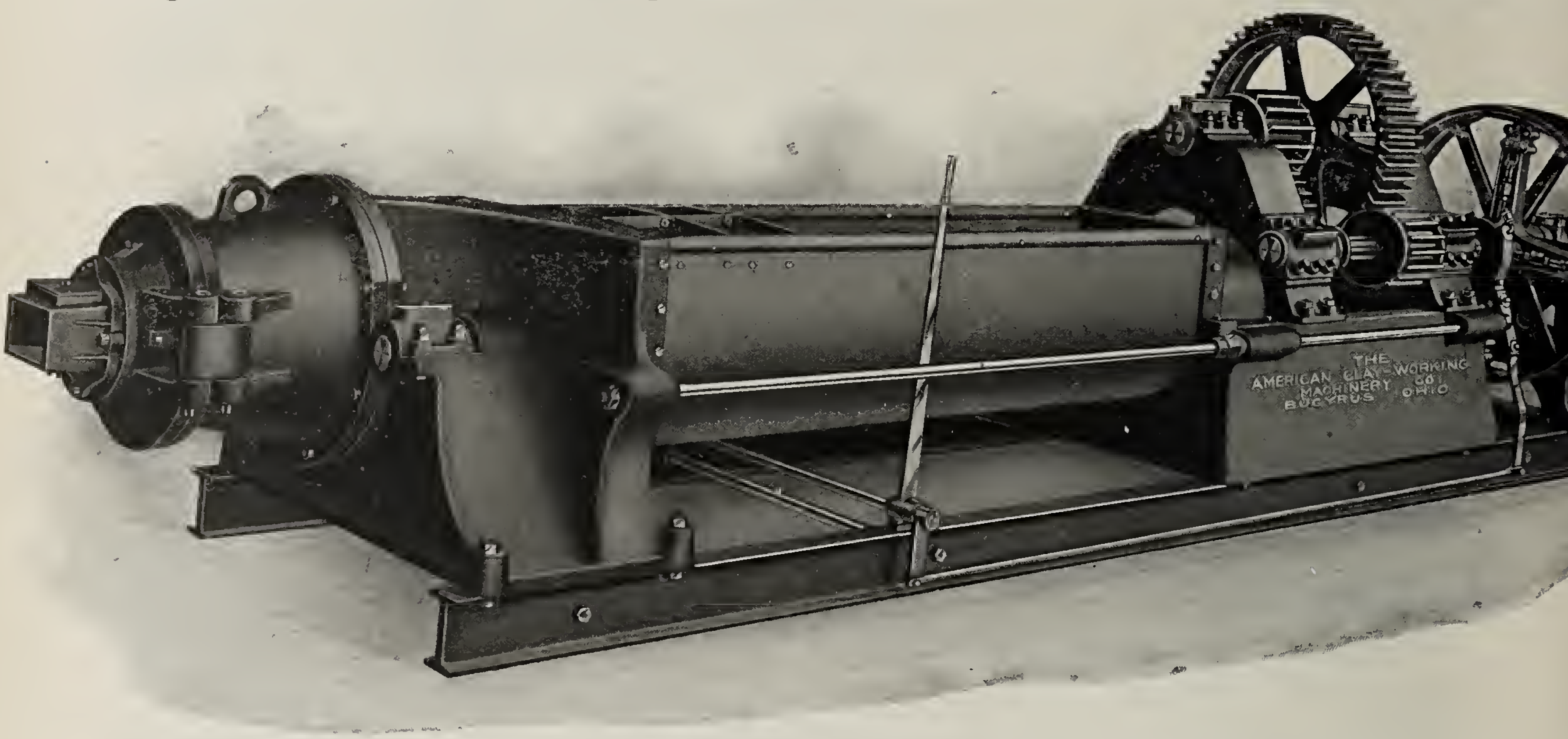
BIFURCATED MACHINE.

This new type of Combined Machine has many points of superiority. Its strength factors are away above the average. The placing of the pugging cylinder by the side of the expressing cylinder removes all objections to a combined machine. The clay is forced by pressure from the pugging cylinder into the expressing cylinder. On the old style combined machine the pugging was done above the expressing cylinder, and the clay fell by gravity through a throat to the brick machine. The clogging or barreling up of the clay caused no end of trouble. This new machine removes this serious objection. The side by side arrangement makes the machine much lower down, saving in height of the building, length of elevator, etc., and places the operator on the floor level instead of on a raised platform as formerly. This makes the machine more easy to operate and with a saving of labor. It makes better brick and insures steady operation. The machine is mounted on substantial steel I-beams, and as shown weighs 25,000 pounds. Built in three sizes. Capacity 35,000 to 100,000 brick in ten hours. It can be equipped with our automatic cutters and will work a greater variety of clays than any other combined machine on the market. The careful and honest construction of this machine insures its successful operation.



Write for complete particulars.

The American Clay-Working Machinery Company,

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39-41 Cortlandt St.
Chicago Office,
Merchants' Loan and Trust Bldg.
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A NEW COMBINATION.

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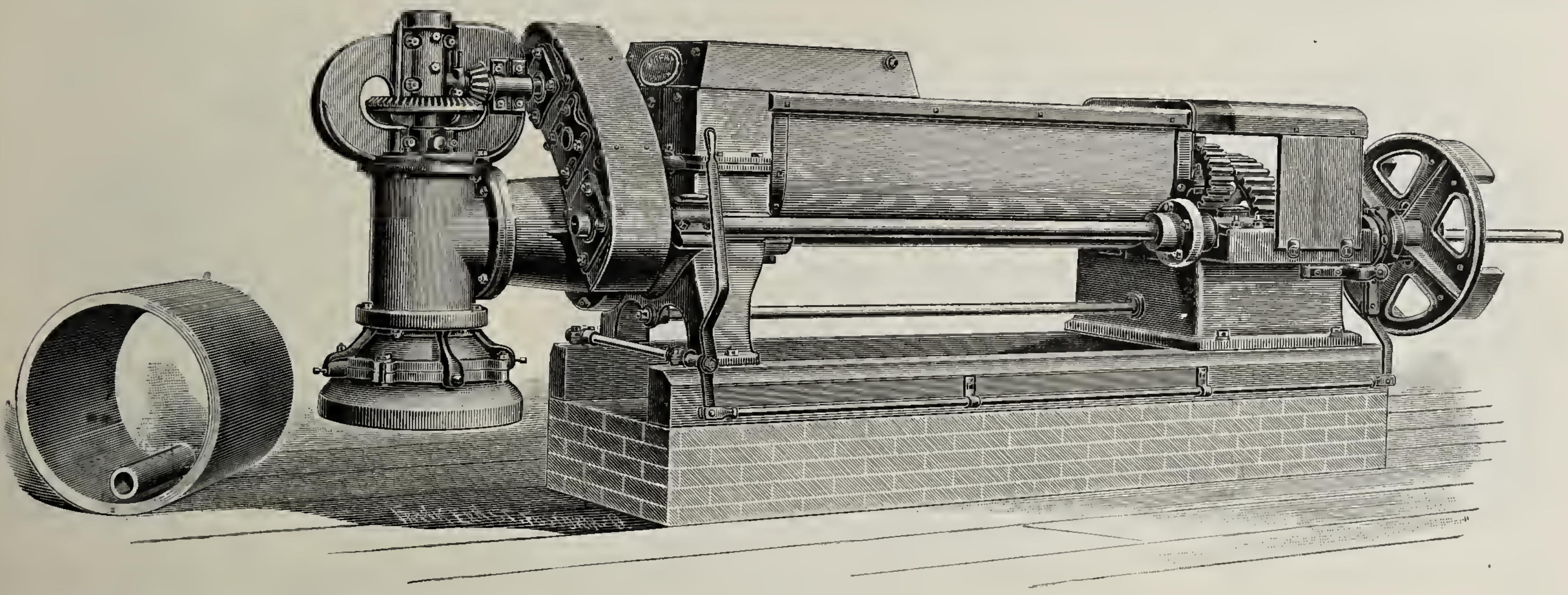

Recognizing the fact that the average tilemaker does not sufficiently pug the clay he uses we have arranged our famous "Hummer Combined" Brick Machine so as to make all sizes of drain tile from 2½ inches to 24 inches.

Sizes 2½ inches to 8 inches, delivered horizontally and the larger sizes vertically. This machine, with a "Bensing" Automatic Tile Cutting Table, makes the most complete outfit for the manufacture of drain tile and hollow building blocks on the market.

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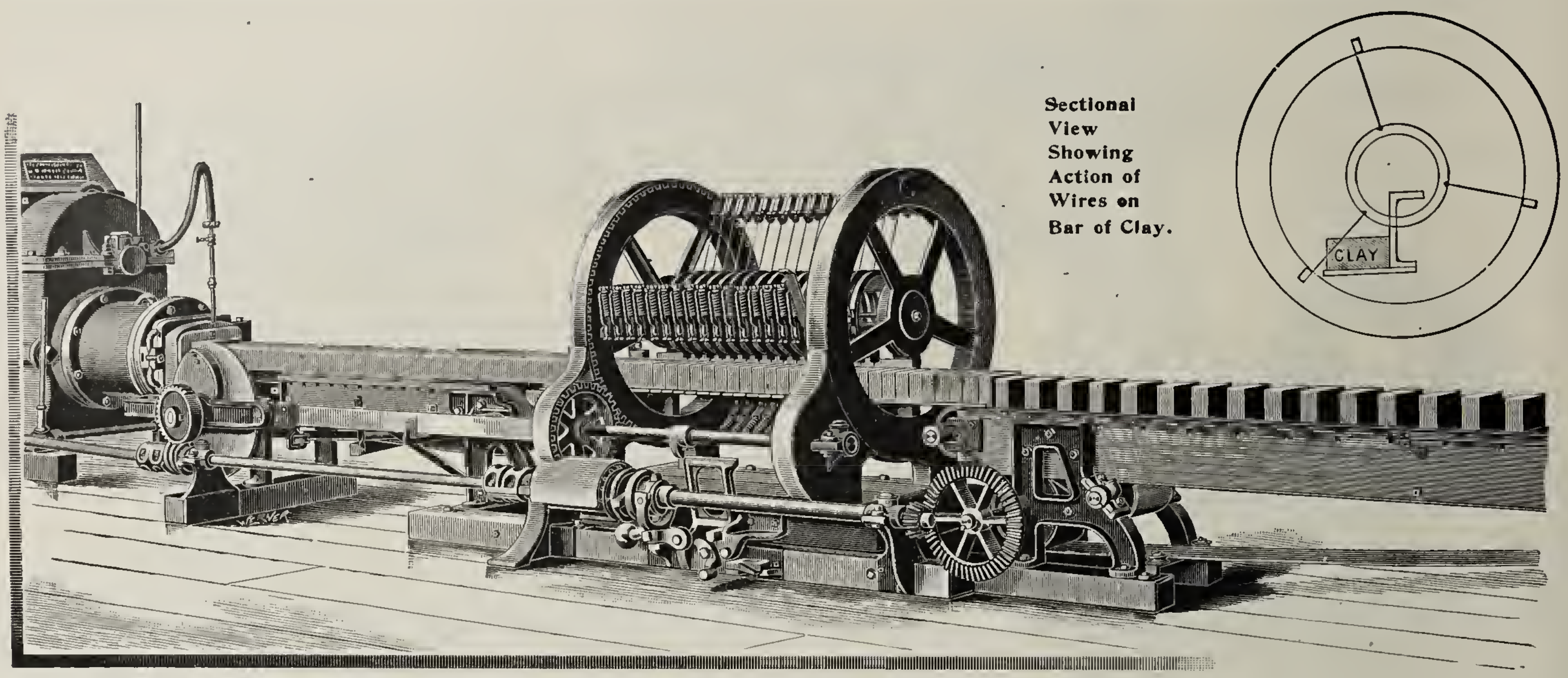
AUTOMATIC CUTTER

Is "Just as Good" as This.



Sectional View Showing Action of Wires on Bar of Clay.

ROTATING AUTOMATIC CUTTER. Patented.

Why waste time and money using Cutters which are frequently out of order and cannot be depended upon to do good work?

Why not produce brick of **finest quality** when it can be done with less expense?

A multitude of others have found it profitable to use this Apparatus.

Why should you not use it also?

You will be satisfied with it.

We will prove this statement if you will give us opportunity.

E. M. FREESE & CO.,
Galion, Ohio.

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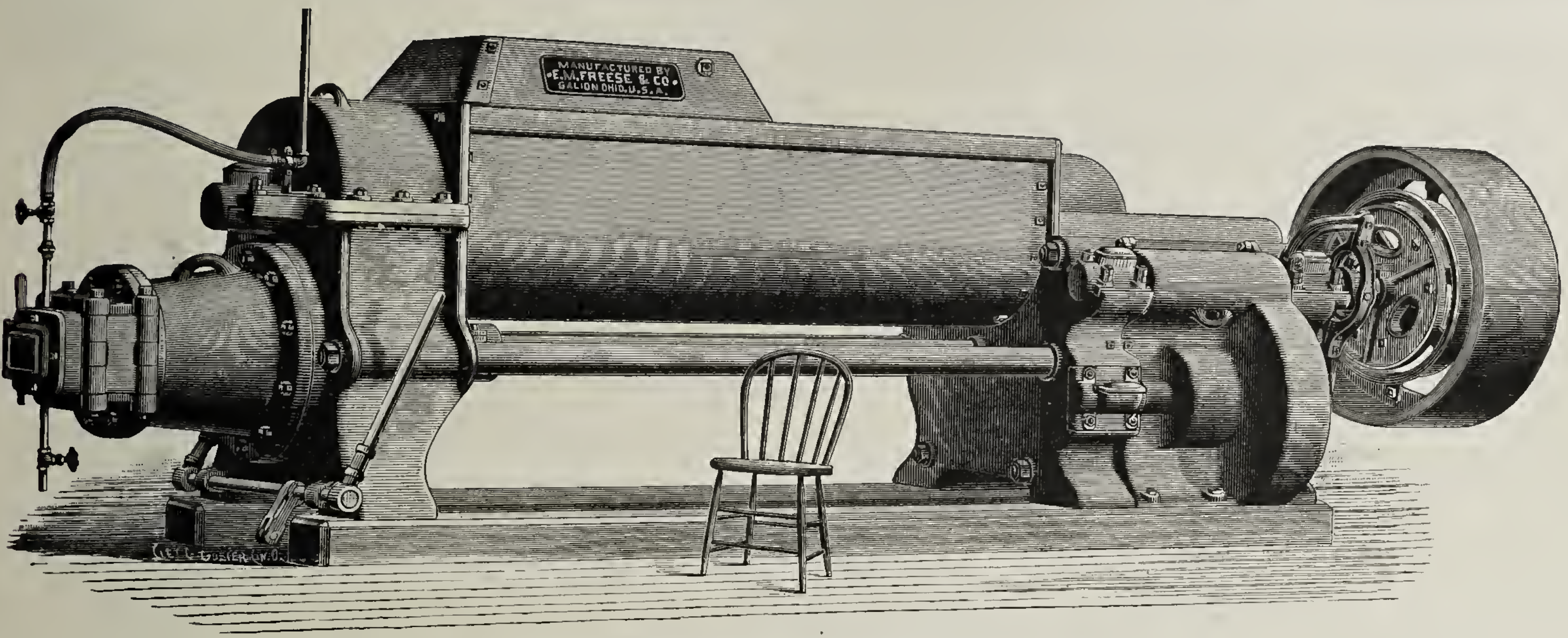
Union Brick Machines

With Pug Mill Combined.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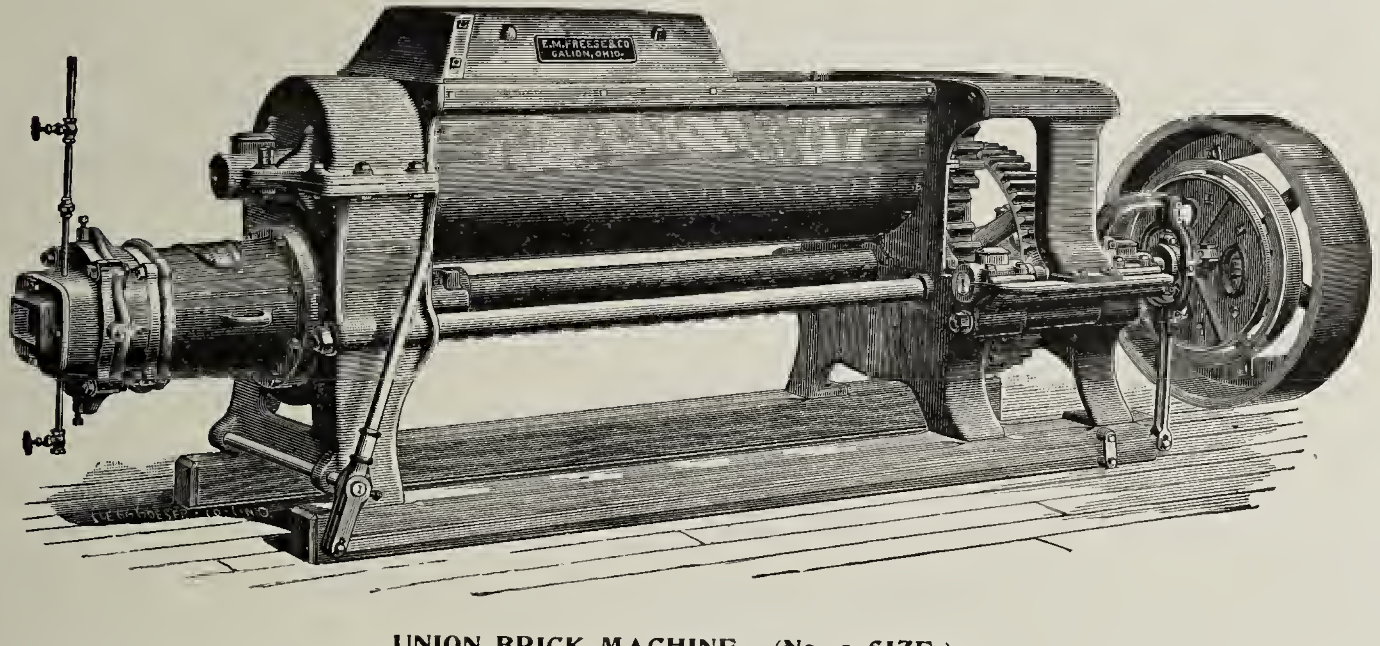
UNION BRICK MACHINE. (SPECIAL SIZE.)



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We build these Machines in five (5) sizes.

Their reputation for convenience, enconomy and satisfactory service generally is established by their use in scores of the best Brick Plants.

E. M. FREESE & CO.,
Galion, Ohio.

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SOME OF THE ARTICLES WE MAKE

Horizontal & Vertical Brick Machines

Clay Granulators,
Clay Elevators,
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Tempered Steel Brick Strikes,
Kiln Castings,
And other castings.

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Friction Winding Machines,
Friction Clutches,
Friction Clutch Pulleys,
Friction Cut-off Couplings.

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Power Freight Elevators,
Hoisting Machines,
And Some Other Things.

Have printed descriptive sheets describing many of these articles, which we will be happy to furnish, with prices on application.

It's not our aim to build the cheapest but we do try to build the best. Better Investigate Them.

The Eastern Machinery Co.,

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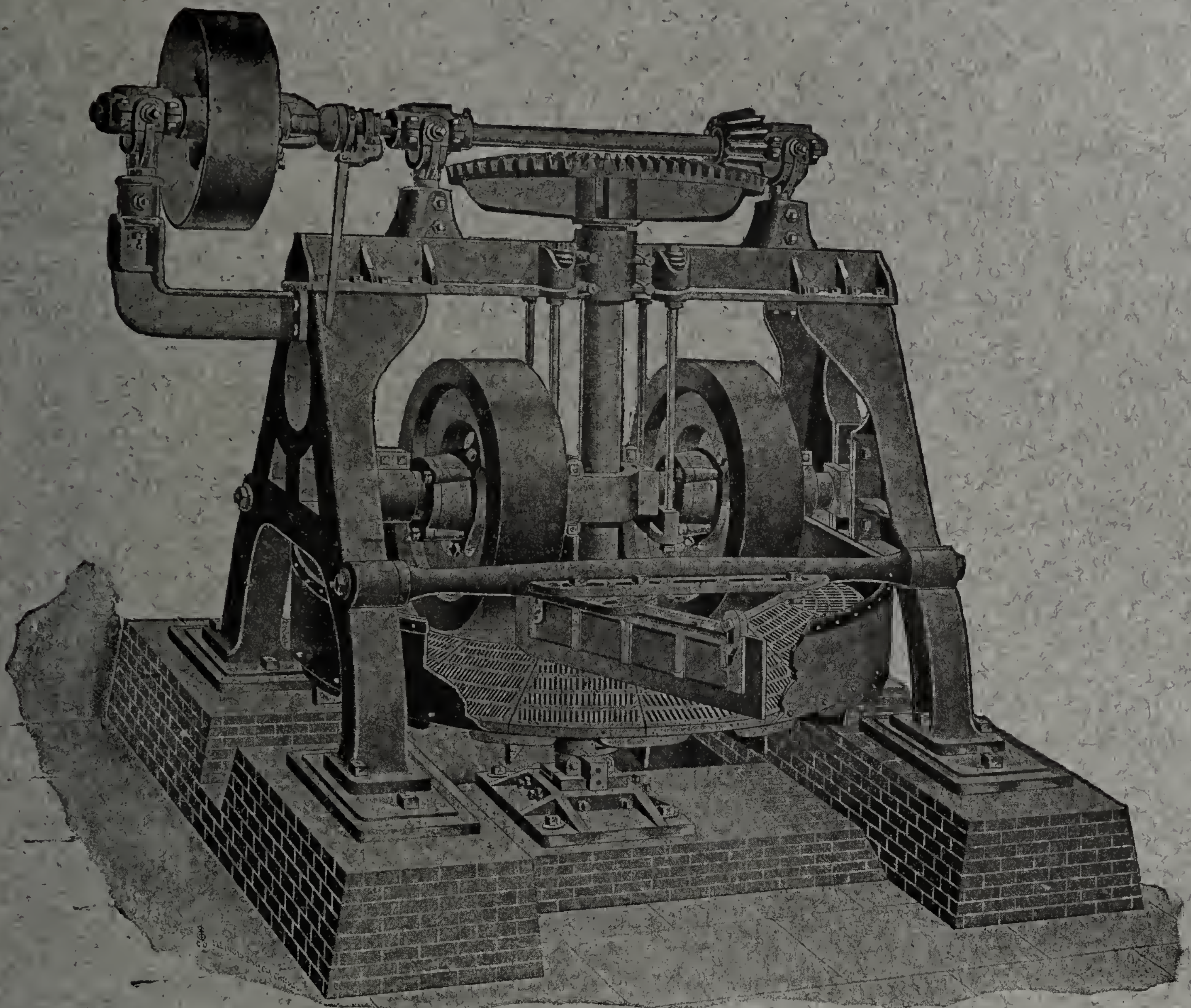

The FROST DRY PAN.

The ORIGINAL and BEST Dry Pan in the market. More of these Dry Pans in use to-day than all others combined. All sizes: both Wood and Iron Frames. Used by every Prominent Brick Manufacturer. ☞ Less repairs are required for the Frost Dry Pan than any other make. This is a very important fact. High Grade Automatic and Throttling Steam Engines, Horizontal Tubular Boilers and Plain and Submerged Tube Vertical Boilers. ☞ Send for Illustrated Catalogue.

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135 Adams St., CHICAGO, Ill.

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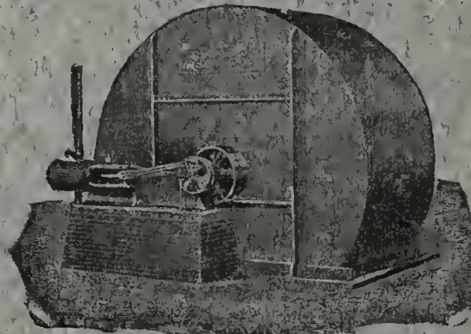
FIRST LESSONS.

As the first step in business you should know the A B C of brick drying. Every manufacturer should know that our "A B C" Waste Heat Dryers show a greater saving in fuel and higher percentage of perfect product than any others.



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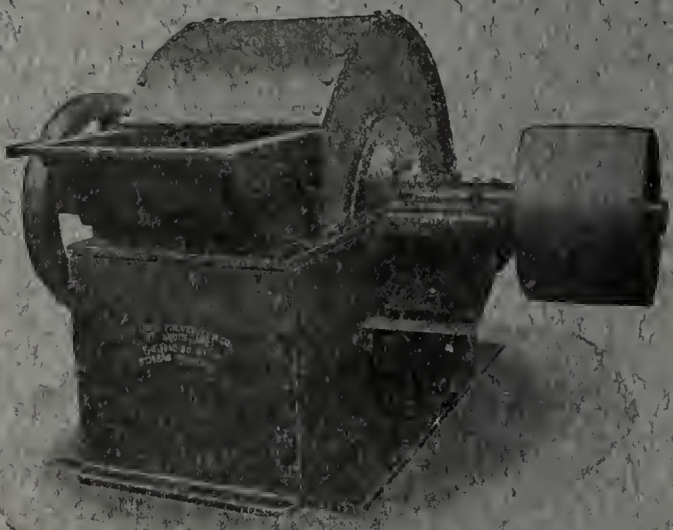
Pulverizers, Breakers and Disintegrators



St. Louis Pulverizer Company,
416 N. Main St.,
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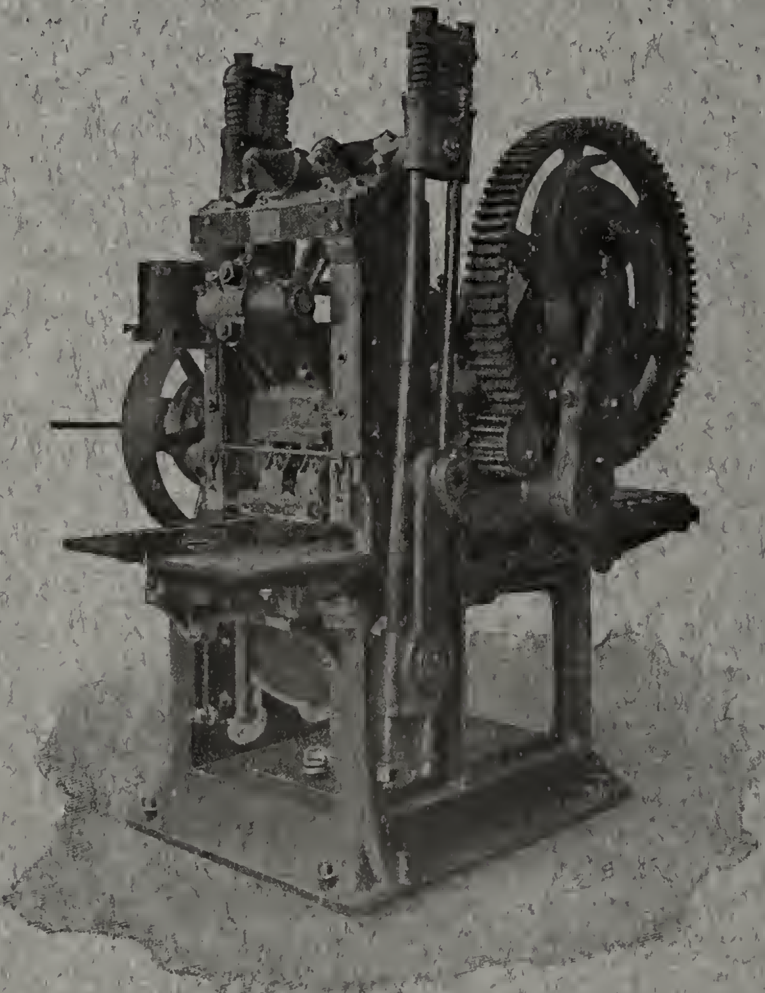

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WE ARE PREPARED to make steel dryer cars of any design.

We would be pleased to have you examine our cars, for experience convinces us that you will find them to be just what you want.

The large number of duplicate orders we are receiving must mean something.

Also hand and steam represses,
Steam dry presses (two mould),
Sword Brick Machines.

The Ohio Ceramic
Engineering Co.,
CLEVELAND,
OHIO.

Table of Contents, Page 260.

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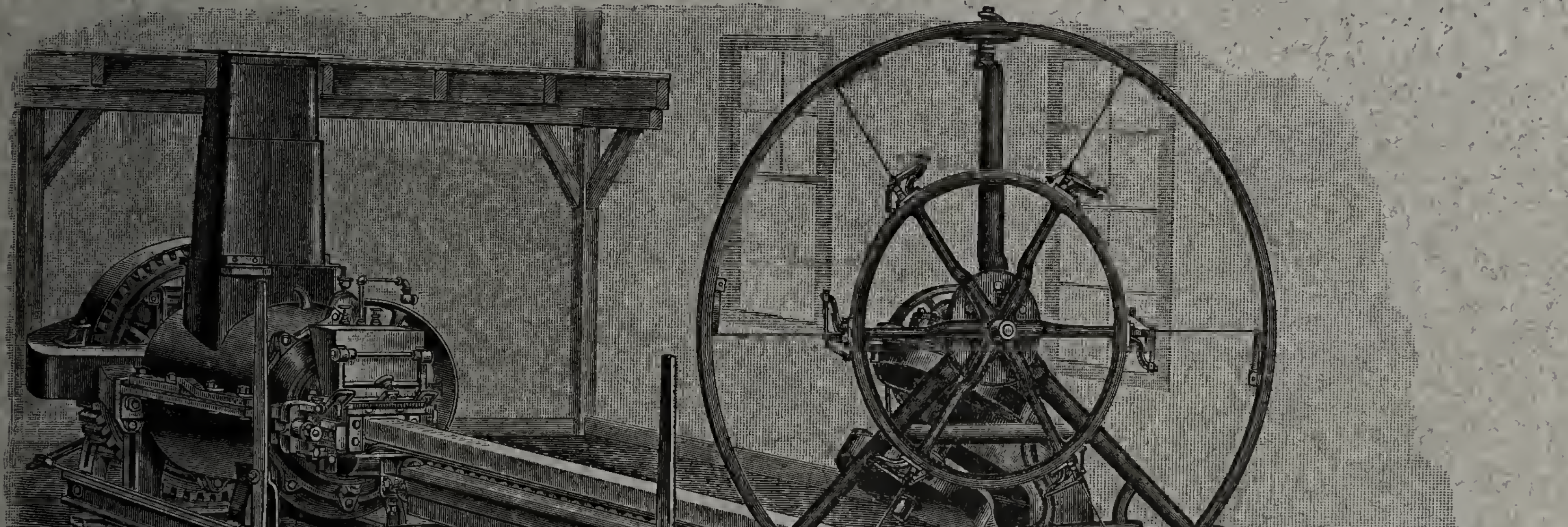

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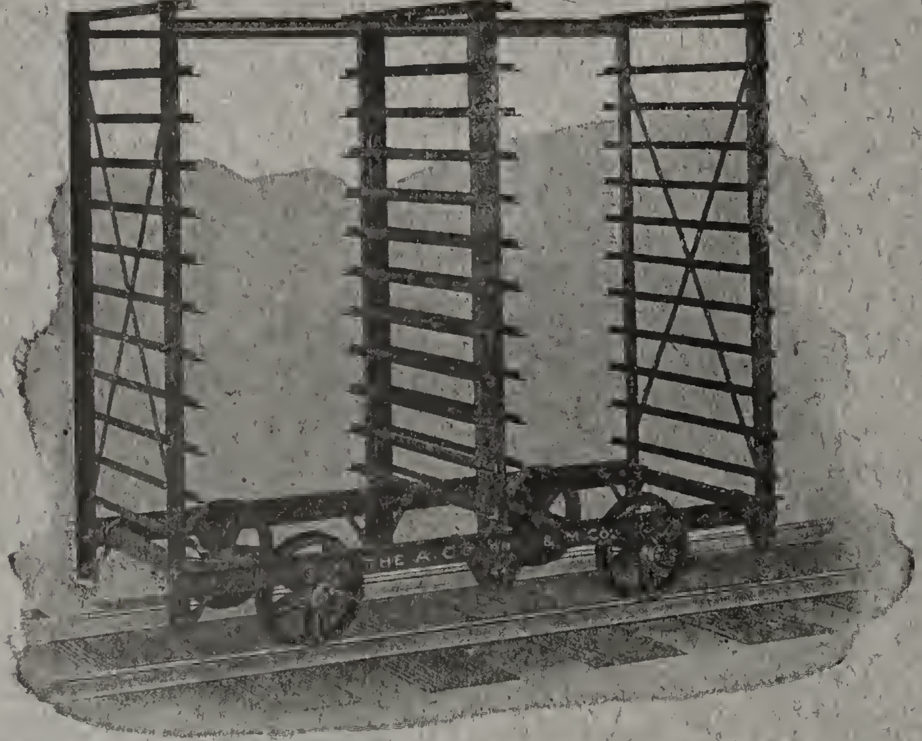

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We do not confine ourselves to standard styles and sizes, but build anything in the way of cars to suit the requirements of our Clients. Our long experience in the manufacture of cars, enables us to design and build the strongest, lightest and easiest running car on the market.

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INDEX TO ADVERTISERS.

Brick Machinery—Dry Press Process.

Name. Page.
Anderson Foundry and Mach. Works 210
Chicago Brick Machinery Co.. 277
Chisholm, Boyd & White Co. 204, 205, 206, 207
Fernholtz Brick Machinery Co. The 209
Ill. Supply & Construction Co. 211
Ross-Keller Brick Machine Co 208

Brick and Tile Machinery.

American Clay-Working Mach Co., The 286, 294
Anderson Foundry and Mach. Works 210, 284
Brewer. H. & Co 292
Chambers Brothers Co 201
Chicago Brick Machinery Co... 277
Eastern Machinery Co, The.... 298
Fate & Co., The J. D 295
Freese, E. M. & Co 265, 296, 297
Henry Martin Brick Mach. Mfg Co., The 269, 291
Hensley, I. W 203
Horton Mfg. Co., The 290
Ill. Supply & Construction Co. 211
Kells Foundry and Machine Co 273
Leader Mfg. Co, The 285
Madden & Co 271
Ohio Ceramic Engineering Co., The 300
Potts & Co., C. & A. 288, 289
Raymond Co., The C. W 261
Stedman Foundry and Machine Works 213
Steele & Sons, J. C 276
Wallace Mfg. Co, The 293
Wellington Machine Co, The... 263
Wiles Co., A. M. & W. H 277

Brick Kilns and Dryers.

American Blower Co, The...... 300
Barron Dryer Co 278
Bushong, M. M 280
Crown Dryer Co., The 282
Economy Dryer and Oil Burning Co 281
Eudaly, W. A 279
Haigh, H 274
Illinois Supply and Construction Co, The 211
Justice, I. M 279
Morrison & Co., R. B 274
New York Blower Co., The 283
National Dry Kiln Co, The..... 282
Phillips, S. G 272
Pike, E. M 274
Platt Triple Draft Kiln Co. 280
Reppell, L. H 279
Sharer, Geo. W 283
Standard Dry Kiln Co, The..... 216

Brick Yard Supplies.

Atlas Car & Mfg. Co. 202
Arnold, D. J. C 213
Bechtel, B. E 275
Cleveland Car Co 281
Caldwell & Son Co., H. W 271
Carnell, Geo 276
Central Iron Works 269
Cox, Geo. S 274
Dunlap Mfg. Co 270
Fernholtz Brick Machinery Co., The 209
Frost Manufacturing Co 299
Gandy Belting Co., The 269
Gray, S. B 274
Harrington & King Perforating Co, The 203
Henry Martin Brick Machine Mfg. Co., The 291
Horton Mfg. Co, The 290
Jeffrey Manufacturing Co, The. 272
Kendall & Flick 271
Marion Steam Shovel Co 284
Main Belting Co 270
Henry Martin Brick Machine Mfg. Co., The 269
Mershon, Schuette, Parker & Co 269
National Musical String Co.... 277
Phillips & McLaren 273
Rockwood Mfg. Co, The 273
Smidth & Co., F. L 276
Scotts Patent Brick Car Co..... 287
St. Louis Pulverizer Co 300
Thew Automatic Shovel Co, The 285
Williams & Co., M. F 275
Williams Patent Crusher and Pulverizer Co 212

Miscellaneous.

American Ceramic Society 214
American Road Machine Co... 271
Avery Stamping Co 266
Baird & Co., Henry Carey 270
Big Four Route 273
Bloomfield Clay Co 214
Caldwell Co., W. E 272
Chesapeake & Ohio R. R 274
Clinton Paving and Building Brick Co., The 215
Crown Fire Clay Co., The 267
Dean Bros. Steam Pump Works 270
Evens & Howard 267
Evert & Co., H. C 272
Gabriel & Schall 271
Hook, F. E 278
Indianapolis Engraving and Electro Co 270, 272
Indiana, Decatur & Western ... 273
Indiana Paving Brick Co 214
Johnsonburg Vitrified Brick Co 214
Kaufman Burial Vault Co..... 278
Lake Erie & Western 271
McAvoy Vitrified Brick Co 215
J. L. Mead Cycle Co 272
Miller Oil and Supply Co 272
New York Brick and Paving Co 214
Ohio State University 270
Pennsylvania Line 274
Purington Paving Brick Co, The 215
Perrine & Son, H. C 271
Reese-Hammond Fire Brick Co 267
Richardson, W. D 269
Roessler-Hasslacher Chemical Company, The 275
Sangamo Brick Co 215
Savage Fire Brick Co 267
Terre Haute Brick and Pipe Co. 215
Vandalia Line 274
Wabash Clay Co., The 215
Ads., Small Wanted, For Sale, etc.

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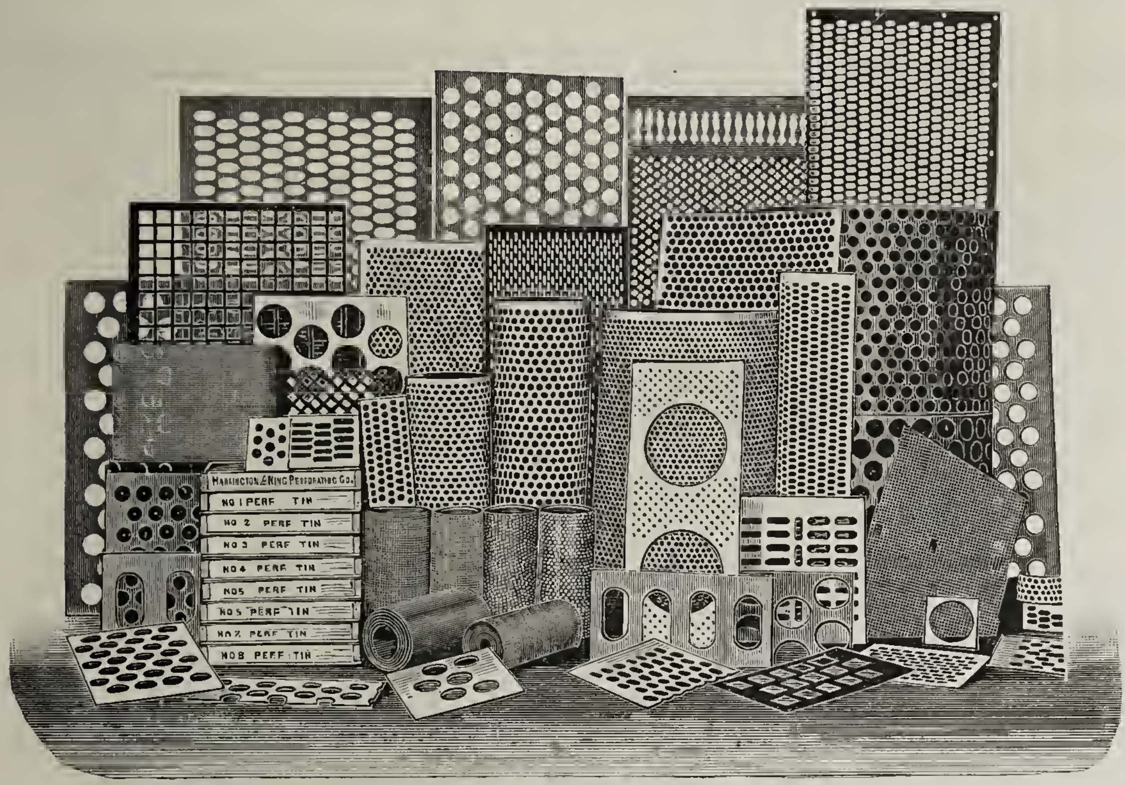
Samples or blue prints with prices furnished on request.



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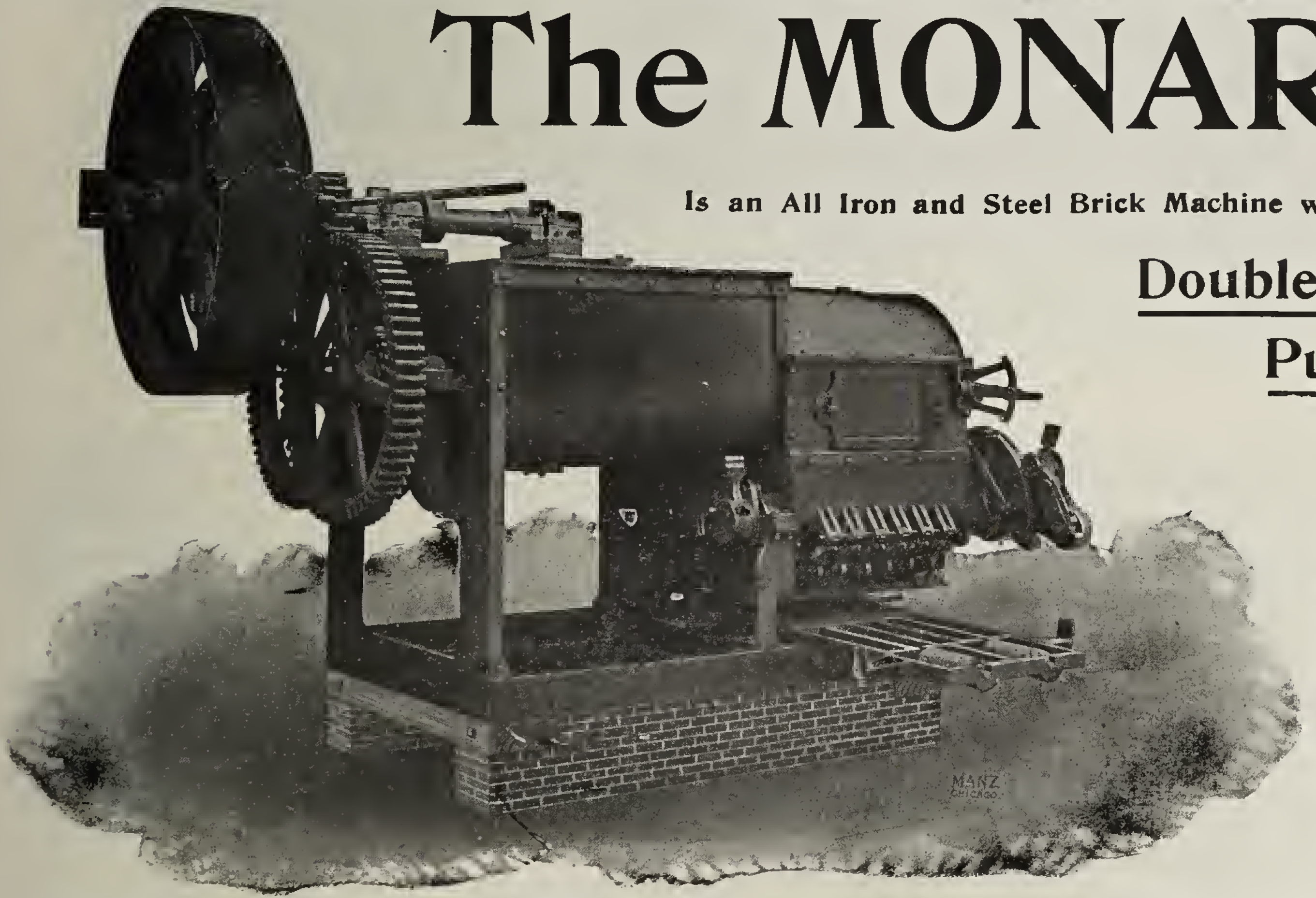

Is an All Iron and Steel Brick Machine with

Double — Pug Mill.

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SIMPLE IN CONSTRUCTION, DURABLE AND . . . POWERFUL.

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Every working part stands open to view both front and rear. It is a World Beater when it comes to quantity and quality of brick. We carry in stock a full line of first-class Brickyard supplies at a very reasonable price. Also the new **IRON QUAKER.** Engines and boilers. Send for new 1901 Catalogue.

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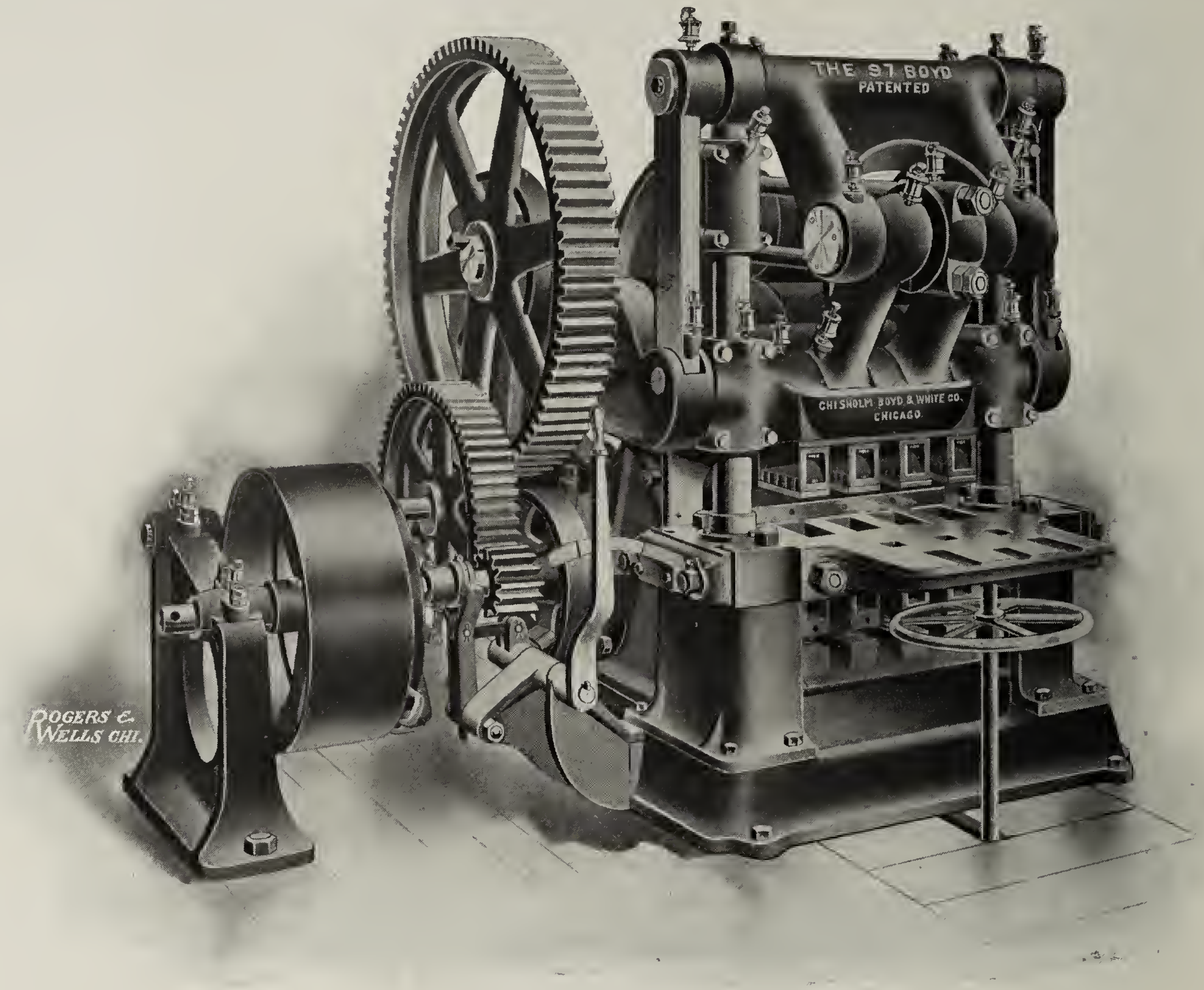
The Improved Boyd Brick Press.

The '97 Model.

IT'S NAME A GUARANTEE.



The '97 Boyd Brick Press has Enormous Strength and Great Durability: It is Compact; The Adjustments are Convenient; It Operates Quietly and Smoothly; The Workmanship and Material are of the best; The Design Ingenious, and shows the most Perfect Application of Scientific and Mechanical Principles to the Art of Brick-making.

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Fifty Presses of this Pattern Now in Use.

Can not be broken in pressing brick. Fully Guaranteed.

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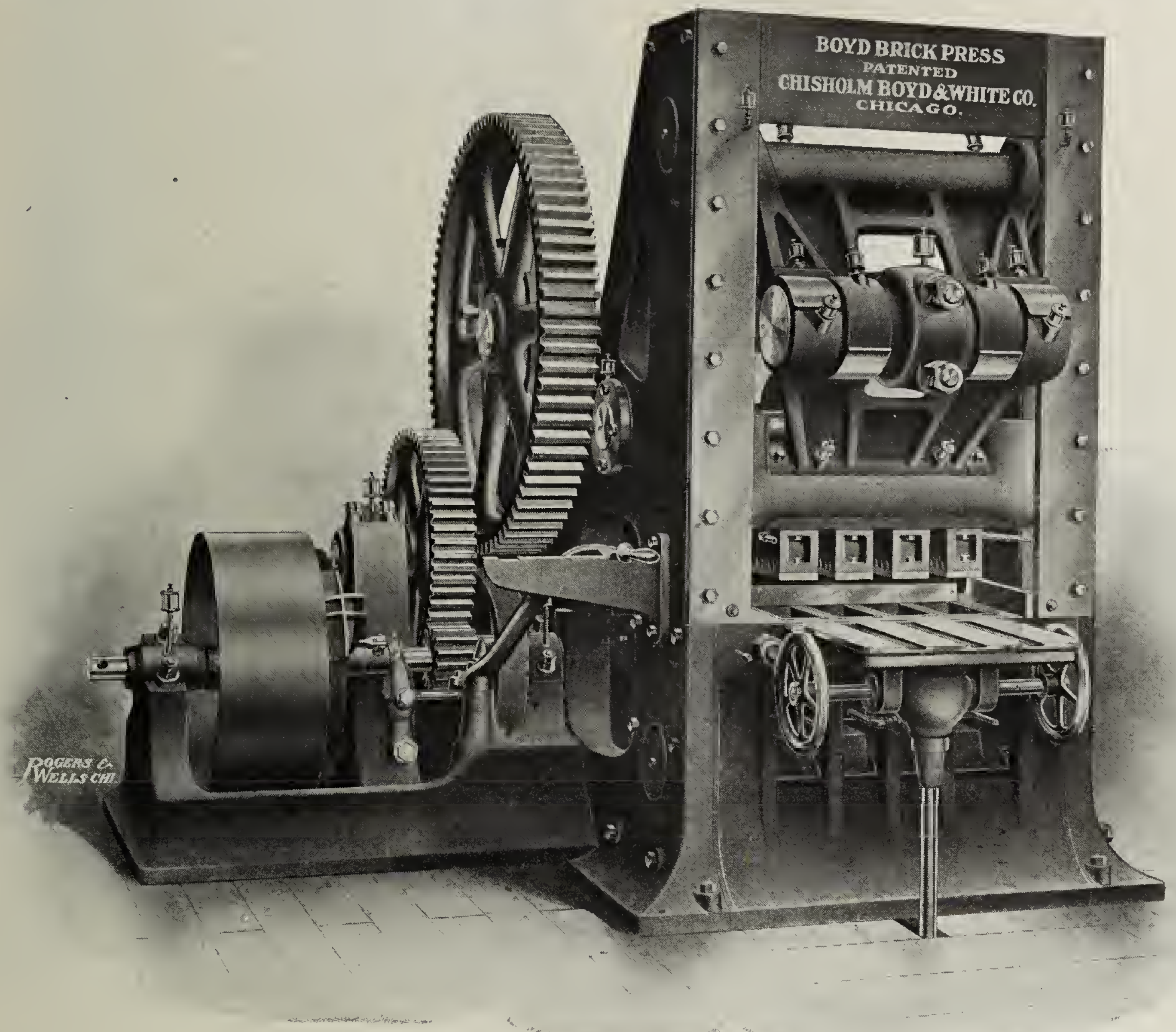
Cable Address; CHISHOLM, CHICAGO.
A. B. C. and Liebers Code.

The BOYD BRICK PRESS.



The Boyd Brick Press will make Better Brick from Clay or Shale than can be made from the same material by any other press.

Especially adapted for Working Shales; and is the only Successful Machine for Making Fire Brick.

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Cable Address; CHISHOLM, CHICAGO.
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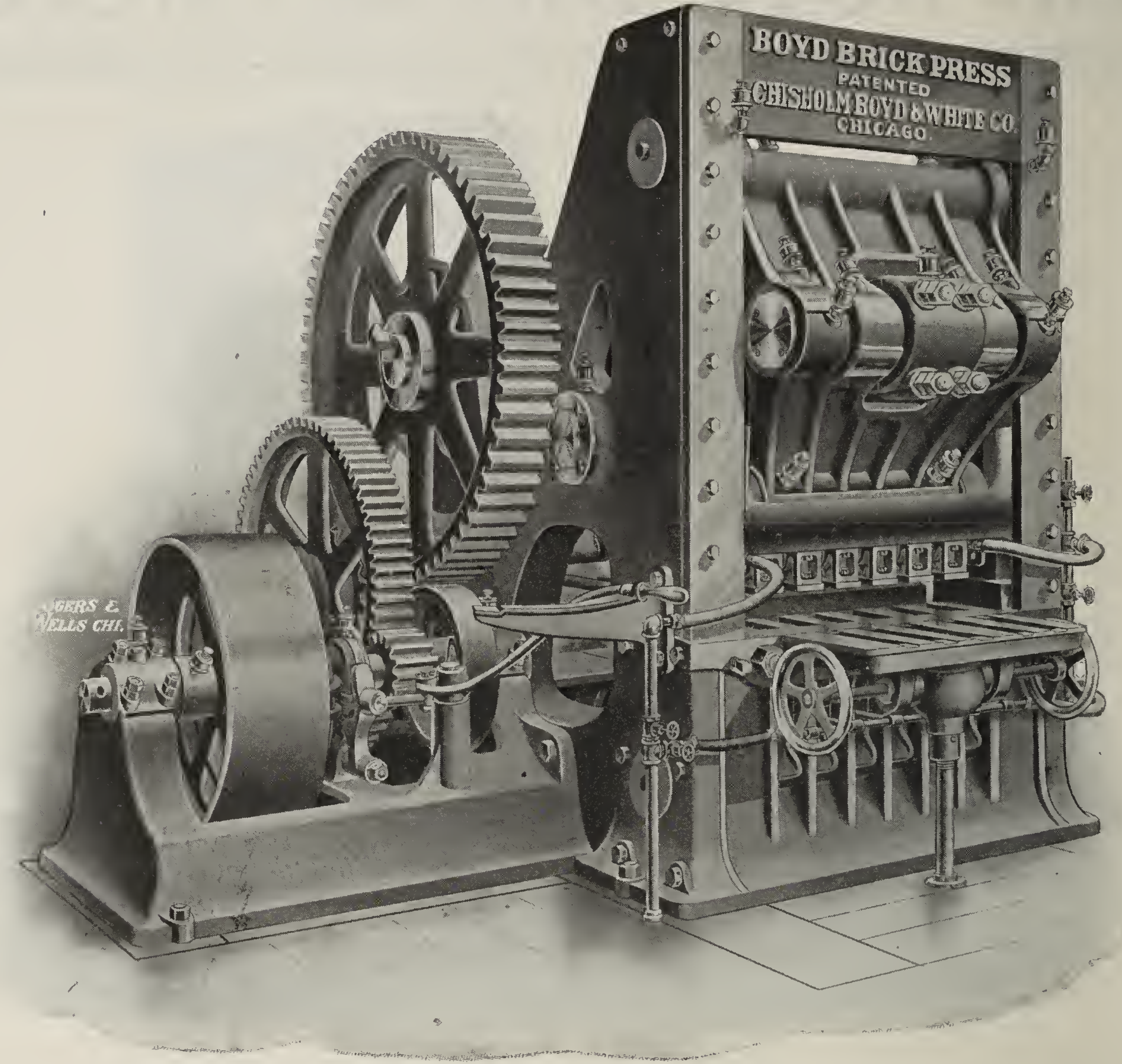
America's Greatest Brick Press.



Another Record for the Boyd Press! Six of our Six-Mold Presses in use **on one yard** since 1892. Average cost of repairs for each machine $1.00 per year.

The Boyd Press exerts greater pressure than any other machine made. It is the only Press in which the lower plungers are independent of the lower crosshead. This feature positively ensures equal pressure and finish on both sides of the brick, and no granulated or soft centers.

The mold liners are made of the hardest and toughest known metal, and are guaranteed for two years. The movement of the Boyd Press is noiseless and without jar or shock; no rubber or air cushions, hooks, latches or other uncertain and unmechanical devices are employed. Write for General Catalogue No. 10.

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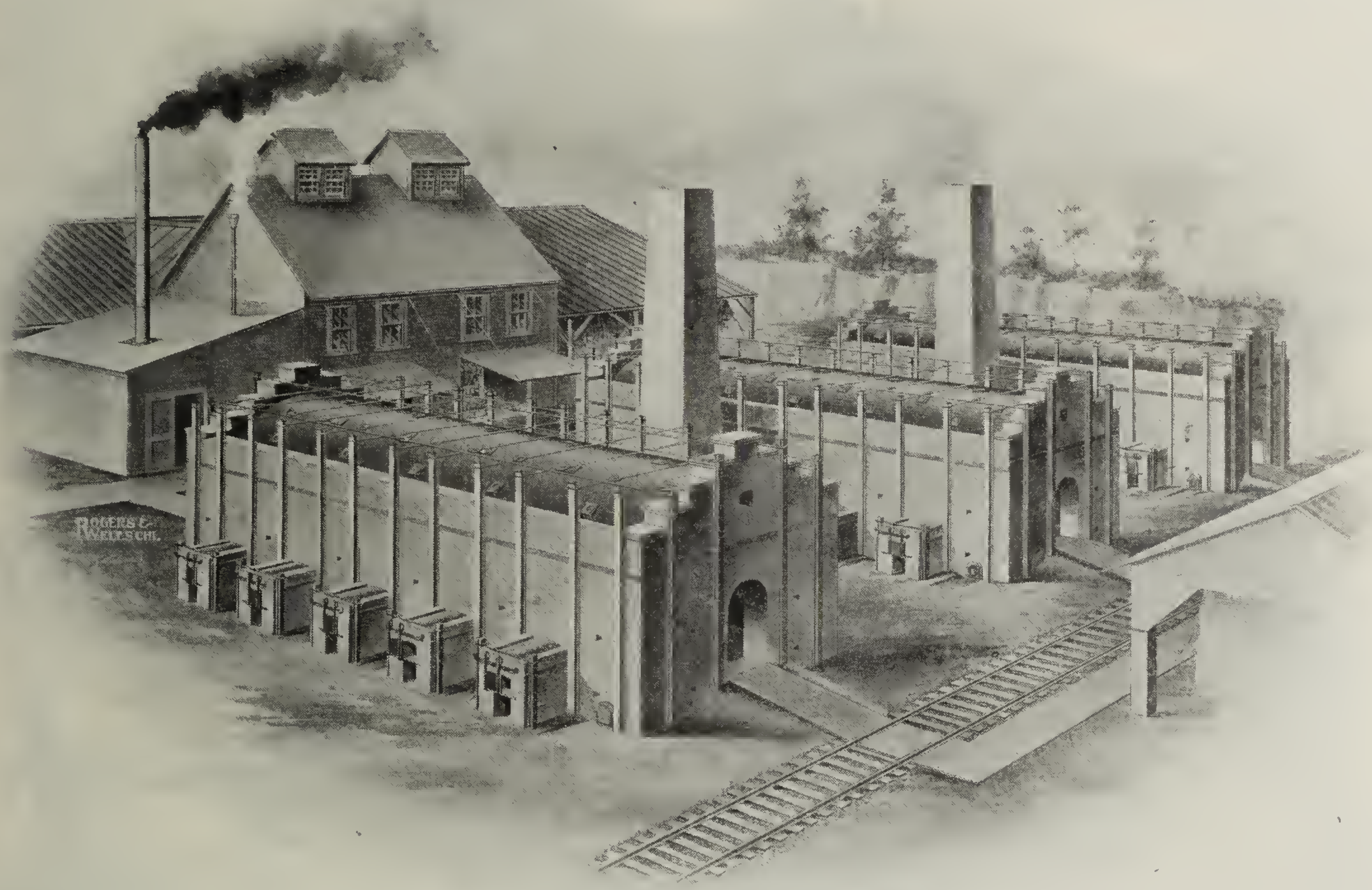
Mention The Clay-Worker.

Chisholm, Boyd & White Company,

ENGINEERS AND CONTRACTORS FOR BRICK PLANTS.

MANUFACTURERS OF

The Boyd Brick Press.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A MODERN BRICK PLANT—As Equipped by Us.

A Sure Thing—We are prepared to construct and equip a Brick Plant of any desired capacity, furnishing the brickmaking machinery and power plant, erect the necessary buildings and kilns, and turn the plant over to the purchaser in proper working order, under guarantee of satisfactory results.

Brick Plants designed and equipped by us have the highest reputation for efficiency. They are modern, up-to-date, compact, convenient in arrangement, and are not encumbered with unnecessary or useless machinery or appliances.

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The LATEST IMPROVED

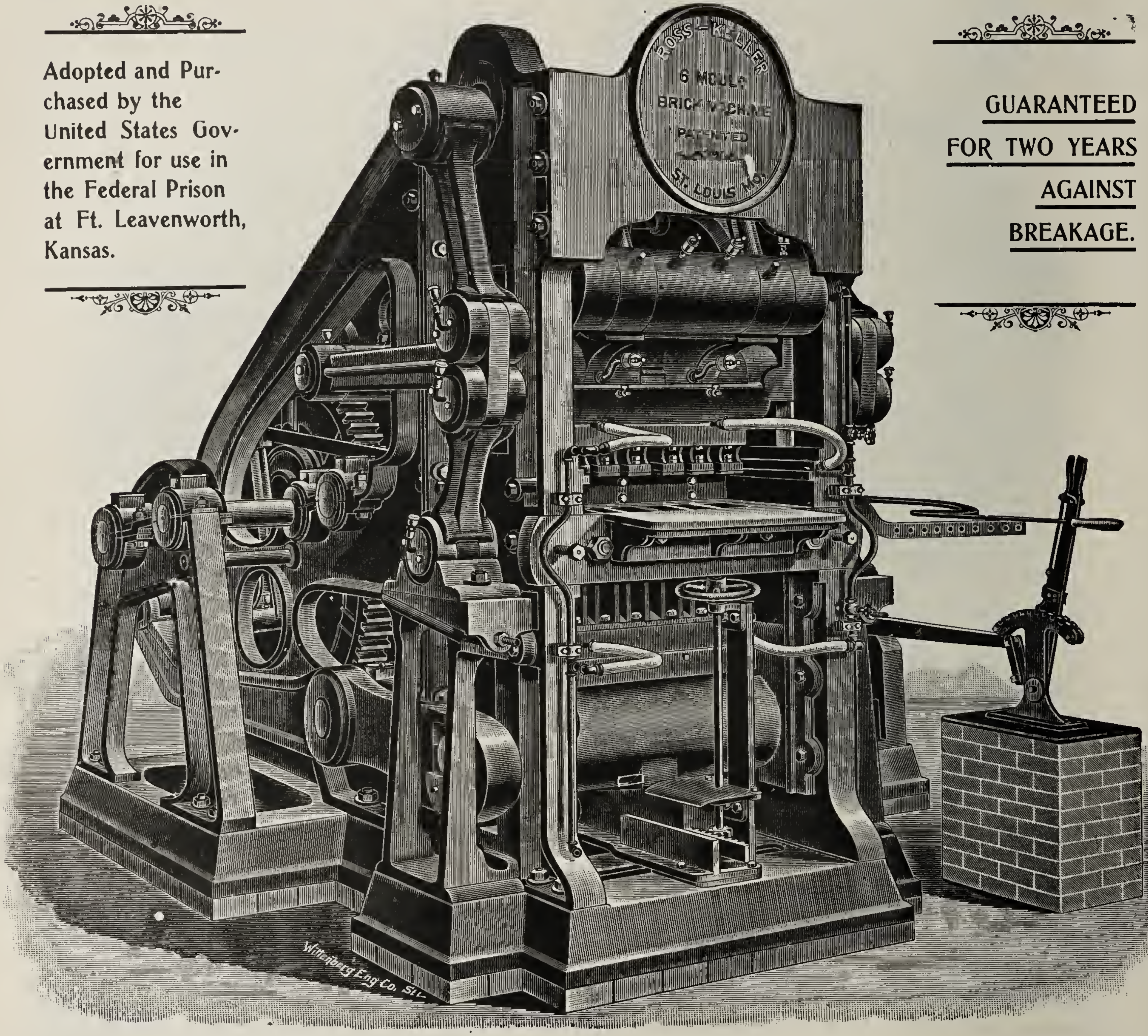
Ross-Keller TRIPLE PRESSURE Brick Machine

Manufactured in four and six-mould sizes. Weight of four-mould machine 58,000 pounds; capacity 24,000 brick per day. Weight of six-mould machine 75,000 pounds, capacity 35,000 to 40,000 brick per day.

BRICK SET IN KILN DIRECT FROM MACHINE.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

GUARANTEED FOR TWO YEARS AGAINST BREAKAGE.



THIS machine has an unbroken record of success. It is used on a number of the best equipped brick plants in the United States. It has never failed to give entire satisfaction and we are perfectly safe in guaranteeing that it will work any clay of which pressed brick can be made, and make them better and cheaper than any other press. It makes better brick because the pressure is greater and is applied in a way most effective. It makes brick cheaper because it is unbreakable and hence there are no repair bills or expensive delays and stopping of work which brickmakers know are more costly than the repair bills themselves. If you want to make the best brick at the least expense the season through don't fail to investigate this machine. with it you can "put money in your purse." Let us tell you more about it and give the address of those now using it. Remember "the proof of the pudding is in the eating of it."

For Prices and Full Particulars, address **ROSS-KELLER BRICK MACHINE CO.,** Fullerton Bldg., ST. LOUIS, MO., U. S. A.

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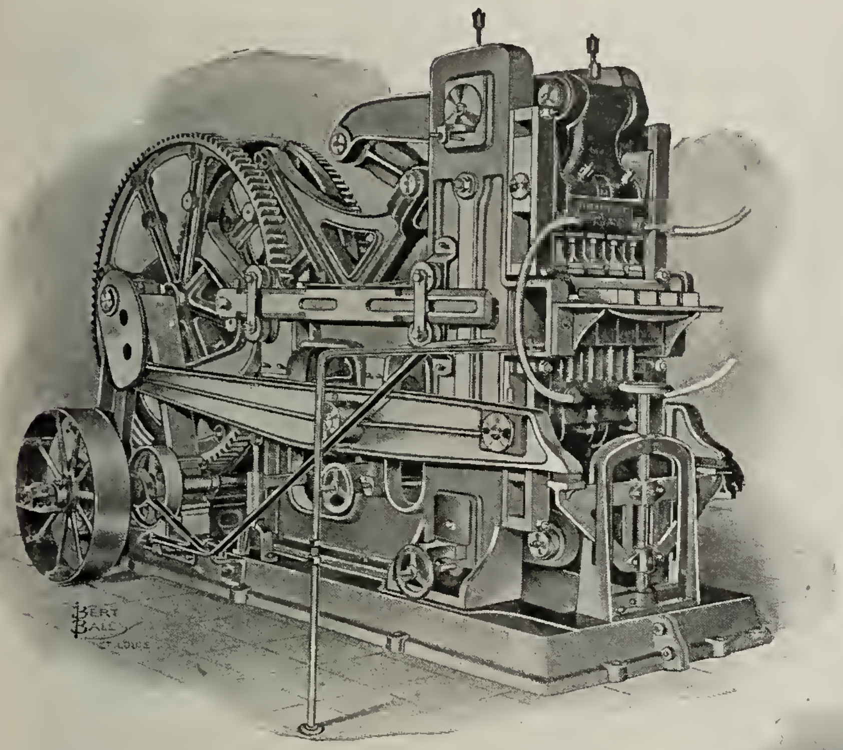

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FERNHOLTZ MOLD BOX

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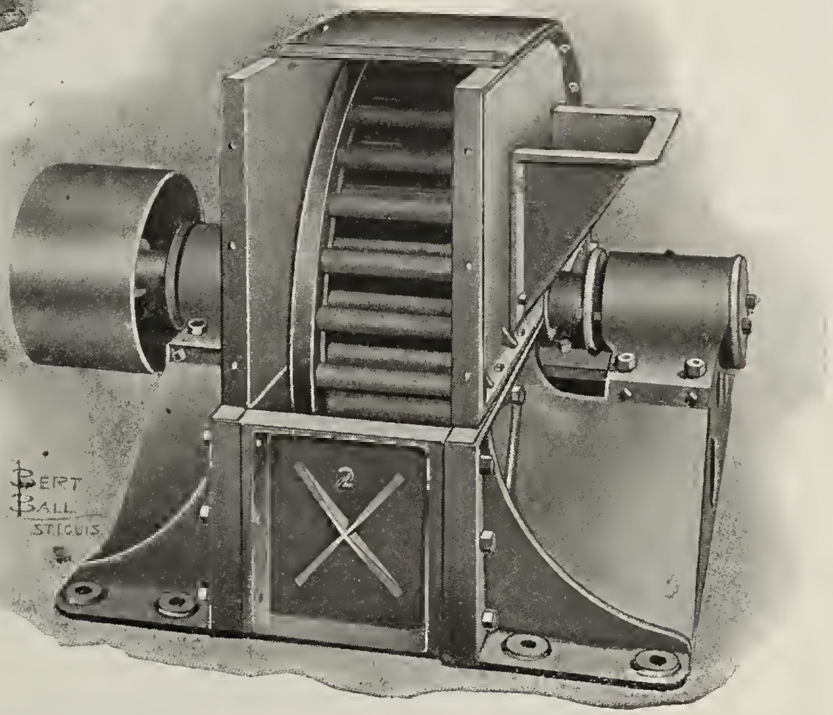
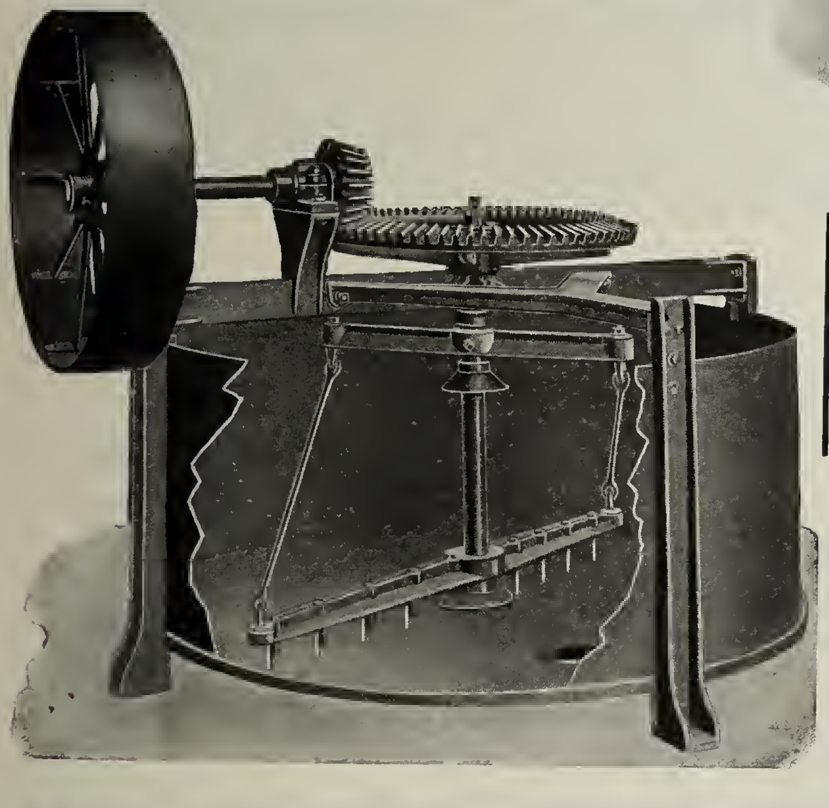
No more rivetting Pins in Cage.
Any one can put them in. Most economical Clay Grinder ever made.





The Fernholtz Iron Frame Clay Mixer.

"The Mixer that Mixes."

WE HAVE a first class repair department and can repair all kinds of Brick Machines and Machinery. We make a specialty of Molds for Fancy Shape brick at reasonable prices.

Dealers in BRICKYARD SUPPLIES.

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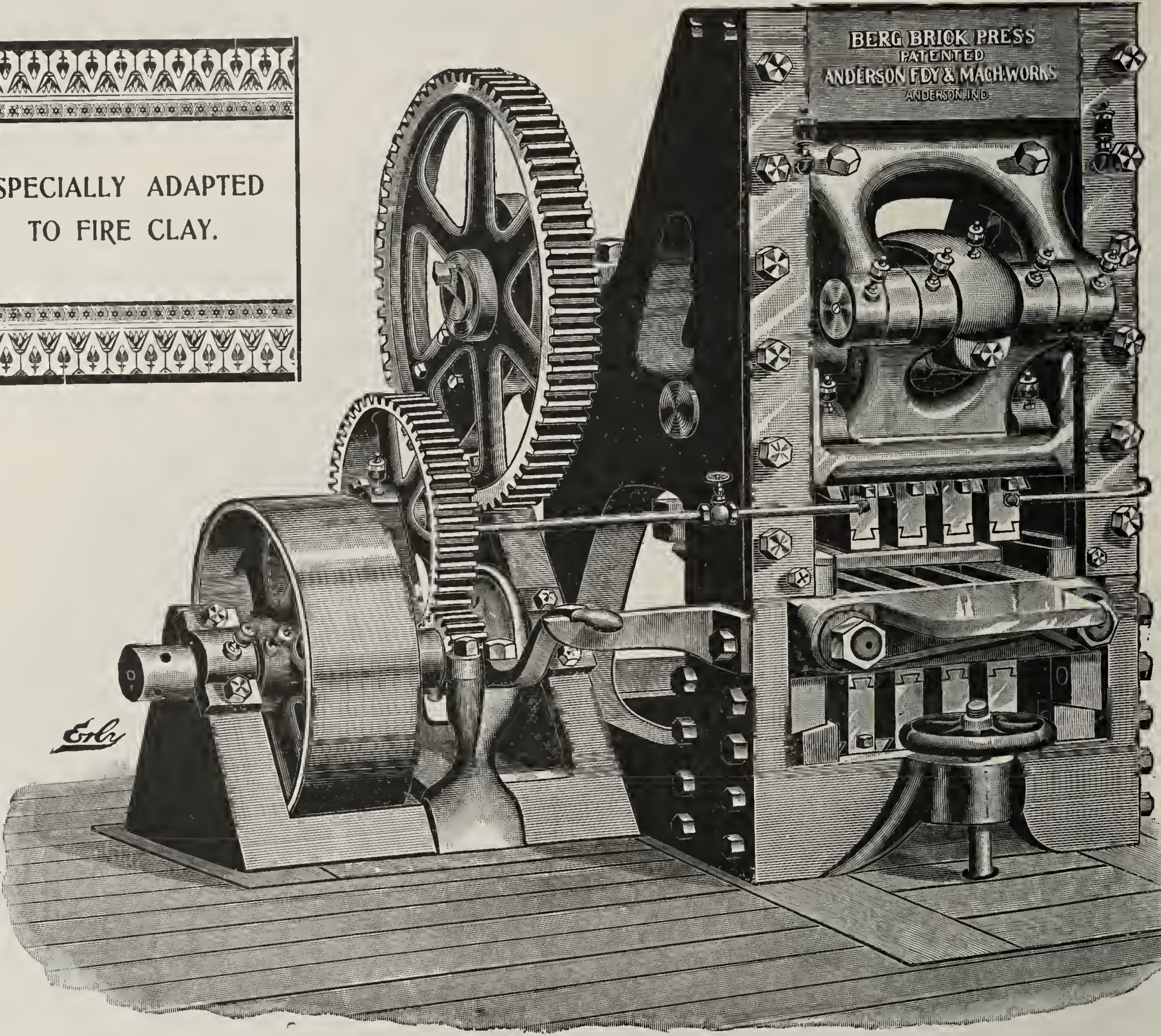
TO FIRE CLAY.



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Three distinct pressures.
Greater Pressure than any other machine.
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Will put more clay into given space than any other machine
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No Plunger Stems, eye rods or Springs.

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Makes all size Brick and Tile from 2 to 24-inch.

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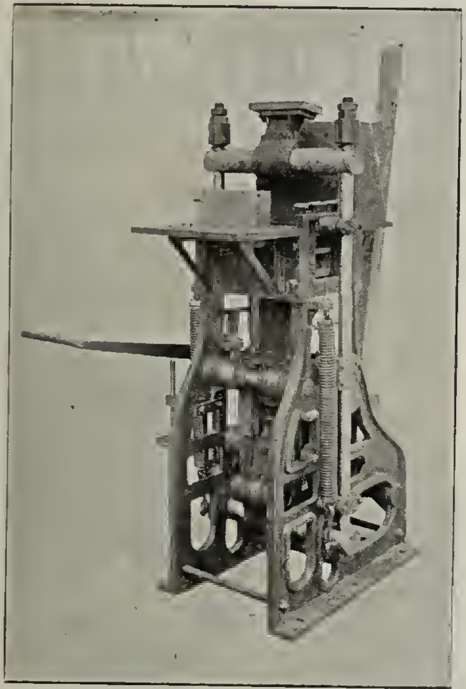


The New Grath Hand-Power Brick Press.

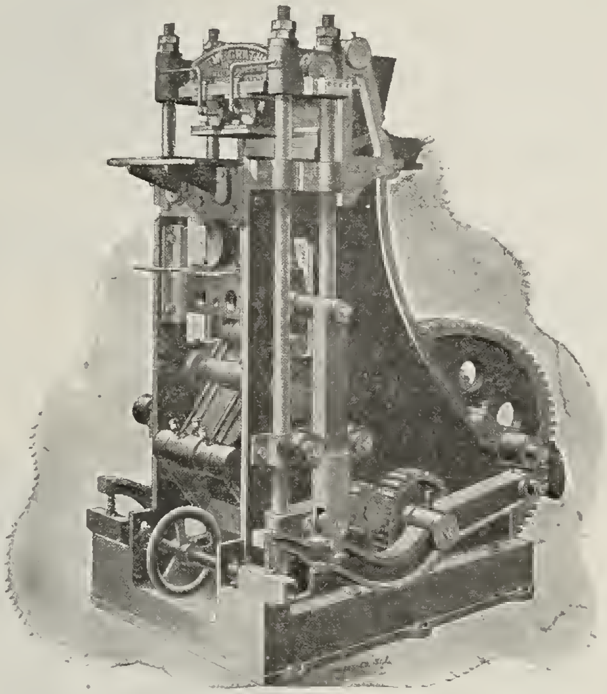
FOR MAKING PLAIN AND ORNAMENTAL PRESS
BRICK FROM SEMI-DRY CLAY.

The accompanying cut shows the only successful **HAND POWER PRESS** for pressing brick direct from the clay. The brick made on same are equal to those made on any steam power or hydraulic press. They have a polished face and perfect edges and corners. As will be seen, the press is equipped with charger and feed box. Two men can easily make 2,000 best quality press brick per day. By simply changing the liners and die plates, brick of any size up to 12½ inches long, 8½ inches wide and from 1 to 4¼ inches in depth can be pressed. In making brick on edge the mould is 9 inches deep. No brickyard is complete without a press of this sort. It is also recognized as the only successful press for making plain press or front brick for small yards that are making brick by the plastic process.

The Coffeyville (Kansas) Vitrified Brick & Tile Co. were the first one to order one of these presses, and to show what they think of same, they have only recently placed an order for two more of them.

The Grath One and Two Mould Steam Power Press.

The accompanying cut shows the latest improvement in Brick Presses which are built in two sizes. The One Mould, which has a capacity of 5,000 best quality press brick per day; the Two Mould having a capacity of 10,000 best quality press brick per day. This press is so constructed that all shapes and sizes of ornamental brick on flat can be made on same by simply changing moulds and die plates, and is the cheapest as well as the simplest and most powerful Press of its kind in the market. The brick made are very dense with perfect edges and corners. The Press is guaranteed against breakage for one year. All parts subject to strain are of steel.



The GRATH UP DRAFT KILN

with Grath Gas and Coking Furnaces attached for burning slack coal, or with Grath Improved Solid Bottom Grateless Furnaces for burning mine-run coal, will give better results than other Up Draft Kiln in the market.

The Grath Improved Down Draft Kiln

with Grath Gas and Coking Furnaces attached for burning slack coal, or with Grath Improved Solid Bottom Grateless Furnaces for burning mine-run coal is the best and simplest Down Draft Kiln in the market for burning common, pressed, paving, fire and enamel brick, also and drain tile, sewer pipe and conduits.

The Grath Gas and Coking Furnaces

can be attached to all kinds of kilns, whether new or already up, and will produce better results with slack coal than can be obtained with lump coal in ordinary furnaces.

The Grath Improved Solid Bottom Furnaces

can be attached to Up or Down Draft Kilns, and will produce better results than all other furnaces, with less labor, and are cheaper to build than any other furnace. Send for catalogue and prices.

The Illinois Supply & Construction Co.,

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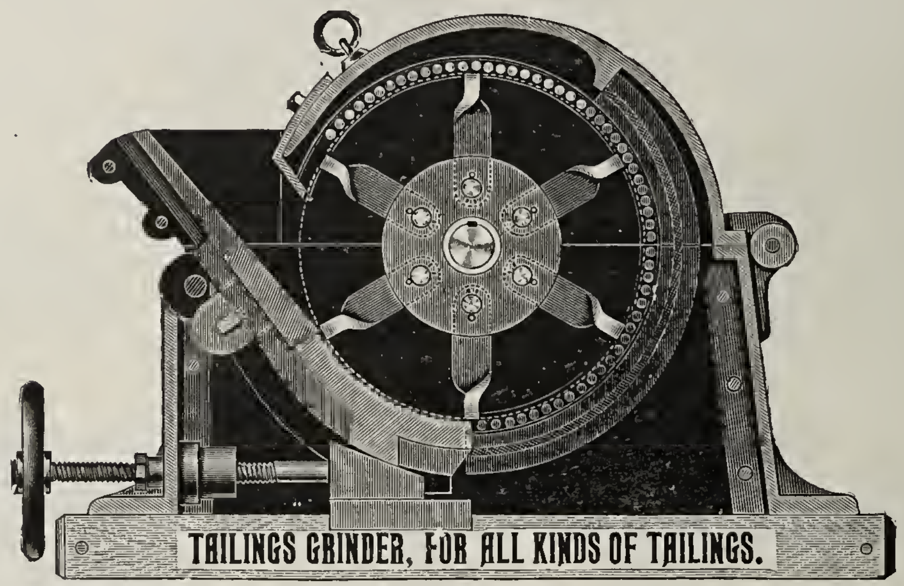
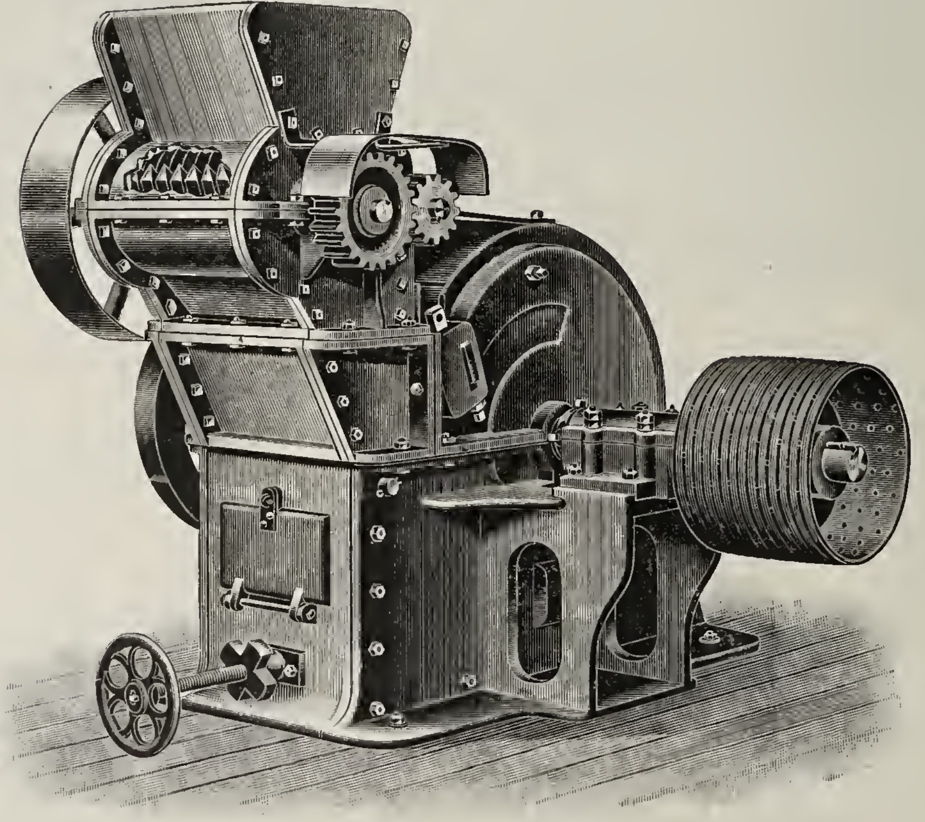
The Williams Patent Crusher and Pulverizer Co.

St. Louis, Mo., U. S. A.

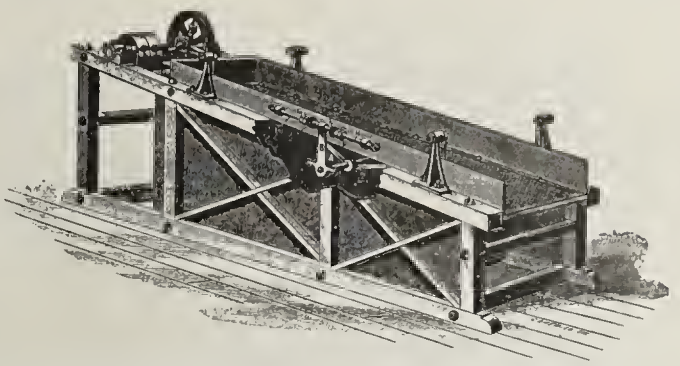

TAILINGS GRINDER, FOR ALL KINDS OF TAILINGS.

AFTER THE DRY PAN.



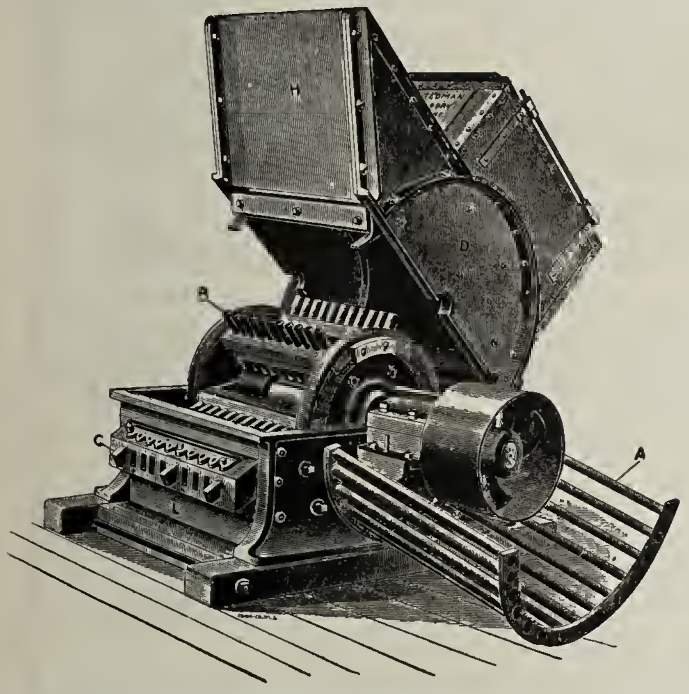
COMBINED CRUSHER AND FINISHER.

STEDMAN'S AGITATING INCLINE SHAKER SCREEN.



A GOOD Screen for properly screening to any degree of fineness a great variety of materials, and especially clay, is a long felt want. Our Incline Agitating Shaker Screen meets the requirements of the trade in the most successful manner possible.

In this screen we have one of large capacity for small floor space and one that will screen fine without clogging, as the agitating device we have underneath the screen wire prevents any clogging of the screen holes when screening clay or any other material in a dry or semi-dry condition. The screen will run with little power and without any shake or jar to the building, as the moving parts are well balanced by an adjustable counter-weight within the rim of the balance or fly wheel.



STEDMAN'S TORNADO CLAY PULVERIZER.

For Thoroughly Pulverizing Clay in a Dry, Semi-Dry or Damp Condition.

Its construction is such that it will not clog in pulverizing damp clay, and the journal bearings are constructed dust proof.

Write for catalogue, giving full description, references and testimonials.

Stedman Foundry and Machine Works,
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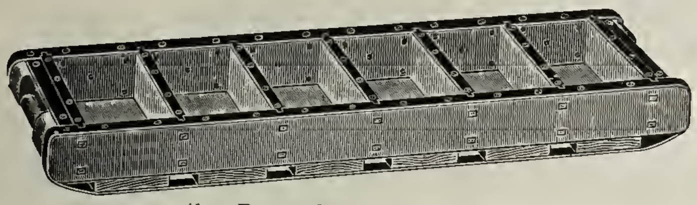
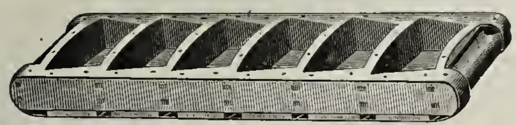
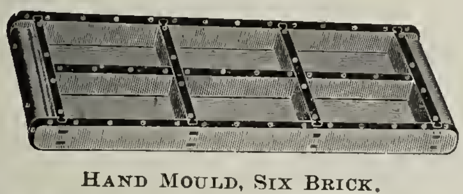


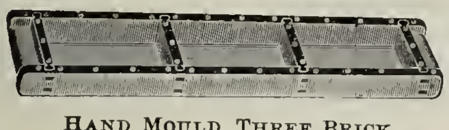
Six Brick Machine Mould.



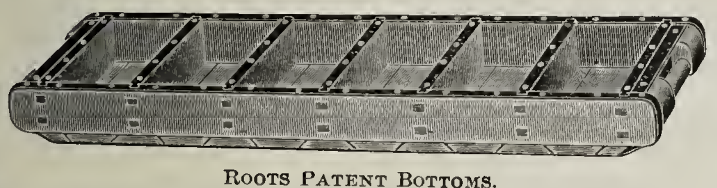
Circle Mould.



Hand Mould, Six Brick.



Hand Mould, Three Brick.



Roots Patent Bottoms.

DO IT NOW.

PLACE YOUR ORDER for 1902 brick moulds with Arnold. You can have them made and shipped any time between now and May 1st, 1902, and if you have the order placed *there* you know you will get the best there is made, and will get them promptly and when you want them. We make moulds to fit "any old machine" that uses moulds and guarantee satisfaction if you will give us the following particulars:

1st. Size of the brick.
2nd. Number of brick in a mould.
3rd. Thickness of partition or distance from center to center of bars in die.
4th. Length of mould over all allowing 1½ inches at each end for handles if possible.
5th. Style of handle by number, (see our catalog).

We also make hand moulds any number of brick and any size desired.

Machine moulds with Roots Patent Bottom. We have made quite a number of these moulds in 1901, they are designed for making a better quality of brick than ordinary molds, and cost but little more. In addition to moulds we make a full line of Trucks and Wheel Barrows, also make special Trucks and Wheel Barrows to order, and a full line of Furnace Fronts, Kiln Doors, Grate Bars, Ventilators, etc.

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Have been in the business for TWENTY-FOUR years, and are prepared to meet every reasonable demand. Unsurpassed shipping facilities. Prices and samples free.

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This wonderful book is really a modern encyclopædia of the clay industries. It is not a high-priced book of worthless recipes, but the careful investigation and explanation of all the great problems of the clay industries, made by the most expert and scientific clayworker who ever lived.

In this monumental German work of some 1,000 pages, we have the foundation of all modern knowledge on clays, brick, terra cotta, pottery bodies and glazes, kilns, kiln gases, etc.

The American Ceramic Society realizing that this is the best book ever published on the clay industries, undertook to translate it into English, and after two years' continuous work has practically completed the task. The Society aims for no financial gain; its object is to assist in perfecting all American clay products until they are the equal, if not superior, to any in the world. All who are anxious to perfect their product should avail themselves of this great help.

We feel assured that no up-to-date clayworker can afford to be without this work. It is issued in two volumes. Vol. I, of 550 pages, is now ready. Vol. II will be ready in the near future. The price is ($15.00) fifteen dollars for the two volumes; separate volumes $7.50 each, paid in advance. Send all orders to

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EVERY BRICK SOUND AS A DOLLAR

Consider the Cost

of an inefficient Drier. Not only do you lose the money you put into it, but it damages your brick and your reputation as a manufacturer from the time it is built until you get red-hot at last and have it torn down.

Consider now the terms on which we sell

THE STANDARD DRIER.

We say: Here is this Drier of ours that has been doing the most successful brick drying known to mankind for the past fifteen years.

Here is also a list of the many large brick manufacturers who are using our Driers to their extreme satisfaction. Any of them will be glad to tell you how good THE STANDARD DRIER is.

Here is our form of contract, which says plainly that we guarantee our Drier to dry so many thousand brick every day the Drier is operated; and if it wont do it, why then you don't have to keep it or pay for it.

There is absolutely no risk for you, and the past and present results of the Drier prove that there is mighty little risk for us.

The Standard is a Steam Drier, but different from other Steam Driers in many ways. Our Catalogue "R" will explain.

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THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXXVIII. INDIANAPOLIS, IND., SEPTEMBER, 1902. No. 3

WRITTEN FOR THE CLAY-WORKER.

NEW BRICK IN AN OLD TOWN.

Alexandria's Modern Brick Plant and Her Ancient Brick Structures.

IN PURSUIT of particular information concerning a brickmaking industry, your correspondent recently embarked, or, rather, "encarred," on the Washington, Alexandria & Mt. Vernon railway, and after a nine miles' dash (the cars go like the Old Scratch after a sinner) south from the Capital City got off in the ancient town of Alexandria, Va.

This is a brick city, but there is only one brickyard near it, that of the Alexandria Brick Company, though a few minutes' ride on the road mentioned takes one amidst a numerous collection of factories of this kind

Christ Church, Alexandria, Va., Built in 1767.

Under the pilotage of Mr. C. Harry Yohe, general manager of the Alexandria Brick Company, a most genial gentleman, and one who knows brick as he knows his own town, I visited the factory named. This is admirably situated, just outside of the city, on the Potomac river, and by the side of a high hill, so conveniently arranged in the latter particular that no power conveyors are required for carrying clay, for when this is dumped—from the top of the hill, immediately into the crusher—it goes down by gravity to the machines. The plant contains two of these, each of which delivers six brick at each action, making a combined output of 60,000 brick per day.

The power plant of this factory consists of one engine of 58-horse-power and a 70-horse-power boiler. The brick machines are for soft mud. In the fall an artificial dryer will be put in; at present a rack system is employed. This is very extensive, having room for half a million brick, which are arranged in tiers easily gotten at and excellently ventilated. The burning system consists of five kilns, with capacity of 300,000 brick.

The Alexandria Brick Company has thirty acres of fine clay land to draw upon, and the brick product is very satisfactory; in fact, this is of superior quality in color (fine red), texture and finish. The factory turns out about 3,000,000 brick per year, all of which are sold in Virginia, in Alexandria and points south. Shipping is done by river route and by the Southern railroad. The latter has a switch at the Alexandria Brick Company's yard, put in especially for the brick shipping interest. This brick company, the president of which is Mr. Park Agnew and secretary and treasurer Mr. M. B. Harlow, has a wide field for its material, and, evidently, is doing a profitable business, and if it produced vitrified street brick a market for such could soon be found at home.

After many years of "dreamful repose," with the dust of ages making the frost of years upon the ancient burg, Alexandria is waking, shaking her robe de nuit—"dusting herself"—and wiping the mist of slumber from her eyes. Once this city, now over one hundred and fifty years old, was the scene of thrift and enterprise; its warehouses were full of goods, its harbor full of ships, and many of the world's distant marts knew its commodities. But a change came, the old town lost much of its enterprise and drowsed along behind the wheel of progress, seeming not to care "whether school kept or not." It was a good place to live in—so quiet, and, in many parts, pretty and "aristocratic;" places where the fine old mansions stood embowered in "living green," instinct with the spirit of poetry and romance. Here came not a few of the well-paid toilers in Washington and set up their lares and penates, going off like crows in the morning straight to fields of labor, and in the evening straight back to the land of repose. But for some time Alexandria has been improving, getting factories and other business enterprises. It is not a very large city, having less than 20,000 inhabitants, but among its industries is a shoe factory, brewery, tannery, glass works, fertilizer factory, cake and cracker factory, flour mill, two large iron foundries, spoke and handle and sash and blind factories. There is also a shipyard at this place, and the extensive water front lies on a harbor with from 20 to 40 feet depth of water, which makes possible the launching of any kind of ship.

And now the citizens of Alexandria will do something "extra" for the brickmaker; they will issue city bonds to the amount of $50,000 for improving the principal streets of the place, and later its partly completed sewer system will be given attention. Now the cobblestone is very much in evidence in this city, but vitrified brick will ere long add beauty and comfort in place of the "rocky road." The streets run in two directions, making the right angle, and are 66 feet wide, excepting one (Washington street), which is 100 feet in width.

Office Alexandria Brick Company.

Alexandria's first street pavement was laid in 1793, and was paid for with money obtained from the sale of lottery tickets and by private subscriptions. (The lottery idea also obtained in the Capital City in its early days, and by this means Washington's first city hall was built.)

In Alexandria one can get a good idea of the durability of brick, for here are brick structures, in fine condition, that were erected when the site of Washington City was a wilderness and before the American eagle was "born" to nip the British lion's tail and set the beast a-roaring.

In this ancient town we find "a quaint and curious volume of (almost) forgotten lore"—the Past sits in dreamful brooding, in street, in house, in hoary temple, in the lap of the nineteenth century.

Mark this old church edifice that still grandly rears its walls and tower skyward. One hundred and thirty-five years ago British brickmakers toiled in the mudyard, making brick to be sent across the sea to the embryo city of Alexandria, and as they shaped, by hand, His Majesty's soil they little thought that the brick would form a sacred temple wherein would worship the great general who would wrest from Britain her splendid American colonial possessions. But so it was; Christ Church, which stands on the corner of Cameron, Washington and Columbus streets, in Alexandria, was built, in 1767, of English bricks, and in this edifice George Washington worshiped. He was a vestryman of this church, no doubt a devout attendant, and his pew remains to-day as when the great man occupied it. Gen. Robert E. Lee also had a pew in Christ Church, and it was on the ground near it, in 1861, that he concluded to take command of the Virginia troops.

Excepting Mount Vernon, there is no place in this country where one can get nearer, in object history, the great patriot, than in the old city I have written about. His church, his Masonic lodge, his tavern, all are here. Here he came as a citizen interested in municipal progress, anxious for the welfare of his fellow-man. Here he was the patriot with the interest of the whole country at heart, and here the general ready to strike in the cause of freedom.

Washington had much to do with Alexandria, and we see him there as the man and every-day citizen. And one of the noblest monuments that could be raised to man, a school house bearing his name, an educational institution which he had fostered, stands in the old city and bears the name, Washington, of the man who first endowed it. NICODEMUS.

BRICK AND LUMBER IN LOUISIANA.

These Industries Combined and Run on a Large Scale at Slidell and Salmen.

SITUATED twenty-eight miles from the city of New Orleans, where the beautiful bayou Vincent comes close up to the New Orleans & Northeastern railway tracks, is where the pine woods make the nearest approach to the city. It is here Slidell is situated. It is here that the country and the city in times past have been wont to gather on festal occasions. But that was long ago, and now the hum of machinery and the hiss of steam have taken the place of the bands of music and the patter of dancing feet. In the rebound yet better things will be inaugurated than ever have been before. Business and pleasure will go hand in hand, and men of means will come here seeking investment, and tired people, people who are overworked and sick, will come here to seek rest and health.

Glimpse of the Alexandria Brick Company Plant.

The one great enterprise here is the Salmen Brick and Lumber Company whose products have a world-wide reputation. Had it not been for a disastrous fire some months ago, brick from this plant would have been used in the New Orleans drainage work. Many of the houses in the city are built of the brick made here, and many fronts are of pressed brick manufactured here. Mexican and European buyers of yellow pine are customers of this company, and the products for export are loaded on cars and barges at their own wharves on the banks of the bayou.

There are really two towns here although they are one in corporate name—Slidell. A little stream divides the two, and they are as separate and distinct as though miles apart. Salmen, where the brick works and the lumber and planing mills are located, is by far the largest part of the town. It has, in addition to the factories, the churches, the school and the handsomest residences and the homes of many of the employes. The part of the town north of the stream has the railway station, some small grocery and general merchandise stores and seven saloons. Those interested in the latter have tried to have barrooms located in Salmen, but so far all efforts have failed.

The mammoth proportions reached by the Salmen Brick and Lumber Company has grown from a small hand brickyard and little country store, begun less than two decades ago. In 1884 F. Salmen came here, and a little later his brother, J. Salmen, joined him, and they opened up a small country store and a hand brickyard. They worked early and late in their store and yard. They soon won the reputation of making the best brick on the market, and from time to time increased their plant.

In 1890 J. A. Salmen, a third brother, came here from Atlanta and joined them in business, and the manufacture of lumber was also engaged in. The brothers had acquired large holdings of cypress and yellow pine lands before either wood had grown so widely sought for as at present.

In 1893 the firm name was changed to the Salmen Manufacturing Company, and two years later to the Salmen Brick and Lumber Company. The sawmill is fitted with band saws that have a cutting capacity of 60,000 feet a day. For a long time it has been necessary to run the mill night and day. The planing mill has been enlarged lately, and now has a capacity of 50,000 feet daily. There is a shingle mill of 40,000 daily capacity, and a lath mill of 25,000 capacity. The mills, brick plant, the store and the homes of the members of the company and some of the employes are lighted by electric lights, furnished by a plant that is run in connection with the mills. The pay roll of this company is a long one and a bulky one. One hundred and fifty men are employed about the sawmill and twenty in the planer, besides those in the woods and on the railroad and boats. The logging road is standard gauge and extends in a westerly direction ten miles. From time to time the line is extended as necessity requires. It will not be long until it reaches Mandeville, and possibly will go farther yet. A telephone line extends the entire way.

The company has large tracts of cypress timber in Livingston, Ascension, St. James and other parishes adjacent to the Amite river and Lake Maurepas. A shipyard, where the com-

The Alexandria Brick Company's Clay Bank.

The Machine Gang—Puzzle: Find Mr. Yohe.

pany's boats and other boats are built, is on bayou Vincent, close to the sawmill, and here a pullboat has lately been constructed to pull the big cypress logs out of the swamps. This boat will burn oil in its furnaces. The logs are felled in the swamp and a strong cable is fastened to them. and the engine on the boat begins turning powerful machinery that causes the logs to move along, like some great live monster, until it falls with a loud splash into the river. These logs are then bound in rafts and towed down the Amite river, through the lakes to the mills. Three towboats are kept busy towing logs in, or barges of lumber and brick out, to the port of New Orleans or Ship island. These barges hold 100,000 brick, which would load twelve and a half freight cars. Coming back they are loaded with merchandise for the store.

The men who work in the swamps cutting the cypress live in houseboats. Two of these have just been completed and are comfortably fitted. The other day, when a representative of the Picayune visited the plant, there was a car on the switch being loaded for export by rail to Mexico, and a barge being loaded for export by water, also to a Mexican market.

The importance of the former brick plant of the company may be imagined when it is recalled that the price of building brick advanced $2 a thousand when the plant was burned last April. It was the largest in the South. The new plant will be larger than the old one; in fact, the capacity will be more than doubled. The total daily output will be 250,000 brick—200,000 ordinary building brick and 50,000 pressed brick. The manufacture of pressed brick is an interesting process. The earth is pulverized by powerful machinery and pressed in molds by a pressure of 200 tons. The new dry press house has been erected, the machinery placed and pressed brick will be turned out in a few days. It will be early fall before the mud-brick plant will be in operation.

When the brick is taken out of the kilns it is loaded in lots of five hundred in iron crates and rolled on railway tracks to the bayou side, where a derrick picks up the crates and sets them down in the barges. At New Orleans another derrick unloads them in the same way. The machinery of the new plant will be of the latest improved and will be operated by electricity.

A little way beyond the corporate limits of Slidell, to the north, is the site of the Slidell brick works. It was an unfortunate coincidence that this company's plant should have been destroyed by fire very shortly after the burning of the Salmen plant. This factory is also being rebuilt and will be turning out brick at a rate of 60,000 a day this fall. The plant is owned by New Orleans parties, whose city office is 311 Carondelet street. A. S. Neuhauser is superintendent of the works and the store. M. B. Currie is the foreman. The latest improved brick-making machinery will be used in the new works and excellent results may be expected.

The general merchandise store, or commissary, is well stocked will all that the employes of the works call for. It also enjoys the patronage of citizens living near.—Mary Dunbarr, in Picayune.

WHAT CLAY CAN DO.

Clay isn't very stunning just to look at.

But it gets there just the same.

Man was made of clay in the beginning, and ever since then he has been striving to get even by making all sorts of other things out of clay.

Delve as far back in history as you care to and still you'll run against something of clay.

Pharoah's folks made all manner of objects of clay.

The Japanese and Chinese have been making clay vases and jars ever since the flood dried up.

Some folks even go so far as to say that Noah belonged to the Ancient Order of United Potters.

To-day clay makes the bricks that build our homes, the chimneys that do the most towards heating those homes, and it forms the pipes that convey away the sewage of the home.

Speaking of pipes, reminds the editor of a visit he paid to the town of Calumet, on the banks of the Ohio river, and a tour which he made through the works of the sewer pipe plant where Calumet culvert pipe is made.

This plant is rather an awe-inspiring sight.

The manufacturers of Calumet culvert pipe have thirty-six factories, the combined monthly output of which is 5,000 carloads.

An idea of just what 5,000 carloads means may be gained from the statement that if these works made nothing other than six-inch pipe for twelve months to come, their output would, if each pipe was laid end to end, stretch from New York to London, from London to Berlin, from Berlin to Moscow, from the Muscovite city to San Francisco, and thence across the continent until it again reached Gotham—it would circle the globe.

The wonderful capacity of this concern enables it to fill rush orders promptly and satisfactorily.

One of the most interesting sights of the place is the making of the large 36-inch pipe. To the ordinary person the process

The Alexandria Brick Company's Kiln Sheds—Page 217.

of making this immense pipe smacks of the illusions of Hermann.

One sees a large lump of clay and a die with a plunger suspended above it.

Then—presto, change!

The plunger has plunged, the die has done its duty, and what was clay is sewer pipe—sewer pipe a yard wide, a yard long and weighing over half a ton.—Clarke's Headquarters.

Written for The Clay-Worker.

PROMOTION OF THE BRICK BUSINESS.

Interesting Suggestions for Progressive Clayworkers.

IT IS ALMOST IMPOSSIBLE to secure recognition for any product without proper advertising. The consumption of the best article ever produced will be limited to local purchasers if it is not advertised. The present age is one of directing people what to do and instructing them what to buy. Great department stores live and wax fat on advertising. Great financial enterprises depend for support upon subscribers secured through advertising. The great railway corporations, whose tracks gridiron the country, depend for a good deal of the business upon advertising, and no one would know when their trains departed or arrived without advertising in some form. And so one may go through the list. There is no enterprise or a business, whether comparatively unimportant or very important, but must depend upon advertising. It is the mainspring of the activities of the business world to-day, and while it doesn't supply actual motive power, it does supply the lubricant which enables the machinery to run smoothly and profitably.

Brick is a comparatively new article of commerce in its better and handsomer forms. Even though the captive children of Israel made brick with which the Babylonians constructed their immense temples and palaces, they were not the class of brick used in the poorest kind of work to-day. The brick upon which ancient people inscribed their messages were not to be compared with the cheapest bricks of the present day, and when it is considered how great has been the advance in methods of making and in finished product since then, it will be seen that progress can be traced by the improvement in the manufacture of brick. The best forms were unknown until a few years ago, and even now makers have only begun to appreciate the manifold possibilities that have been existent in brick all these years. It sometimes requires centuries to understand what may be accomplished with a certain article. Perhaps it would be better to modify that statement and put it another way. It has taken centuries in the past to become acquainted with the possibilities of particular things, but according to present indications that has passed and this age is noted for its quick appreciation of the peculiar value of any particular thing and an almost instant adaptation of that particular article to the use for which it is best fitted.

The growth in the use of brick and the numerous adaptabilities indicate that users have studied the question carefully, but perhaps in only a limited way. Architects may know that it is especially useful for some special variety of work, but they may not have communicated that knowledge to others, maybe largely because they haven't considered it worth communicating, or they may desire to retain the knowledge thus gained as a part of their stock in trade. If they do the latter, it need not lie dormant, but the very fact that they have discovered additional economical uses of an unusually mobile building material should be sufficient to secure contracts they might otherwise lose.

It is along these lines that successful advertising in the brick world could be done. It may be useless for one manufacturer to undertake the work alone, as applying to his individual kilns and yards. It would probably be too expensive, but if a number of manufacturers should pool their capital they could advertise judiciously and profitably. This doesn't mean that they can advertise their individual properties. It means, rather, that their individual properties can be made more valuable by conducting a campaign of general advertising based upon the fact that brick is not enough used in any constructional work, but more particularly in permanent building operations. It is only charitable to think that possibly architects are ignorant of the best features of brick in construction. Some are so firmly wedded to stone that it would be impossible to secure any other specification, even though an angel came down from heaven with an alabaster building material ready mixed for building purposes.

There needs to be two classes of advertising. One should be direct to consumers through either the weekly or daily papers, depending upon the locality you wish to cover and educate. Consumers should be shown the superiority of brick. It should be pointed out to them, not once, but many times, wherein stone is less valuable than brick and where it is only just as good. It should be shown in a concise, convincing way. Advertising can be made the most profitable investment you make, but it can't be done unless it is judiciously managed. The education of possible patrons will necessarily be a long, tedious process, and then may not succeed. But the main features should be incorporated in each advertisement and placed in such mediums as go to that portion of the public you desire to reach.

The other variety of advertising should be direct to architects and should point out how much better brick is than stone, how much easier it is to handle, how small the proportion of deaths becomes among workmen who work about brick. All stone is a more or less dangerous thing to handle and more than one man is maimed for life because some big piece of stone did not handle readily. The records of the use of brick are not blood stained. There have been comparatively few accidents in brick construction. One piece or a number of pieces would do no harm if it fell, except the fall be a long distance. These points make good advertising material and each one could be worked up into an interesting, readable and instructive article on the advantages of specifying brick when making plans of buildings.

The expense need not be large if the project be judiciously managed. The advertising to consumers should be done in the papers those likely to want construction read. A paper circulating largely among mill hands or a large boarding population would be useless as a medium. Another circulating among owners of properties, those who may build some day, would bring good returns. It would set the prospective customers to thinking, but that would not injure the brick man. In fact, his best friend is the man who thinks and compares certain indisputed facts with exploded theories, merely to discover the explosive power.

The best manner of advertising for architects is through their trade papers. Any reputable architects' paper would carry the advertising where one would not expect to see it. Circulars and even personal letters may be necessary. The thing is to get architects aroused to the numerous advantages of brick for building operations, large or small. No one can controvert the fact that it would make a vast difference to many property owners, because they might dispose of clay underlying a series of worthless knolls or plains.

It may be a radical idea to advertise brick, but if one doesn't advertise it he becomes sort of slow to appreciate and grasp what looks like good opportunities to make more money. Radical ideas properly executed have accomplished wonders. It may be that there is a hint here which will benefit those who are wondering how they can create a market for their product. The best way is to advertise and compel people to come to you. They must have brick to do certain things. And a certain gentleman has brick to sell. What more natural thing than advertising? They all admit that it is a good thing and agree that some time they will try it. What are the views of some of the leading manufacturers on this subject? BURTON.

Written for The Clay-Worker.

THE FAITHFUL WATCHMAN.

By Brick-a-Bat.

IT WAS A DARK, dreary night, the rain was coming down at that steady rate, not all at once, blowing and beating, but, just the same, gave promise to last all night, as it sang its mournful tune on the shingle roof of the brick plant at Bridgeport.

The watchman was a goodly man and had the interest of the company heavily resting upon his shoulders, and it was very oppressive this particular night, and made him drowsy, but not at all sleepy—you never saw a watchman that gets sleepy, did you? He was very well contented in mind, for he had only one kiln on fire and the dryer, and he was confident the superintendent would not leave his comfortable home on such a night. This was in his mind as he leaned a pallet against the engine-room, at an angle of 45 degrees, where he could command a view of the fires of the boiler, dryer and get a strong light from the kiln fires. What a good watchman. He knew none of the men would neglect their work without his knowledge of it. The men seeing the good example set by their chief, proceeded to put on a heavy fire, fix their planks and set their lanterns close at their sides.

Now, all went well for a short time, and only the merry crackle of the burning coal and the gentle, soothing patter of rain could be heard. Ah, how nice it was that the mean and suspicious days of punching clocks had not yet arrived. Still the watchman was trusted and allowed some liberty and a degree of independence. But, alas! the music of the fires changed, and it was at home by his own humble fireside, and the muffled sound of the rain was the pleasant burr of the household. Soon one could hear the healthy snores of the honest watchman and his crew.

South Crouse Avenue, Syracuse, N. Y., Paved 1891; Photographed August 1, 1902.

On such a scene the superintendent gazed, wrapped in his mackintosh and amazement. What should he do? He was only a moment in deciding. He went carefully up to the watchman and looked into his happy face, and there saw no worry or anxiety. Taking his lantern, he passed on to the laborers, and found them all resting well. Leaving them all in the dark and hiding the lanterns in one place, he takes a seat to watch the developments. As the kiln was not yet far advanced, it would not hurt to let the fires burn low for a while, and the dryer was full of dry brick. For an hour he watched over his sleeping army and still no developments and no indications of any. It was time to act. Going to the upper end of the long, dark shed the superintendent threw a brick on the tin roof of a "lean to" and the ring went bounding through the big shed like a pistol shot.

All was dark as the faithful watchman jumped to his feet and, nothing daunting, was soon to be heard scolding the firemen for neglecting their fires while he was inspecting the yard.

In the morning the superintendent looked over his kiln with apparent displeasure and asked his night chief if the kiln had not been neglected, but no, the ever wakeful, honest watchman assured the superintendent that all had gone well during the night and not a fire had been missed.

And yet they want to open the "clock system" and insist that every clock be punched regularly. How unjust to the Faithful Watchman.

BUILDING STATISTICS.

Remarkable Increase in Large Cities.

An investigation made by the United States Geological Survey in connection with some statistics on the production of brick incidentally discloses a phenomenal increase in the number of new buildings erected in the forty-five largest cities of the country in 1901 as compared with 1900. In 1901 the number of building permits issued was 85,571. In 1900 it was 68,417. The gain was therefore more than 25 per cent. The value of the buildings erected last year was $372,173,631, against $241,556,585 in 1900, a gain of nearly 55 per cent. Although New York was first in the value of its buildings, with $136,015,697, the number of permits was less by 1,056 than in Philadelphia, where the total value of the new buildings was only $29,519,710, and 1,605 more than in Chicago, where the total value was only $34,962,075. The average value of the buildings erected in New York in 1901 was $17,768, in Chicago $5,776 and in Philadelphia $3,388. The year 1901 was one of unprecedented activity in the production of building brick, the total output being valued at $51,048,653, as compared with $43,099,512 in the year before. The common brick product increased in value from $38,621,514 in 1900 to $45,503,076 in 1901.—Exchange.

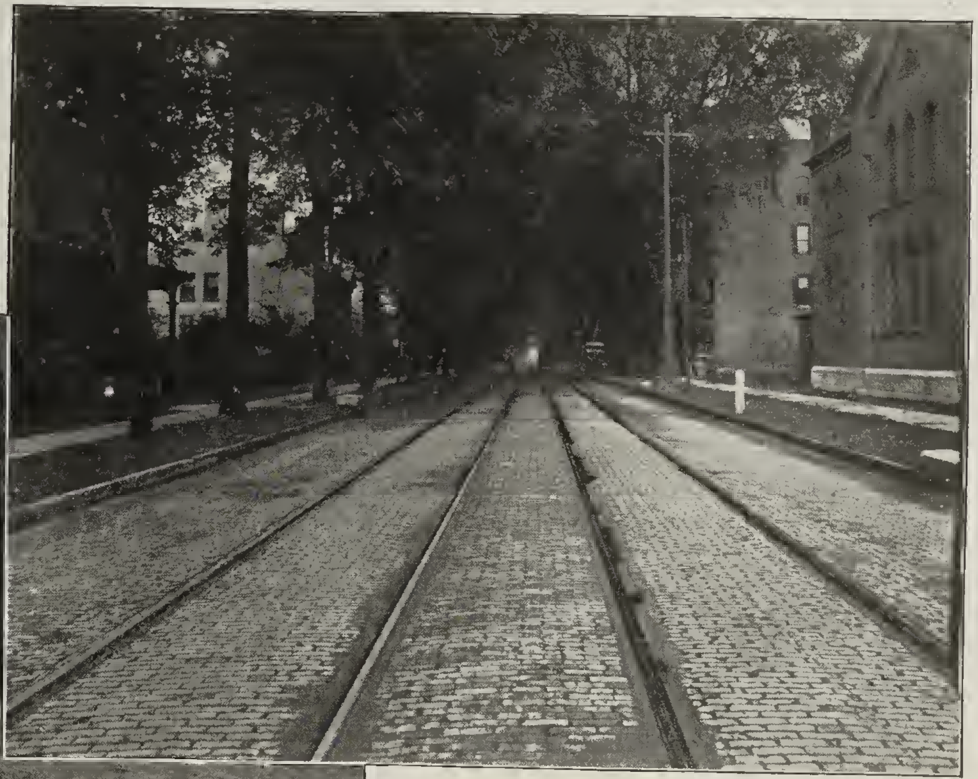
Written for The Clay-Worker.

BRICK STREETS OF SYRACUSE.

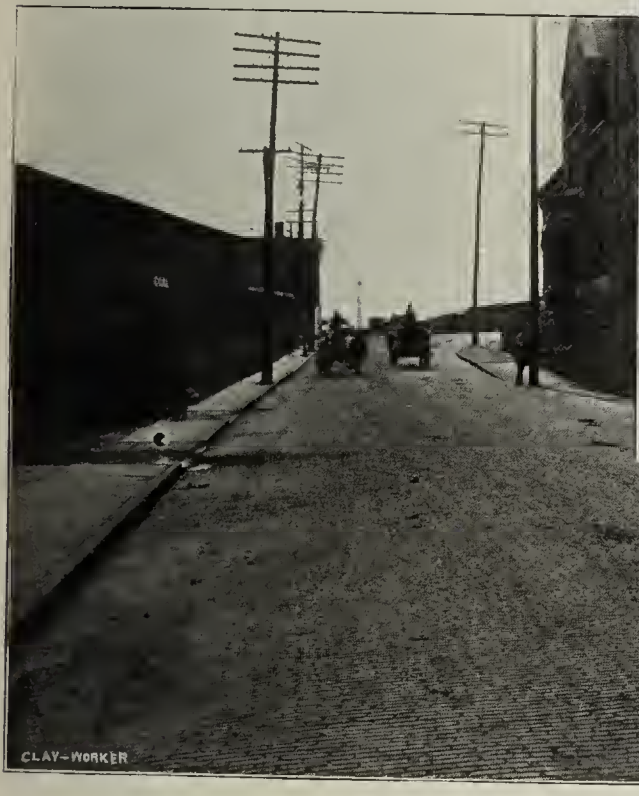
Excellent Pavements Which Demonstrate the Superiority of Brick Over Other Paving Materials for Durability, Sanitation and Cleanliness.

BRICKS FOR street paving in Syracuse were first used about twelve years ago, since which time they have been used in considerable quantities, yet when one considers the excellent condition of the brick streets in comparison with those paved with other materials, the wonder is that they have not been used more extensively. The reason may be that offered by a number of citizens of whom the inquiry was made; namely, that the asphalt companies have more influence in the city council than the brick manufacturers.

There is a varied assortment of paving material used in the city. Some streets are macadamized, some are paved with Belgian blocks, some few with cobblestones, a great number with asphalt and a considerable number with brick. Some have brick between the car tracks and asphalt at the sides, and some have asphalt at the middle and Belgian blocks at the sides. The limestone used in macadamized streets is the native Heiderberg limestone, a compact blue rock that serves the purpose very well. The blocks used are made from the Medina sandstone from the the western part of the State or from the Potsdam stone from the northern part of the State. The blocks are used on the steep hillsides, where the middle of the pavements are asphalt, as in the winter season the asphalt becomes too slippery for safety. Irving avenue, University avenue, East Genesee street and part of Westcott street are so paved.



West Water Street, Paved 1890; Photographed August 1, 1902.



East Fayette Street, Paved in 1892; Photographed August 1, 1902.

The following streets are wholly or in part paved with brick: East Water street, Crouse avenue, East Fayette street, South Salina street, canal street, South avenue, North West street, South West street, West Genesee street, Cortland avenue, Tallman street, Sabine street, Market street, McBride street, Pearl street, Wallace street and Mechanic street. The following streets are now being paved, or will be paved, with brick during the present season: West Jefferson street, West Fayette street, Kennedy street, Clark street, Belden avenue and Euclid avenue.

One of the oldest brick pavements in the city is that on West Water street, near the New York Central railway freight house, where it is subject to very heavy traffic. This pavement was laid twelve years ago, and is apparently in as good condition to-day as when first put down, despite the very heavy traffic on it. Previous to the laying of the brick on this street it is said to have required repairs nearly every year.

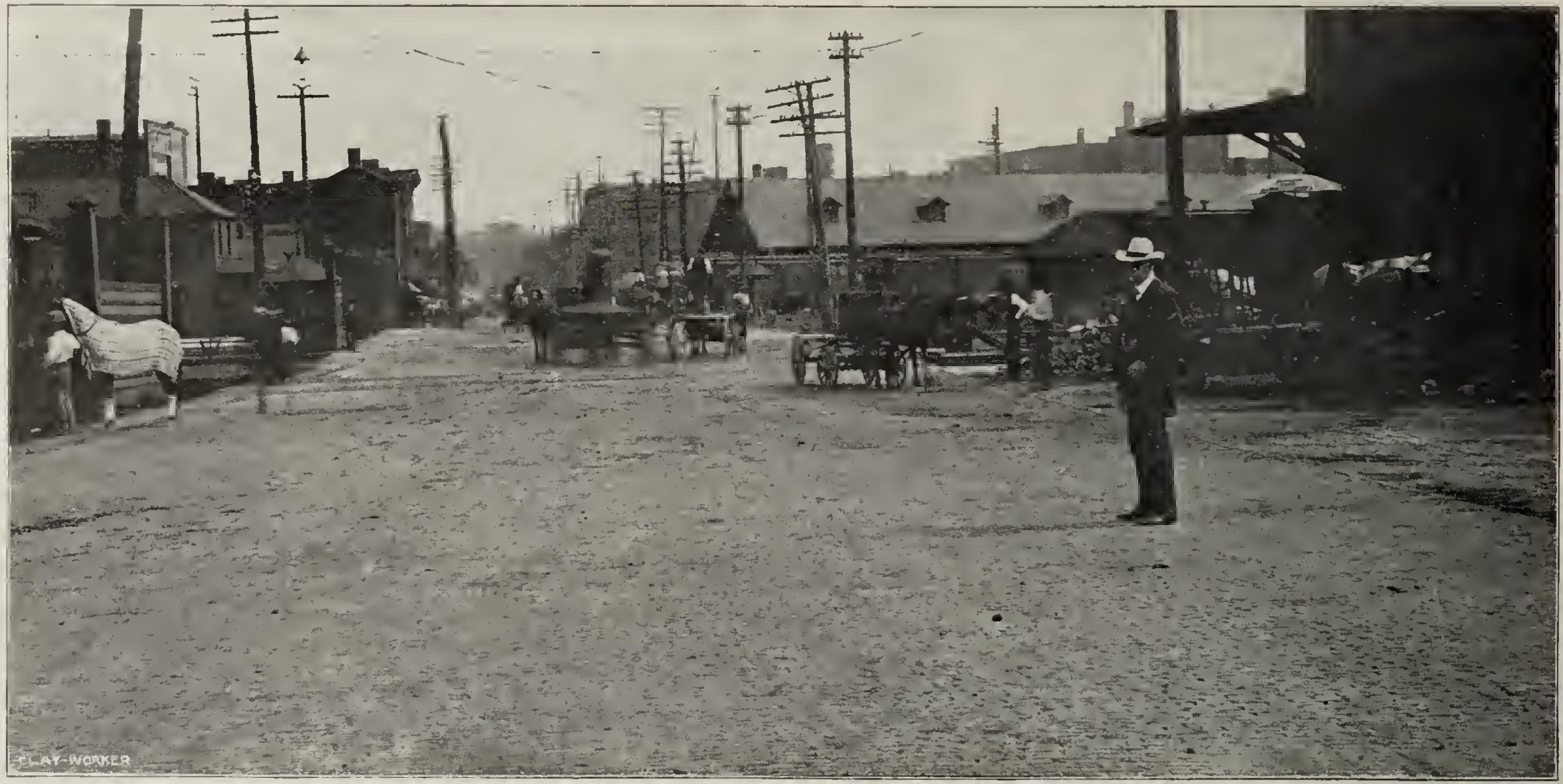
Crouse avenue has been down ten years and is still in fairly good condition, as shown by the accompanying illustration. Nearly all of the heavy traffic to University Hill passes over this street rather than the parallel asphalt streets on each side. The teamsters have learned that the horses can draw loads easier over the bricks than on asphalt. The bicycle riders have learned the same thing, and many of them ascend the hill on the brick street in preference to the asphalt.

Most of the brick pavements in Syracuse are in fairly good condition, except in a few places where they have been torn up for the purpose of laying water mains or sewer pipes and carelessly replaced. In a few places they were laid on an imperfect foundation, such as a freshly filled sewer before it had time to settle. As a result the settling took place afterward and the pavement became irregular and bumpy, a fault due to imperfect engineering, and should not be laid to any defect in the brick used. However, some brick of inferior grade have been used. Some were hard and glassy and chipped on the edges, but the brick remain intact, and there are no holes through the pavements, such as disfigure so many of the asphalt pavements.

The site of the city of Syracuse is on the bed and shore of an old lake, Lake Iroquois, and all the streets in the main part of the city are on the lake deposits, which consist of sand, gravel, marl and clay, which in the undisturbed condition are fairly compact, but where ditches have been dug and filled in it takes some months for the loose earth to settle back to its original condition. If the pavement is laid on the freshly disturbed earth, the settling is likely to be irregular and the pavement after a time becomes bumpy, irrespective of material used; or, when a pavement is cut to put down sewer, gas or water pipes, it nearly always results in irregularities, especially when the filling is hastily and carelessly done, as is too frequently the case.

Most of the paving brick used in Syracuse are manufactured by the New York Brick and Paving Company, whose plant is east of Solvay on the western line of the city. The clay for the paving brick is brought by canal from the beds on the Seneca river, a few miles north of the works. The clay burns a pale yellow color and at high temperatures may be fused to a nearly black glass. It makes strong, durable brick, but some of the earlier ones were burned too hard and tend to spall and chip too readily. The bricks made by this company resist the action of acids and alkalies much better than the ordinary brick, and are in high favor because of this property with paper, pulp and chemical manufacturing companies. For this they are shipped to the most distant parts of the United States and Canada. This trade has grown up largely as a result of the publication of a letter in The Clay-Worker in April, 1891, from the chemist of the Solvay Process Company giving the results of a test made on the brick in their soda works. The publication of this letter in The Clay-Worker brought inquiries from paper and pulp companies far and wide, and the bricks were tried in many places and found satisfactory, and the trade has grown to large proportions. The company is now turning out bricks at the rate of 60,000 per day, fifteen millions per year.

T. C. HOPKINS,
Professor of Geology in Syracuse University.



South West Street, Syracuse, Paved 1892; Photographed August 1, 1902.

HEARD IN THE YARD.

"This is where I turn you out," remarked the pug mill to the clay. "You're just a little too raw."

"Well, you needn't put on so much dog about it, anyhow," returned the latter.

For cheap machinery the reader is referred to our "For Sale" columns. We do not advise the purchase of cheap machinery. As a rule, cheap machinery is dear in the end, but for some places second-hand machinery answers a very good purpose. Those wanting experienced help will also find the "Wanted," "For Sale," etc., columns a means of satisfying their needs.

Written for The Clay-Worker.

COST OF PRODUCTION.

Modern Machinery vs. the Hand-Mold Method.

(No. 2.)

L. C. Moore.

THIS QUESTION of the cheapest method of manufacturing bricks is presented to us year after year by neighboring brickmakers who have grown tired of the old method and feel the spirit of improvement stirring within their veins, or perhaps it is a prospective newcomer into the ranks of our craft who desires to know all about the business before he puts his money into it, and expects to get enough pointers from a few hours' conversation to make a success of a great enterprise from start to finish. They seem to think that the man who uses machinery and other modern appliances must have solved the problem of economical production, when the fact often is that he has brought his company to the verge of bankruptcy in attempting to carry out the ideas he had gotten from some other man's paper. The hand-mold men have been hard hit this year, and need no argument to convince them that under present circumstances, at least, their method is a failure. There is a strong demand for bricks at good prices, but they would be losers if they could sell their entire product at $10 per thousand. The following is an extract from the diary of a neighboring brickmaker:

Monday—Weather fine. Molded ten thousand bricks and placed them on the yard. Clouds in the west to-night.

Tuesday—Rained last night. Looked over the muss and cussed.

Wednesday—Cleaned up the muss and cussed some more.

Thursday—Weather fine. Again molded ten thousand bricks.

Friday—Cloudy. Bricks won't dry.

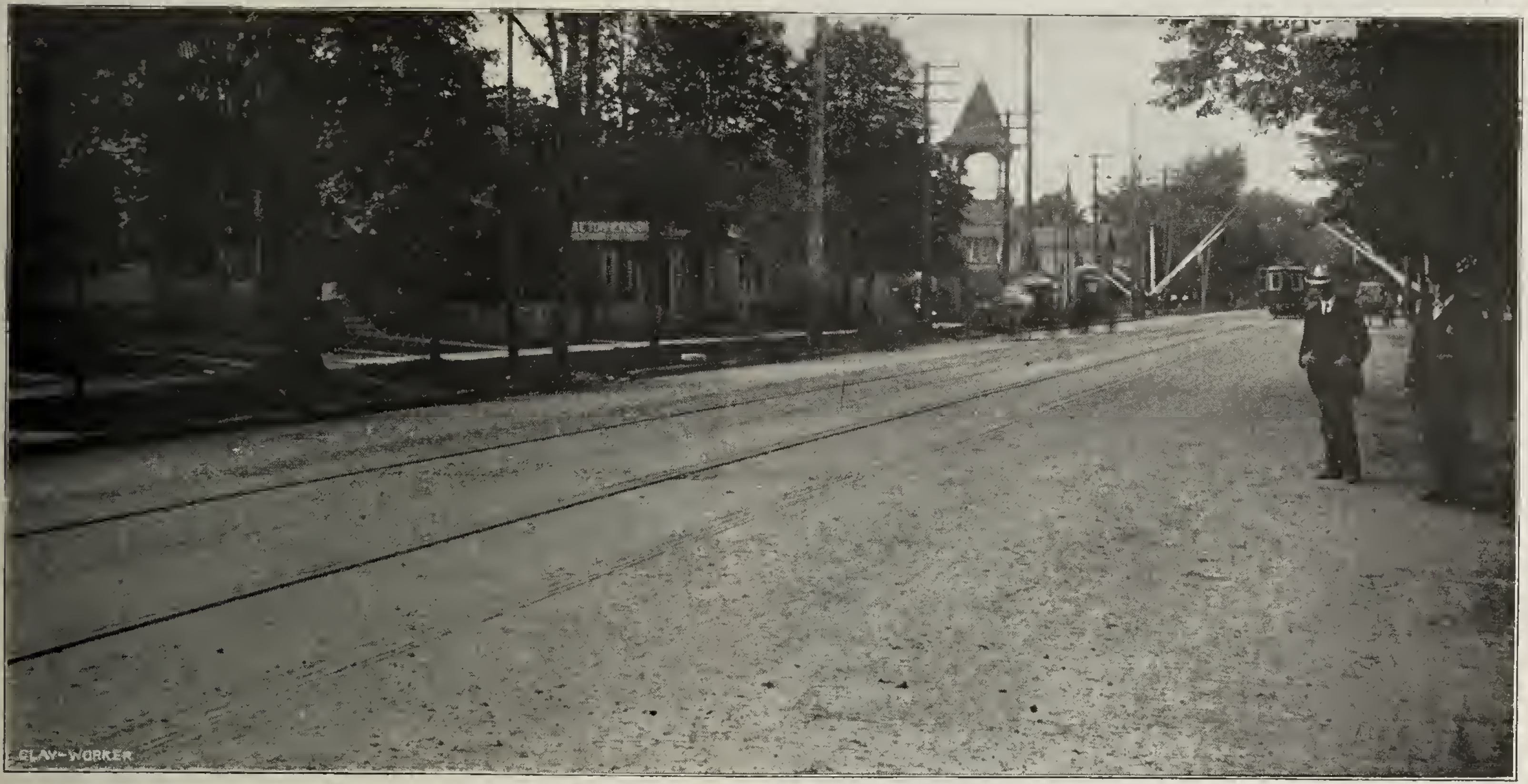
Saturday—Looked over the muss, but didn't cuss, because I couldn't do it justice.

Repeat this record for six weeks in July and August and you will have some idea of the tribulations of the hand-mold open-yard manufacturer in Missouri this season. No wonder he is looking about him for something that will be more satisfactory as to results than his present method. But this season is a record-breaker as to rain, so that it is not fair to base our arguments upon data collected in 1902. It is no easy matter to answer the inquiries of a man who desires to put his money into such an enterprise, if one desires to act as benefactor to the questioner. But in most instances, a visit to a modern plant, a few questions and answers as to cost of construction and amount of capital necessary to operate same, will send them back to the mud barrel with the long sweep and old gray-mare attachment. I mention this for the benefit of those who think that all that is necessary to enable them to produce bricks at a less cost than their neighbors is a brick machine which is guaranteed to make bricks at the rate of 25,000 to 50,000 per day. When one commences the purchase of machinery for the purpose of bettering his old mudyard, he would better look well to his bank account, whether it be able to bear up under the strain of a long list of necessary accessories.

In fact, he should ascertain if his company be able to construct a modern plant, and still have a considerable surplus capital for operating expenses, carrying large surplus stocks of finished product, and handling large contracts. If the inquirer, after learning the probable cost of a modern plant, still desires to put his money into it, then one can afford to go into details as to the approximate cost of manufacture when once the plant is placed in running order. But, as we stated in the beginning, there can be but a few cents difference per thousand in the simple molding of bricks by hand or by machinery, and then the greatest saving for the machine manufacturer is from his improved appliances of gathering his clay, conveying it to the machine and preparing it for molding. Where the proper outfit of machinery is installed, one need not touch the clay from the time is is loaded into the clay car until it is molded into bricks and ready for the dryer. The machinery should be arranged to handle the clay automatically and continuously, grinding, tempering and molding it without the delay and repeated handlings of the hand-mold manufacturer. This will give the machine manufacturer an advantage of several cents per thousand at this stage of the work. But still greater advantages are obtained in drying and burning. Again, the continuous system shows its great advantage over the go-as-you-can of the old method. We make our daily output, place the bricks within the dryer, keeping them moving toward the kiln all the time. As fast as they are placed in the kiln, others take their places in the dryer, and so the work goes on. Each day sees something definite accomplished, and each crew of hands knows to-day what is to be done to-morrow.

It may rain, snow, or even freeze, still the work goes on with but little hindrance from the weather. Though there are sure to be occasional delays, for machinery will wear out and need refitting, still the per cent. of time lost from carefully kept machinery is very small. There may be much disputing over the best dryer, or whether it is more economical to use steam heat than radiated heat, or whether a well-constructed natural air dryer may not be the cheapest of all. But one thing is evident in all seasons, and especially during such a year as 1902, some method of handling green bricks without exposing them to the rains is an imperative necessity. Of all the gains of modern methods over the old in handling bricks, the modern dryer is undoubtedly the climax.

(To Be Continued.)



South Salina Street, Syracuse, Paved 1891; Photographed August 1, 1902.

BRICK-YARD BEVERAGES.

Rum and beer, it would seem, have become a necessity in the manufacture of brick in the Hudson river district. Those of your readers who may not come in contact with it may think that this is an exaggeration. Why so many of the bosses allow the men to have it in the quantity they do on the yard is a mystery. To see a man carrying a box of beer on his shoulder to the yard is a common sight. The growler is in evidence at any time. To go still further I have seen a wagonload of it at the yard, with the vender going through selling it by the bottle or more. A protest was made the past summer by some of the bosses at Dutchess Junction. They would not allow a liquor dealer to come on the yard. Still the men showed the use of it, and it was discovered that a peddler who visited the yard, selling old clothing, was the means whereby the supply came. Is it any wonder that the brickyard workman of to-day is good for nothing? A. O. T.

Written for The Clay-Worker.

BRICKMAKING UNDER THE SHADOW OF THE ROCKIES.

Hills of Shale Prove More Valuable Than the Gold "Diggins."

HE WHO STANDS in the shadow of the great hills or gazes upon the cloud-fringed peaks of mountain heights without feeling the comparative littleness of structures reared by men, certainly lacks that appreciation of nature's work common to most men. Piles of brick arranged after architectural designs may possess beauty of an artificial kind, but natural grandeur and magnificent proportions belong to the everlasting hills and the mountain crags, while for effects in tints, nothing surpasses the hazy blue which skirts the distant range or the red and brown effects of the exposed rocks in canon and glen.

These thoughts come naturally to one who stands upon the mesa just above the little city of Boulder, Col., and looks over the town against the hills which form for it a background of imposing and beautiful proportions. A little to the right, in the north part of the city, the black stack and smoking kilns of the Boulder Pressed Brick Company may barely be discerned behind the hill of shale which supplies the works with raw material.

In order to form an appreciative idea of a factory, or even a brick plant, the surroundings should be kept in mind. Environment has much to with success in business life, to say nothing of individual happiness and moral excellence in private life. Boulder is one of the older settled towns of the State, and is located in a nook of the hills where Boulder creek puts out and flows off through what is now a productive agricultural valley, well irrigated by the waters of this mountain-fed stream. At this point miners, in early days, secured their supplies and disappeared up the canon and sought out mountain camps, there to continue digging for that dreamed-of wealth which to many never came. Here it is that the cattlemen now make their shipments and get their supplies, or tiring of mountain life, bring their families to enjoy the privileges incident to city life. From a mining village in 1859, Boulder has grown to be a city of 7,000 people, and enjoys the distinction of being the seat of the State University and of the Colorado Chautauqua, thus making it a literary center to be sought by the youth of the State. The town appears to be set directly against and at the foot of the hills, but when measurement is made it is found to be a mile away, so deceptive does the magnitude of the mountains make horizontal distances.

Shale Bank of Boulder (Colo.) Pressed Brick Co.

In this thriving town Mr. E. W. Austin began the brick business thirteen years ago, having as competitors in building material the inexhaustible supplies of red sandstone in the hills nearby, and of other rock farther up in the mountains, not to mention the adobe of the early pioneer architecture. Notwithstanding this, the demand for good brick grew so that now Mr. Austin is president and manager of what is known in commercial circles as the Boulder Pressed Brick Company, with a factory and seventy acres of land, all within the city limits The factory is built at the foot and near one end of the shale bank which forms the backbone of the seventy-acre tract and is nearly one-half mile long. This shale bank, which is worth many times more to its owner than many of the old diggings up in the mountains ever brought their owners, is peculiar in its structure. The hardest of it is as black as coal and lies in ledges which dip to the southeast at an angle of 45 degrees. The workable material is not less than fifty feet thick, and lies so that the cars, when filled, run by gravity to the buildings containing the dry pans and press. The shale has been tested by Eastern clayworkers and is pronounced excellent for all kinds of coarse clayware, such as building brick, sewer pipe, drain tile, paving brick, etc. Its analysis is as follows:

Works of the Boulder Pressed Brick Co., Viewed from the Hillside.

Silica	60.
Iron	4.75
Alumina	18.
Magnesia	2.
Water	15.25
	100.

No lime or alkali is found. The large per cent. of silica and of iron gives the brick an exceedingly compact structure—to such a degree that a hard-burned brick will take a high polish. Mr. Austin wears a watch charm cut from one of the hard bricks taken from his kiln, which was polished by a lapidary, and is as ornamental as polished stones from natural mines.

The shale is dumped from the cars into the pit. These cars, by the way, merit more than a passing notice, as they are somewhat of a novelty and make the dumping of heavy loads of material an easy task. They are riveted iron boxes, hinged in the middle by a rod passing through the box near the top and held in position by strong hooks at the side near the bottom. Mounted on two four-wheeled trucks the two halves of the box swing on bearings located at the inner ends of each truck. When in position for dumping, the side hooks near the bottom are thrown loose and the car dumps in the middle. The cars hold enough material for 1,200 brick, or nearly four tons. The shale comes from the bank so dry that it is necessary to wet it slightly before it is thrown into the pans. The dry-pan now in use is one made by the Chisholm, Boyd & White Company of Chicago. The ground clay is elevated and passed over an inclined screen four feet by twelve feet, made of No. 22 wire, ten meshes to the inch. The screen is pivoted at the lower end and shaken by means of a cam at the upper end. The clay which passes through the screen goes into a mixing box nine feet square, where a revolving sweep with arms mixes the clay thoroughly. A jet of steam is turned into the box, which slightly moistens the clay, after which it is run into the press.

A four-mould Boyd dry-press of 20,000 capacity per day of ten hours is used. Ordinarily 17,000 per day, or 34,000 on two shift runs, are made. This output is burned in three open kilns holding 700,000 brick. One of the kilns is provided with a movable section of roof twenty feet long, which is rolled over the top on T-rails laid on the walls for that purpose. This hood or roof can be moved to any desired point during the setting or emptying of the kiln, and rolled back to the rear upon a track made to receive it when not wanted over the kiln. Mr. Austin intends to add one of these to each kiln.

The coal used in burning the brick is mined within five miles of the town, and is a high-grade of lignite, resembling anthracite in its luster and purity, but is soft like the bituminous coal of the East. It costs $2 per ton laid down at the kilns. One thousand pounds will burn 1,000 brick, including water-smoking. The brick are a clear red of even color, hard and smooth. Thirty-five different shapes are kept in stock, comprising most of the ornamental shapes called for in the construction of pressed brick fronts.

The volume of business done during the last two years is a little surprising. During the year 1901, 5,662,000 brick were made on a four-mold machine running one shift of ten hours each, and since January of the present year four and one-half millions of brick have been made. A large demand has been made upon the factory by reason of the erection of the large beet sugar plants at Loveland, Greeley and Eaton, all of them within fifty miles of Boulder.

At one side of the yard is a round down-draft kiln with a fine stack design for the addition of three more similar kilns. But little use has been made of it, but it stands ready to be filled with sewer pipe or drain tile whenever the demand for the ware will justify its manufacture. The clay, as noted before, is suitable for goods of this class.

In looking about the town many neat residences and business blocks of pressed brick are found to attest the appreciation of the product of the home brickyard, and, what is unusual in such construction, is that with stone so convenient and plentiful, brick is used for foundations as well as super-structure. The State University buildings now number thirteen, the later built ones being of Boulder pressed brick. The campus over which the buildings are scattered at convenient distances is situated on an elevation on the south side of the city and commands to the east a fine view of Boulder Valley, dotted with numerous small lakes or reservoirs, a rich agricultural district, stretching away towards the eastern plains. To the west a mile distant are the foot-hills, the boldest and highest of the range, and beyond is seen the ever snow-capped summit of Arapahoe Peak. In the canons and along the mountain roads the scenery is said to be as grand and beautiful as any in Switzerland. To the north is Long's Peak, rising nearly 15,000 feet above sea level, while to the south is a series of beautiful mesas extending from the foot-hills. If Napoleon, with his armies marshaled on the plains of Egypt, could incite his soldiers to action by pointing to the pyramids and reminding them that forty centuries looked down upon them, surely the youth of Colorado should receive inspiration from the surroundings of class-room and campus. Here, in the long twilight which succeeds the early setting of the sun behind the mountain range, the earnest student may gather knowledge and mental strength from his book and also bodily strength in the well equipped gymnasium and ample athletic grounds which the State has provided.

This is a digression pardonable on the ground of attempting to impart to the reader a comprehensive idea of the field and surroundings of a successful brick plant situated on the mountain border of the great plains. The local market is susceptible of enlargement as the country and neighboring towns develop. The reputation of the brick in other States, however, is such that a ready market for Boulder pressed brick seems assured. The Colorado & Southern Railway and the Union Pacific line afford ample transportation for meeting this demand. Large shipments have been made to Wyoming, Nebraska and Kansas. which is not a bad record for a small plant with a big shale bank. Mr. Austin is a most genial gentleman, and a skilled workman also, ready to take the place of a sick employe and so keep the wheels moving and the fires burning. C. G. E.

VIEWS OF BOULDER PRESSED BRICK WORKS.

Rear View of Plant.

Loading Pressed Brick in Cars.

Taking Out Burned Brick and Setting Green Brick in Same Kiln.

WRITTEN FOR THE CLAY-WORKER.

ROSEVILLE BRICK AND POTTERY NOTES.

IT IS A PLEASURE for any one who is interested in industrial affairs to visit a manufacturing center where every plant is running at full capacity and every manager and superintendent is laying plans for expansion and improvement along various lines. Such, in brief, is the present condition of affairs at Roseville, O. Moreover, with one or two exceptions, all the manufacturing interests of Roseville are controlled by home capital, and that is a subject for congratulation always.

In this town and its immediate vicinity there are two large brick plants and six potteries. All of these are well known in the Roseville district, and yet each one has its interesting features, with which all may not be acquainted.

—The Roseville Brick and Terra Cotta Company.—

This local company operates the paving-brick plant which produces the Buckeye block, a paver of established reputation. The plant has been in operation for more than ten years and has good prospects for the future. The shale banks, at any rate, cannot be exhausted for years. It does one good to see a clay bank something over twenty feet in height, with no stripping and but little "dead work," nearly the whole cut going into the mill and turning out a first-class product. The hardness of the shale is such that the company has not yet tried a steam shovel on it, but it requires no rock crusher and goes directly into the dry pan and thence to two rotary screens. From the screens a chute leads to a wet pan, and the clay goes from the wet pan direct to the brick machine. With the exception of the wet pan, all machinery, as well as the dryer, was put in by the American Clay-Working Machinery Company. The Buckeye continuous steam dryer is in use and is entirely satisfactory. Live steam is used and the brick remain in the dryer only twenty-four hours. The yard has thirteen round, down-draft kilns with outside stacks, one stack drawing from two kilns. With this equipment the plant turns out 22,500 pavers daily.

That the superintendent, Mr. M. H. Berry, is proud of his plant and well satisfied with his equipment is evidenced by the orderly appearance of the whole outfit.

—The Ohio Press Brick Company.—

This firm is one of the members of the Hydraulic Press Brick Company. Its plant is a fourteen-kiln establishment, with a daily capacity of 35,000 dry-pressed brick. The superintendent, Mr. T. S. Rouse, took an entirely justifiable pride in discussing the improvements which have been made in the plant and those which will be made in the near future. Among other things, two new steamers attracted the writer's attention. These are of the company's own design and combine the essential qualities of cheapness, simplicity and efficiency. Each steamer consists of an air-tight, zinc-lined cylindrical bin, into which the screened clay is emptied through a chute. At the bottom of this chute is a coil of perforated steam pipe, from which both the bin and the chute are kept filled with steam. A rotary drag serves the double purpose of stirring the clay at the bottom of the bin and forcing it out from the center and into the chute leading to the dry press.

The presses in use are a little out of date and are soon to be replaced by modern hydraulic machines. Mr. Rouse also showed The Clay-Worker's representative some photos of a new pneumatic-hydraulic press which he has recently designed and had built. In this machine the pressure on the rams is hydraulic, but the moving parts of the machine are operated by air pressure. Mr. Rouse is heartily in favor of hydraulic presses, and is confident that his new machine is the best one yet.

The kilns are of the round, down-draft type. The dead-bottom furnaces have been in use, but Mr. Rouse has been substituting inclined grates, by means of which he accomplishes a considerable saving in time, as well as fuel and labor. Another good feature is the "baby" kiln for getting out smaller orders of shapes, etc., and for experimental use. Babies are good things in the clay business, and this applies not only to kilns, but to clay-grinding machinery, glaze mills, scales, etc., as well. It doesn't need to take a ton of material to make a test and determine whether what seems to be a good idea will work out in practice. Many clayworkers put up with conditions that they know are not right and think they could change if they weren't afraid to risk it on a large scale. Of course, this is an old story, and yet these "babies" ought to be encouraged—they're good things.

—Roseville's Potteries.—

When you step off the train at Roseville and look about to get your bearings the first thing which greets your eyes is a substantial brick structure. Protruding through a kiln shed-roof are six tall stacks, and on the front of the building the words "The J. W. McCoy Pottery Company." On the day of The Clay-Worker's visit to the pottery Mr. McCoy was away on business, but it was a pleasure to make the acquaintance of his son, W. N. McCoy, a young man of about twenty, who went through the shop and discussed the workings of the factory like a veteran. He said the plant had been running since Jan. 1, 1900, starting in on common ware and in the course of a few months working into a good line of ornamental goods, such as mugs, tankards, jardinieres, pedestals, etc. They are turning out about 5,000 pieces daily, with three jiggers and three casters working on the white bodies and four jiggers making cooking ware. Their pay roll numbers about one hundred. The company also handles the output of Pace Brothers' factory and is doing a flourishing business.

Mr. Metzner, who has charge of the manufacturing side of the business, is a successful glazemaker, as well as an artist, and one cannot help admiring the technical qualities of his glazes. Everyone knows the strong tendency of low-fire colored glazes to craze, and craze badly. Well, here is a man who can overcome the difficulty and is putting out noncrazing ornamental goods regularly, experiencing no difficulty so long as the biscuit burn is good, and, of course, he is there to see that it is good. This is true throughout the list—Royal Worcester, Carnelian ware, Rosewood and decorated pieces. Mr. Metzner is also producing some good metallic effects, but the company has not yet put this line on the market.

Before taking leave of young Mr. McCoy the writer learned that he expects to enter the Ohio State University this fall to take the four years' course in ceramics. Both he and his father believe that a thorough technical training, combined with a knowledge of the business side of the work and a familiarity with the every-day workings of the factory, will make the strongest possible combination for a pottery man. Keep your eye on the McCoy Pottery Company and see if that isn't good judgment.

—The Roseville Pottery Company.—

This company is operating two plants in Zanesville and two in Roseville. Its Roseville plants are both stoneware factories, producing both glazed stoneware and flower pots. An interesting feature of one of these plants, the Midland pottery, is the jiggering of oblong beef roasters. Jiggering has hitherto been confined, except in a few instances, to round objects, and it is a mark of progress to see oblong jiggering in a stoneware shop.

And last, but by no means least, in enterprise and progressiveness are

—Ramsbottom Brothers.—

This firm is operating two shops—one at Roseville and the other at Santilla. The Santilla plant puts out a line of glazed stoneware. Three jiggers and two turners are able to make two cars of this ware per week. The Roseville plant is a two-kiln establishment, employing thirty-five hands, including four jiggers. The output of this plant is at present confined to flower pots and cuspidors, but this is only for a start. The Ramsbottom Brothers are fully alive to the spirit of the times, and are planning to extend their operations and manufacture several lines of finer goods. With straightforward, enterprising young men like these in control of her manufacturing interests Roseville may be sure to continue in the enjoyment of a good reputation as a flourishing pottery town.

A. NEWMAN.

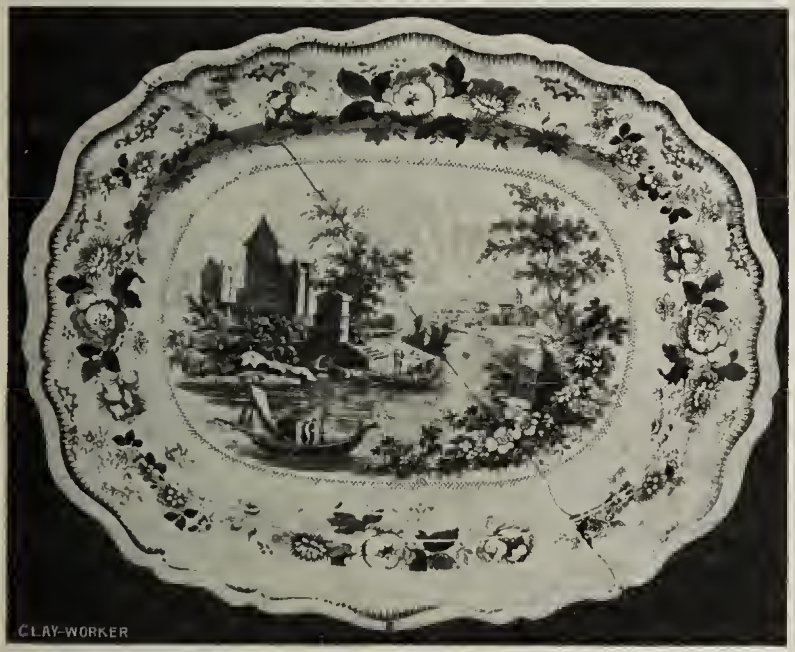
WRITTEN FOR THE CLAY-WORKER.

SOMETHING ABOUT OLD ENGLISH PORCELAIN.

THE FIRST FACTORY erected in England, of which we have any record, for the manufacture of porcelain, was erected at Bow in the year 1730. It was in the manufacture of this ware that was introduced what is known to us as kaolin, but what was known at that time under the name of "uniker." This porcelain was at the outset very hard, but was later made much softer, probably due to the fact that the makers of same had become better acquainted with the materials that they were using.

Thomas Fry, an Irishman, is said to have started the Bow factory. The works were, however, sold in 1770 to Weatherby & Crowther. It was at this time that the works first began to do business on a business plan and on any large scale at all.

At the time that the works were in possession of Mr. Fry the works did not make the success that was universally expected of it, and things went along in this manner until the factory was taken hold of by the new concern, who are reputed as having carried on a good business. A few years later the entire factory was removed to Derny and was then operated in connection with the works located at that point.



Specimen of Old English Soft Porcelain.

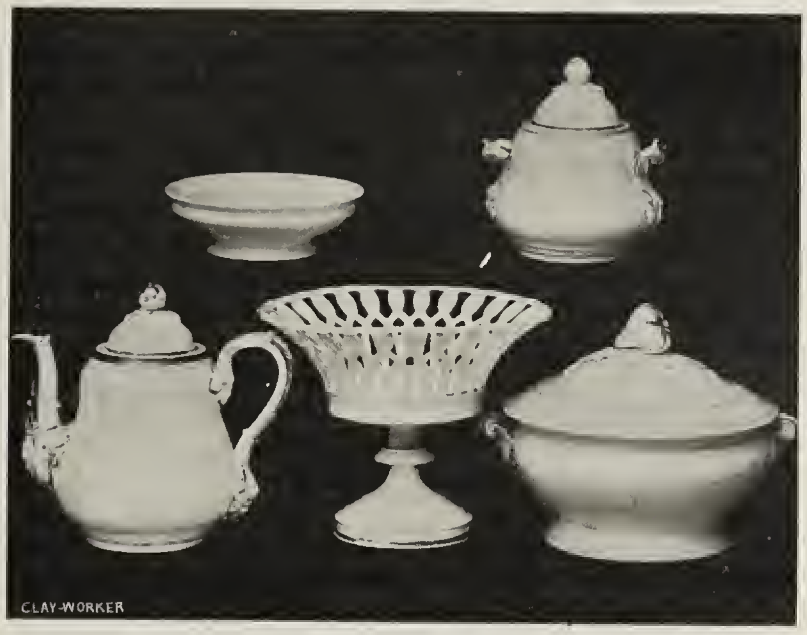
Next in line with the Bow works comes that of the Chelsea. This works is said to have been erected in the year 1745 by Nicholas Sprimont, who was the manager of the works until the year 1750, when he purchased the entire plant outright and became its sole owner. The plant was, however, sold again in 1765 to William Duesbury, the owner of the Bow works. The plant was not operated again, but the working parts of same were, like the Bow plant, removed to Derby, to become a part of that works.

Mr. Duesbury remained with the Derby works until his death, which occurred in 1786. The plant was left to the young Mr. Duesbury, who in turn left it to his son, who operated the plant successfully for some time.

The progressive part of all the earlier work was done at the Worcester works, which were started in the year 1751 by R. W. Binns, who made at the first such articles as a variety of bowls, cups, etc., and which were decorated with an underglaze blue. This factory was the most progressive of all the earlier factories, and it was at this plant that printing from engraved copper plates was first introduced with success. Mr. Robert Hancock, an expert engraver, was engaged, and many fine decorations were the results of this man's genius.

Worcester porcelain brings higher prices than any of the earlier porcelains, and one reason for this is no doubt due to the fact that the decorations on Worcester are so far superior to that of other makers as to set the prices at so high a point.

The Worcester works were sold in the year 1730 to Thomas Flight, who had been connected with the company for some years past. Mr. Flight died in the year 1791, leaving his sons in charge of the works. They immediately formed a partnership with Mr. Martin Barr, and the partnership was known under the name of Flight & Barr.



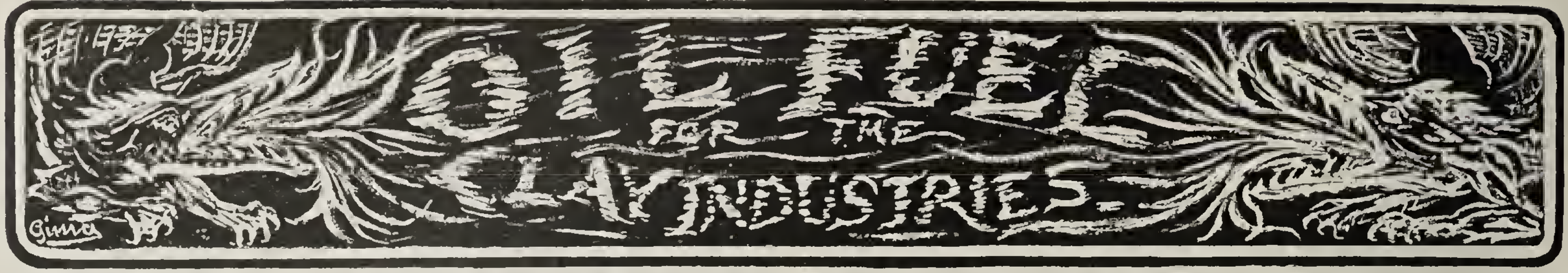
Old English Hard Porcelain.

One of the old employes of the Flight works, but who had branched out and started a factory of his own, now combined with the old concern, and a stock company was immediately formed.

The first piece of ware which we show in the accompanying illustration is what is known as Old English soft porcelain, and is a very interesting specimen. The design is supposed to be a reproduction of the city of Venice. The design is executed in a rich underglaze brown. The workmanship is superb and the glaze has a remarkable brilliancy and luster which would be found hard to equal and extremely hard to excel even in these days of modern porcelain. The second illustration shows what is known as an English hard porcelain. These pieces are somewhat later than the first piece, and were made in the neighborhood of seventy-five years ago. The goods are highly vitreous and the workmanship about the best that it has ever been the writer's pleasure to look at. The only decoration visible on the specimens is what has been a burnished gold band with numerous tracings. This is almost worn off, but a part of the color still remains.

If you want experienced help read the "Want" ads. in the Clay-Worker.

For desirable situations read the Clay-Worker "Want" ads.



OIL FUEL FOR THE CLAY INDUSTRIES

By B. Schwennicke and Translated by G. J. M. Ashby.

THE TREMENDOUS AND many-sided development of all our industries marks itself to-day, along with the continued and increasing competition, and these conditions must intensify the notice we take of every attempt to economize, whether in the use of material or of labor.

The production of heat is the starting point of all civilization, but, notwithstanding this, we have, after so many thousands of years, made comparatively little progress in the rational employment of fuels, and many of our methods of to-day show nearly as much barbarism as the burning log on the open floor of prehistoric races. They have but very little in common with the great progress in other directions. It needs but little practical and scientific observation to see that, both in our domestic and industrial heating methods, much fuel and, consequently, much wealth is wasted.

Especially the clay industries have every reason to practice the greatest economy, for the fuel bill is the one that enters most in the calculations of every brickmaker. Unfortunately it is only the stress of competition, which so often brings disaster in its train, that is able to overcome the conservativeness of our clayworkers and bring about improvements in our modern technical practice.

A new fuel for industrial purposes is liquid fuel. Tar as a residue from gas manufacture and various other residues from tar and oil refining are not easy to utilize in our industry. They are usually employed for heating steam boilers at the places where the residues are produced. Of far greater importance in modern times is the use of natural petroleum, not only because of the active researches that are finding vast stores of this great wealth in so many parts of our earth, but because of the accumulating evidence of its supreme value as a fuel. Unquestionably petroleum, in its various forms, is coming into the front rank among fuels. The reason for this is that it consists principally of the combustible element, carbon, with very little oxygen, nitrogen or ash. Petroleum belongs to the absolutely dry—that is, fuels free from water. It is therefore eminently adapted for use in the clay industries. In addition to this it has the advantage of containing very little sulphur, to say nothing of the many other advantages connected with its use.

Petroleum, notwithstanding its comparatively low price, is often regarded as an expensive fuel. When it is costly it is not so in itself, but because of the irrational way in which it is used. The main principle which we must insist upon in order that the full value shall be got from this unequaled fuel, a principle that is diametrically opposite to the practice obtaining in our use of it, is that there shall be the greatest possible avoidance of loss of heat.

So obvious as this scientific aphorism may seem, it is, nevertheless, bound up with many mysteries and problems. These it is the task of technical practice to solve. It is a wide, an interesting and important field for the skilled specialist, and, as the eminent economist, Dr. Achenbach, says: "Herein is the crucial point of the future general development of industry."

The road to success in the greatest possible economy of heat when burning petroleum is indicated by the motto: "Avoid the direct steam jet and use the continuous kiln."

Before we take up these two points it will not be uninteresting to consider petroleum itself and some of its properties.

—Petroleum, Its Production and Properties.—

The usefulness of petroleum as a fuel has been long known at some of the places where it is found, but its extensive employment, except in America, is confined to Russia, for in that country there is an immense wealth of the material and it is very cheap. The principal sources are at Baku, a city on the shore of the Caspian sea, at the eastern spur of the Caucasian mountains. This place had for ages been the pilgrims' shrine of the Parsees, the fire worshippers of Persia and India. Besides this we have recently added Grosny, in northeastern Caucasus, where an active pretroleum production has been developed. There are also other districts in this empire so richly endowed by nature, as in the far southeast of Samarkand (Turkestan). An important company is now being formed for the development of the petroleum industry there. The local brickmaker who has been compelled to use as fuel for his continuous kiln cornstalks and corncobs will now enjoy the advantage of oil fuel.

Two circumstances make it difficult for Russian petroleum to compete in the markets of the world. These are, first, its great distance from the nearest ocean port, Batoum, on the Black sea; secondly, the comparatively small percentage of illuminating oil (kerosene) that it contains, which is two and a half times less than that found in Pennsylvania crude oil. This fact is the cause of the Russian industry having developed so largely along the lines of production of lubricants of all kinds and vaseline. In 1895 Baku turned out 100,000 long tons of lubricants. The quality of Russian machine oil is known in every industrial country. The residue from this, also that which remains after the distillation of benzine and kerosene, especially from the Grosny petroleum, are used for fuel. The entire petroleum production of Baku in 1896 amounted to over 5,750,000 long tons, of which 825,000 tons were exported. The Russian requirements in illuminating and lubricating oils were 650,000 tons, so that there remained more than 4,250,000 tons for use in the country as fuel. In addition to this there is Grosny with its production of over a third of a million tons. For its own use the petroleum industry, with a number of various kinds of factories in the immediate neighborhood of Baku and Grosny, consumed about 850,000 tons. The remainder, about 3,730,000 tons, floated up the river Volga and was distributed among all the industries tributary to the great stream, as well as to more distant provinces, but in the western provinces "mazoot" (the Russian name for petroleum residues) has difficulty in competing in the coal regions there in consequence of the distance and consequent cost of transportation. This applies also to northern Russia, where, in addition, there are immense forests and deposits of turf, besides which English coal is comparatively cheap. In addition to America and Russia there are some other sources of petroleum, notably

Roumania and the Netherlands' East Indies. According to recent statistics compiled by Mr. N. N. Foster, an employe of the English Home Office, or Ministry of the Interior, the world's production of crude petroleum amounts to 18,555,000 long tons, or about equal to a fortieth part of the world's total annual production of coal.

According to the famous Russian chemist, Dr. Mendeleieff, the petroleum residues contain 86 per cent. carbon, 12 per cent. hydrogen, 17 per cent. oxygen and .05 per cent. sulphur. The remaining .25 per cent. consists of moisture, ash and nitrogen. The specific weight of the petroleum residues varies, according to the source whence they come, between .800 and .950. The heat value of the petroleum varies with the weight—the greater the specific gravity the greater the amount of heat. For this reason it is very ill advised to buy the fluid fuel by the gallon. Instead of that it should be bought by weight. The difference in heat values can amount to as much as 20 per cent. The Russian petroleum residues which come into the market sometimes contain up to 2 per cent. of water. This has the sole purpose of making the oil a little more fluid.

The following valuable table by Mendeleieff shows the heating properties of petroleum as compared with other fuels:

TABLE I.

Fuel of usual average condition and composition.	100 parts by weight of fuel contain parts by weight of:					Heat units* (calories.)	Temperature increase.	One part by weight of fuel needs parts, by weight, of:	
	Carbon.	Hydrogen	Oxygen.	Nitrogen and ash.	Moisture.			Oxygen or	Atmospheric air.
1. Wood { Seasoned	36.9	4.5	30.6	1.0	27.0	2825	772° C.	1.058	4.60
Bone dry	50.6	6.2	41.9	1.3	....	4433	1075° C.	1.426	6.20
2. Turf, good quality	40.7	4.1	25.2	10.0	20.0	3450	903° C.	1.159	5.04
3. Lignite { From	41.0	3.0	16.0	25.0	15.0	3410	940° C.	1.173	5.00
To	62.0	4.5	18.5	5.0	10.0	5423	940° C.	1.528	7.95
4. Coal { From	51.0	3.8	15.2	20.0	10.0	4515	991° C.	1.512	6.55
To	78.0	4.0	8.0	5.0	5.0	7337	1037° C.	2.359	10.22
5. Anthracite (South Russian)	90.0	1.7	2.3	2.0	4.0	7765	1466° C.	2.216	9.64
6. Charcoal (smelting)	86.0	2 4	5 6	2.0	4.0	7450	1298° C.	2.429	10.57
7. Coke (smelting)	84.0	1.2	4.8	5.0	5.0	6925	1283° C.	2.288	9.95
8. Petroleum residues	86.9	12.5	....	1.5	....	11261	2333° C.	2.282	9.93
9. Natural gas	64.1	22.9	4.2	5.8	3.0	12143	1993° C.	3.499	15.22
10. Generator gas (cooled)	12.7	0.4	19.7	64.2	3.0	744	1180° C.	0.174	0.77
11. Water (cooled)	35.3	6.3	50.1	5.3	3.0	4000	2210° C.	9.944	4.11

*By heat unit is meant that quantity of heat required to raise the temperature of one kilogram of water one degree C.

—Combustion, with Especial Reference to Petroleum.—

As is well known, atmospheric air contains in one hundred parts by weight only 23 per cent. of oxygen. It is exclusively the oxygen that supports combustion, while the 77 per cent. of nitrogen has to be heated, but its place in the air is only that of ballast and serves no useful purpose in combustion. It is therefore clear that every increase of air supply, beyond what is needed for combustion, is a waste of heat taken up by the nitrogen. What a great loss in combustion is caused by the presence of nitrogen in the air is shown by the fact that carbon burned in pure oxygen develops a temperature of 9,870 degrees C. (17,798 degrees Fahr.), but in ordinary atmospheric air it only develops 2,450 degrees C. (4,442 degrees Fahr.) For this reason it is clear that we should only supply the requisite quantity of air when burning. If the supply is too great we reduce the temperature, and may, under certain conditions, extinguish the fire altogether. If the supply of air is insufficient, then, instead of combustion, we have a process of dry distillation and the formation of unused combustible gases and smoke, which are a loss. The result is incomplete combustion. In both cases there is a waste of fuel.

For perfect combustion the furnace must admit of a precise regulation of the air supply.

Very differing temperatures are produced accordingly as combustion takes place at the ordinary rate or slower or quicker, depending upon whether the chimney (or fan) produces a sufficient draft. In the latter case, that of the combustion being quickened, the oxygen of the air is brought into more rapid and complete contact with the fuel or with the gases and products developed from it. In working in such manner a similar quantity of air is necessary, and still less in proportion as the fuel comes into contact with the air in a finely divided state.

From the preceding we may epitomize: First, how greatly important it is, especially for petroleum, to have the greatest possible division of the fuel; second, how disadvantageous it is to use injectors, which not only do not permit the fuel to reach the finest state of subdivision, but which, in addition to the inevitable "ballast" of nitrogen accompanying the oxygen in the air, blow in a jet of steam to still further reduce the heat effect.

The viscosity, or thick condition, of a liquid fuel, which is closely related to its specific gravity, is an important subject to keep in view in the design and construction of the burner, just as we have to bear in mind the character of other fuel, such as coal, when designing grate-bars and fireboxes, which have to be different according as the coal is in large or small pieces, or slack.

The use of the steam jet might find a justification where the petroleum was very thick or viscid, but where the dissolving power of the steam is not absolutely necessary its direct use as a jet can only be characterized as irrational, for the reason that the vaporized water which is thrown into the furnace has to have its temperature raised to an equal degree with the rest, and thereby a large proportion of the heat effect of the fuel is wasted.

So long as we have only to do with the firing of ordinary steam boilers we may have to accept the direct steam jet with resignation as a necessary evil, though even here the loss is considerable, both in heat and steam. As the latter has to be replaced by fresh water, it becomes a still greater disadvantage for locomotives and ocean steamers. The steam jet must be absolutely and unconditionally rejected for calcining, such as lime, gypsum, etc., and this is especially true of kilns for clay ware, as well as for all similar industries where very high temperatures are needed.

We know what trouble and care are caused us to drive out of our clay the mechanically and chemically combined water, particularly with fat clays. We know how important it is, when using ordinary fuels—coal, wood, turf, etc.—to have the fuel dry as possible. What moisture in the kiln will do has been discovered to his cost by many a brickmaker whose kiln has a wet bottom. We know that even damp weather will have a harmful effect upon the fire because of the moisture contained in the air. The moisture in the air we cannot escape, nor that which comes from the clay by driving off the

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Note.—If we take it that petroleum requires for complete combusion as much as fifteen parts by weight of air—that is, one and a half times more than the theoretical quantity—it would still be able to provide a temperature of 1,950 degress C (3,542 degrees Fahr.)

combined water, but we can and must avoid the introduction of moisture in the kiln. To this end we must not set our ware in a wet state, nor use a wet fuel, nor inject steam nor water vapor into our furnace or kiln. This vapor, too, condenses upon the ware which is being warmed for water-smoking, as well as upon that which is in the cooler portions of the kiln.

Condensation of the vapor upon the ware lays us open to the danger of cracking, sometimes even of completely softening the ware, making it a shapeless mass. Worse than this, various soluble salts may be produced in and on the ware which, under the names of "whitewashing," "petering," "efflorescence," etc., seriously reduce the value of the ware especially front-brick and terra cotta. As the ware reaches a higher heat the salts thus formed produce incrustations, or patches of thin glaze, on its surface The salts of alkalies, lime, magnesia, iron oxides, alumina and the sulphates have a solvent action on clay, and may, alone or in combination, reduce the fire-resisting properties of the ware. Sal ammoniac in high temperatures unites with alumina-silicates, forming volatile chlorides, which are deposited in other parts of the kiln, making new and undesirable combinations.

All the above-mentioned evils resulting from the presence of moisture in the kiln may be met with in the continuous kiln, too, but only when the design of it is not scientific or the management of it is not good. Where this occurs it affords the principal arguments for the ignorant or half-informed opponents of the continuous kiln. When burning petroleum with a direct steam jet in a continuous kiln these difficulties will naturally be met with in a high degree and can only be to some extent diminished by making the chimney pull off the gases from the kiln laden with water vapor and harmful ingredients, at as high a temperature as in the ordinary, intermittent kiln, but then we lose in great part the main advantage of the continuous kiln, the utmost possible utilization of the developed heat.

—Burning Petroleum without a Steam Jet.—

Although every one of the steamships on the Caspian sea, as well as nearly all the steamboats on the river Volga, besides the greater number of the locomotives on the Russian and Roumanian railroads are fired with petroleum, and though the greater number of the factories of all kinds along the Volga and in the neighboring provinces, including the clay and lime-burning industries, use this fuel, it by no means follows that it is used in the best manner. On the contrary, unfortunately, there is much room for improvement. It is well known that in those countries where fuel is abundant a rational and economical use of it is seldom to be found, except where some big undertaking supported by a very large capital works upon the most approved principles of modern industry and by sharpest observation and closest calculation runs the works in the most economical manner compatible with thorough efficiency.

We can dispense with the steam jet and also with compressed air, but still subdivide or atomize the petroleum in a most effective manner by the use of an ingenious combination of apparatus. The fuel oil is pumped by a steam-driven pump direct from the tank, and, after passing through a heating apparatus, it goes, under constant pressure, to an atomizing burner of special construction, whence it is sprayed in to the furnace or among the ware to be burned. This is done without any admixture of steam or air, and fuel is atomized in so finely divided a state that a smokeless flame is produced, giving the highest possible heat effect. The fire zone is completely shut off from the outer air, and the air only gets access to the flame through a rosette-shaped valve with radial openings. This valve is easily regulated for the smallest required change in the quantity of air admitted. The nozzle of the burner can be readily replaced by another piece.

The preheating of the petroleum is of the greatest importance, not only because it renders the oil more fluid and more readily atomized, but prevents loss of heat in the furnace, which, in firing both continuous and intermittent kilns, is a vital matter. The hotter the fuel is and the finer its state of division the greater will be its heat effect. Taking, for example, the steam boiler using crude oil as fuel, with a steam jet, under the most favorable conditions we can only turn twelve kilos of water into steam with a consumption of one kilo of fuel, while by using the fuel without a steam or air jet we can vaporize from fourteen to fifteen kilos of water with one kilo of fuel.

The apparatus here referred to must, of course, be adapted in all its parts to the installation for which it is intended. The size and construction of the kiln, also the highest temperature to be used, should be taken into account.

—Rational Methods of Using Oil.—

The advantages obtained by the rational use of petroleum fuel may be summarized as follows:

A superexcellent division of the fuel, with a consequent increased heat effect.

Attaining highest temperatures, therefore particularly useful for fire-clay products.

Production of a flame of any desired length and nonproduction of smoky flame.

Simple and easy regulation of the air supply.

Absolute silent working.

For marine and tubular boilers an equal heating of the upper and lower parts of the tubes.

The boiler tubes are always clean.

The clearing of grate-bars, one of the worst inflictions connected with coal firing, disappears entirely. Besides which there are no repairs to grates. There is ease, comfort and cleanliness when firing with petroleum, compared with the intolerable dirt and dust when handling coal, ashes and slack.

It is possible to rapidly increase the heat and make steam quickly. This is of peculiar advantage for fire engines.

No furnace doors have to be opened so that the boilers do not suffer from the inrush of cold air, and in the common intermittent kiln the ware is not chilled when feeding fuel.

When firing with petroleum there is no appreciable heat in front of the boiler, as there is on the foot-plate of a locomotive or stoke-hole of a steamer using coal.

The steam pressure in a boiler, as also the heat in a kiln, can be easily kept up.

In consequence of the freedom from sulphur the boiler tubes last much longer, and in the kiln there is no formation of sulphates in and on the ware.

As a result of the greater steam production with petroleum, locomotives can haul heavier trains.

Smokeless combustion, an important consideration for warships and in the question agitated so much lately of the smoke plague in our cities.

The economy in labor is a most important factor in the calculation. The fuel flows to the point where it is needed. The loading of 350 tons of fuel oil on an ocean steamer took three-fourths of an hour, while the loading of an equal weight of coal would take seventeen hours.

When firing with petroleum on a steamer a great saving of weight was noted, as well as a reduction in labor. Only one man was needed, instead of five men when using coal.

For shipping, petroleum is destined to play an important part in consequence of the greatly reduced space needed for storing it. Comparative tests on the Hungarian state railways showed that longer distances could be made with equal tender and load, as 30 per cent. more water could be carried, for instead of 300 kilos of coal less than 200 kilos of petroleum sufficed for an equal haul. The evaporation per hour with coal was 6.61 kilos; with petroleum, even using steam jet burners, the evaporation was 11.32 kilos, a steam production of 70 per cent. greater than with coal.

Compared with all the ordinary fuels, which always contain moisture, petroleum may be considered as free from water, and, provided it is not injected into the furnace by a direct steam jet, offers exceptional advantages to the clay industries, inasmuch as there is no risk of condensation of water vapor on ware in the cooler parts of a kiln—an advantage which, we may add, merits particular attention by the dry pressed brickmaker.

In order to answer the question, which may in some cases arise, whether it is advisable to go over to the use of crude-oil fuel, it is necessary, in the first place, to note the weight and price of the fuel in common use as compared with the oil fuel; then the great difference in heat production, and, finally, the difference in the cost for labor between firing with ordinary fuel and petroleum should be calculated. In truth, there are many manufacturers who to-day seem very remote from the use of petroleum who would find far-reaching advantages in its adoption. This applies especially to the clayworker, whose economic interests will force him more and more into progressive ways.

—Oil as a Fuel for Continuous Kilns.—

One of the principal of these is the use of the continuous kiln, which, by the use of petroleum firing, without the steam jet, becomes of new and surpassing importance. The advantages of a well-constructed, well-managed continuous kiln using ordinary solid fuels have been brilliantly proved, both on technical and purely economical points, but the continuous kiln achieves its greatest triumphs in combination with the use of fluid fuel, or petroleum, in the constituents of which fuel neither water nor ash is to be found. The complete combustion of the fuel, the harmless character of the fuel gases, the simplicity, positiveness and, by no means least, the low cost of the system will make its introduction profitable to those manufacturers who, in consequence of their distance from sources of supply and consequent freight charges, at present consider petroleum fuel out of the question. The great economy of fuel in the continuous kiln will more than cover the cost of transportation from quite considerable distances.

By the rational use of petroleum fuel in the continuous kiln the generator gas kiln loses much of its importance. Wherever petroleum can at all compete there the petroleum-fired continuous kiln will put the generator-gas kiln, with its expensive and complicated operation, completely in the shade. If, in addition to this, the fuel that has to be converted into gas contains sulphur, as coals always do and sometimes in very large quantities, sulphurous acids are formed that produce discolorations and other evils on the ware, and this cannot be avoided in the generator-gas kilns. This, of course, does not apply to natural gas, which has no sulphur in it and which, as is shown by the preceding table, enables us to obtain the highest temperatures that the clay industry is likely to need.

The use of petroleum-firing for the common, or intermittent, kiln will necessarily be more restricted in consequence of the waste of heat in this type of kiln as compared with the continuous kiln. By intermittent burning the capacity of the kiln is much reduced. Besides this there is a great loss of heat at each cooling off of the kiln, which heat has to be provided anew for the next firing. (Mr. Schwennicke is evidently not familiar with the systems in course of evolution for some years past in this country of utilizing much of the waste heat from the common down-draft kiln.—Translator's Note.) More than this, the supply of air, the same as to the furnace of the steam boiler, always comes cold to the fire. The heat, too, is taken by too short a road and too quickly to the chimney and drawn off without being fully utilized. We may even see instances of the ordinary intermittent, down-draft kiln in full fire, where flames are actually coming from the chimney. It is more difficult to get an equal distribution of heat throughout the fire area in an intermittent kiln than in a continuous kiln. When using solid fuel we meet with another disadvantage in the impossibility of regulating in a positive manner the proportion of air to fuel consumed, and through the irregular supply of air, sometimes too much, at others too little —and always cold air—there is imperfect combustion and waste of fuel.

Quite different is the case with the continuous kiln. The old prejudices against it for irregularity of burn and contact of the fuel with the ware have been long since overcome. Irregularity of burn has no part in the system, but is solely a consequence of incompetent operating. For this there is no excuse, as the kiln has not only been brought by many improvements to such a state of perfection but all its peculiarities have been so thoroughly studied that we can safely use this up-to-date burning apparatus everywhere that bricks of every kind, especially face and paving bricks, terra cotta, roofing tiles, drain pipes and fire-clay ware of every description, are to be produced on a manufacturing scale. We can certainly produce ware in the continuous kiln that is at least as good as anything than can be burned in the intermittent kiln; that, too, with a saving of fuel in the continuous kiln as compared with the common discontinuous, or intermittent, kiln of from 60 to 80 per cent.

In the continuous kiln the air supply, before it can reach the fire area, must travel a long road through the burned ware, whereby its temperature is gradually raised up to that of the fire itself. In this way the greatest possible heating effect of the fuel is obtained, and the quantity of fuel consumed is by this means alone greatly reduced. After the combustion products leave the fire area they have to pass through several divisions of the kiln that are filled with unburned ware before they escape by way of the chimney. The products of combustion give up nearly all their heat to the green ware, producing in it a full and equable preheating, getting it quickly ready for the full fire. Finally the combustion products leave the chimney very nearly cool.

The fire-holes (holes on top of kiln for feeding in fuel) are very near to each other, so that all the ware comes into close contact with the flames. This condition, as also the ease with which the fire can be regulated in every part of the kiln, makes it easy to get a very even burn. The capacity of the continuous kiln and its saving of fuel are very great, and these are just the points that make it so superior to the intermittent kiln, but over and above this the continuous kiln notably excels the intermittent kiln in its much easier and simpler working. The burners, as well as the setters and wheelers, are doing the same kind of work without change or interruption, so that they get thoroughly schooled, which is better for both workmen and employer. The division of the labor and the general organization of the works are rendered much easier.

The following table will serve as a comparison between the continuous and the non-continuous kiln. It is true that we can only give approximate data here, inasmuch as the heat effect of fuels, even of the same kind, varies so greatly and the differences in temperatures needed for burning different kinds of clay is very great.

The quantities are given in kilograms. The fire area, in each case, is 100 cubic feet.

TABLE II.

Fuel.	Intermittent kiln.		Cassel kiln and intermittent down-draft kiln.	Semi-continuous kiln.	Continuous kiln.	Saving of fuel in the continuous kiln compared with the intermittent kiln without a crown.
	Open top.	With crown.				
Coal.........	470	317	303	255	119-164	65-75%
Lignite.....	707	467	438	396	170-283	60-76%
Turf	792	566	552	424	141-226	71-82%
Wood.......	948	608	608	490-	340	64%

Each 100 cubic feet of kiln room, if we consider the brick as 8x4x2 in., will give us a setting of about 1,400 bricks. The size of the Russian brick is 266x133x67 millimeters, equals 144½ cubic inches, and gives us a setting of only 730 bricks.

Sufficient data respecting petroleum firing in the continuous kiln are not available to allow of it being included in the above table, but there is not the least room for doubt that by means of petroleum firing in the continuous kiln we can attain the greatest results in this direction that are possible in our industry.

As to the first cost of a well-designed petroleum firing installation there is no denying that this is higher than one for common solid fuel, but the saving and the advantages are so great that the first cost is really not of any consequence, for it very soon pays for itself. If a brick manufacturer, with his cheap, but imperfect, installation has to employ, for instance, fifty men, his competitor, with a perfect installation, costing, say $5,000 more, would produce an equal quantity and quality of goods, made from similar raw material, with only forty men. We have but to capitalize this saving of the daily labor of ten men and calculate the yearly interest to convince ourselves that the brick manufacturer could well afford to pay more than $5,000 for the improvement.

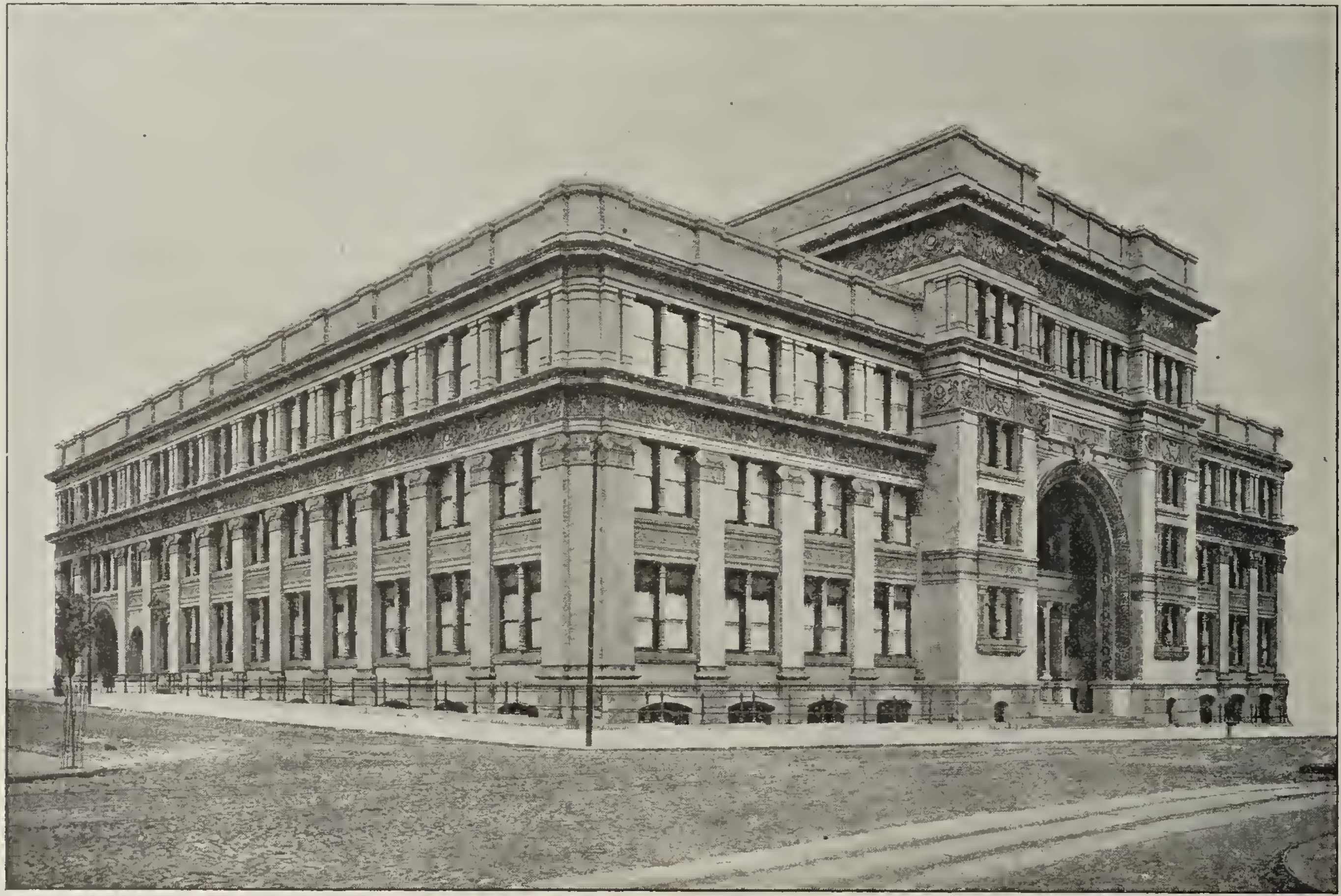
In addition to the pay roll there are other important items in the debit and credit account of burning, which give opportunities to surpass the competitor who adheres to antiquated methods.

Written for THE CLAY-WORKER.

TERRA COTTA AND BRICK IN ARCHITECTURE.

—The Drexel Institute, of Philadelphia.—

WHEN THE ABOVE institute was founded in 1891, through the generous munificence of Anthony J. Drexel, architects and contractors alike, stood amazed at the wealth of terra cotta detail called for in the plans and specifications. In truth, there was no such building in this city. Terra cotta was still in its infantile stage. Here and there it had been introduced into the facades of one or two moderate sized buildings, but never before in this lavish manner, and Boston, New York and Philadelphia became quite excited. A hundred thousand dollars' worth of the fire-resisting agent, this happy intervening medium which serves to relieve the intense plain-facedness of the buff brick, was a contract worth struggling for, and struggle they did, Chicago representing the West and Boston the East, with Perth Amboy following very closely in their wake. After a neck and neck struggle, however, the contract fell to Messrs. Conkling and Armstrong.



Main Building, Drexel Institute.

The institute is situated at Thirty-second and Chestnut streets, the site being chosen as being the most central and easy of access to all parts of the city. The founder's gift to the institution, as a whole, amounted to three million dollars, and its purport was and is for the extension and improvement of industrial education as a means of opening better and wider avenues of employment to young men and women. Of the three millions donated by the founder one million was applied to the erection and furnishing of the magnificent structure with its splendid equipments and appliances. And here let me say, no other institution outranks it, from its famous organ down to the library and museum. To this later was added another million, which duly covered the investments in the museum, library, picture gallery and the new hall or eastern annex, which is now being completed. This leaves an endowment fund of two million dollars which is applied towards the maintenance of the institution, thus enabling the institute to offer the instruction at extremely moderate, and, in some of the evening classes, at nearly nominal rates, with the advantage of free scholarships to deserving students.

The evening classes, which are open for the six months of the year from October to March, inclusive, offer the same curriculum as the day classes, and these embrace:

The Department of Fine and Applied Arts, Department of Mechanical Arts, Science, Technical Courses, Domestic Arts, and the Sciences—Domestic.

—The Main Building Exterior—

Measures in the frontage some two hundred and ten feet, with a depth of one hundred and ninety feet. This large and imposing structure is in the form of the classic renaissance, more easily recognized, perhaps, as modern Greek, buff being the color agent throughout in the terra cotta and brick. These latter were the production of the Perth Amboy clays and kilns, no effort or expense being spared to obtain a uniformity of tone or color, the bids for these running all the way from thirty-eight to forty-five dollars per thousand. The lowest bid for the terra cotta decoration and details amounted to eighty-four thousand dollars.

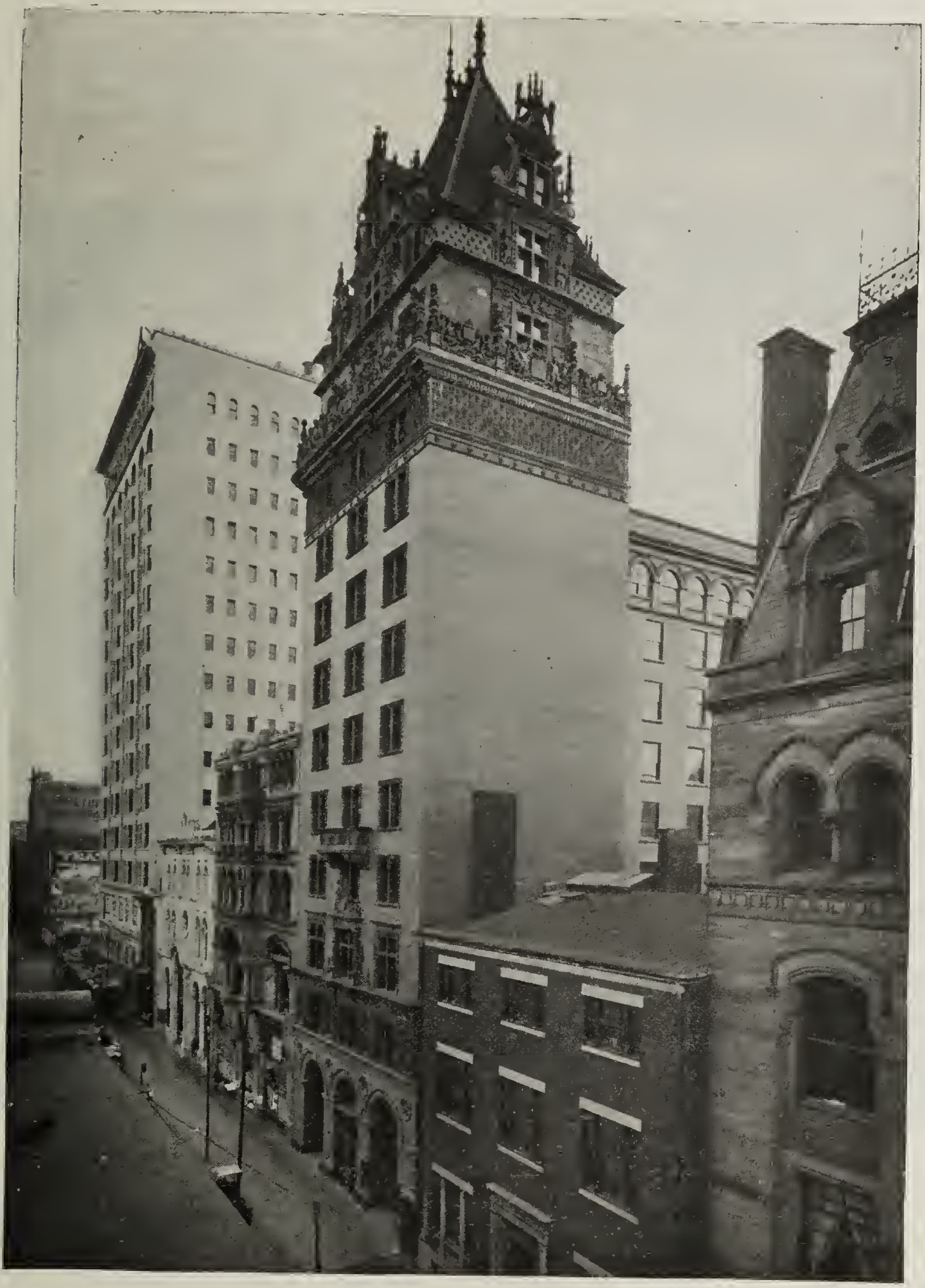
An inspection of the portal, or main entrance, which is twenty-six feet wide at the base, and rising to a height of thirty-six feet, proves it to be both interesting and choice in its elaborate detail. This consists of a series of finely executed high-relief medallion portraits: Zack, representing Music, Raphael, painting; Goethe, poetry; Columbus, navigation; Newton, mathematics; Faraday, physics; Humboldt, natural history; Jefferson, government; Galileo, astronomy; Shakespeare, drama; Michael Angelo, sculpture; William of Sens, architecture. In the spandrels of the arch are medallions of Apollo and Moses.

The central object of the arch is a figure representing the Genius of Knowledge. Above her, in the frieze, is the tablet bearing the legend, "Drexel Institute."

Cornice, window frames and string courses are likewise all well-conceived and finely modeled examples of terra cotta work. Through the portal one ascends the broad steps into the great court, an illustration of which is here given. This is sixty-five feet square, rising in height directly to the roof, and covered with a decorated ceiling, the center of which is filled with finely set stained glass, thus flooding the hallway with a soft, translucent light. At the farther end of the court is the double marble stairway, ascending to the upper stories, and descending to the auditorium and the workshops and laboratories in the basement. This is flanked by a pair of magnificent bronze and gilt candelabra, fitted with electric light.

The portico, entrance hall and central court, being wainscoted in marble, the arcades faced with English enameled brick, while the dividing lines are accentuated by the terra cotta cornices. The auditorium, containing the grand organ, has a seating capacity of 1,500. The library and reading room, measuring 120 feet long by 60 feet wide, contains some twenty-eight thousand volumes. Beyond this is the picture gallery, museum and gymnasium.

To meet the requirements commensurate with the growing demands of the institute, another building is being erected, and will shortly be completed and ready for occupancy at the beginning of the academic year. This will be known as the East Hall. This is located on Chestnut street, directly east of the main building. It will be four stories high, 200 feet long and 60 feet wide, extending from Chestnut street to Ludlow street, the ground on which it stands being a gift from Mr. James W. Paul, Jr., son-in-law of the founder and president of the board of trustees. In style this differs somewhat from the main structure, while harmonizing with it in general effect, the material being the same buff brick and buff terra cotta trimmings and decorations. This and the main building were designed by the well-known firm of architects, Wilson Bros. & Company.



Facade American Baptist Publication Society Building.

—The Splendid Terra Cotta and Brick Edifice of the American Baptist Publication Society.—

It is on record that this society at one time had its home in the hat of the secretary. To-day, thanks to the sterling industry and ability of its executive, it may boast of possessing the finest book store in all America, aye, the whole world. From the ruins of the old marble-fronted store which failed to resist the destructive agency of the fire on the morning of February 2, 1896, there has arisen a graceful and ornate structure of twelve stories, replete with all modern conveniences, and beautified internally and externally with the best resources of the applied arts, a building to enter with pleasure, tó leave with respect.

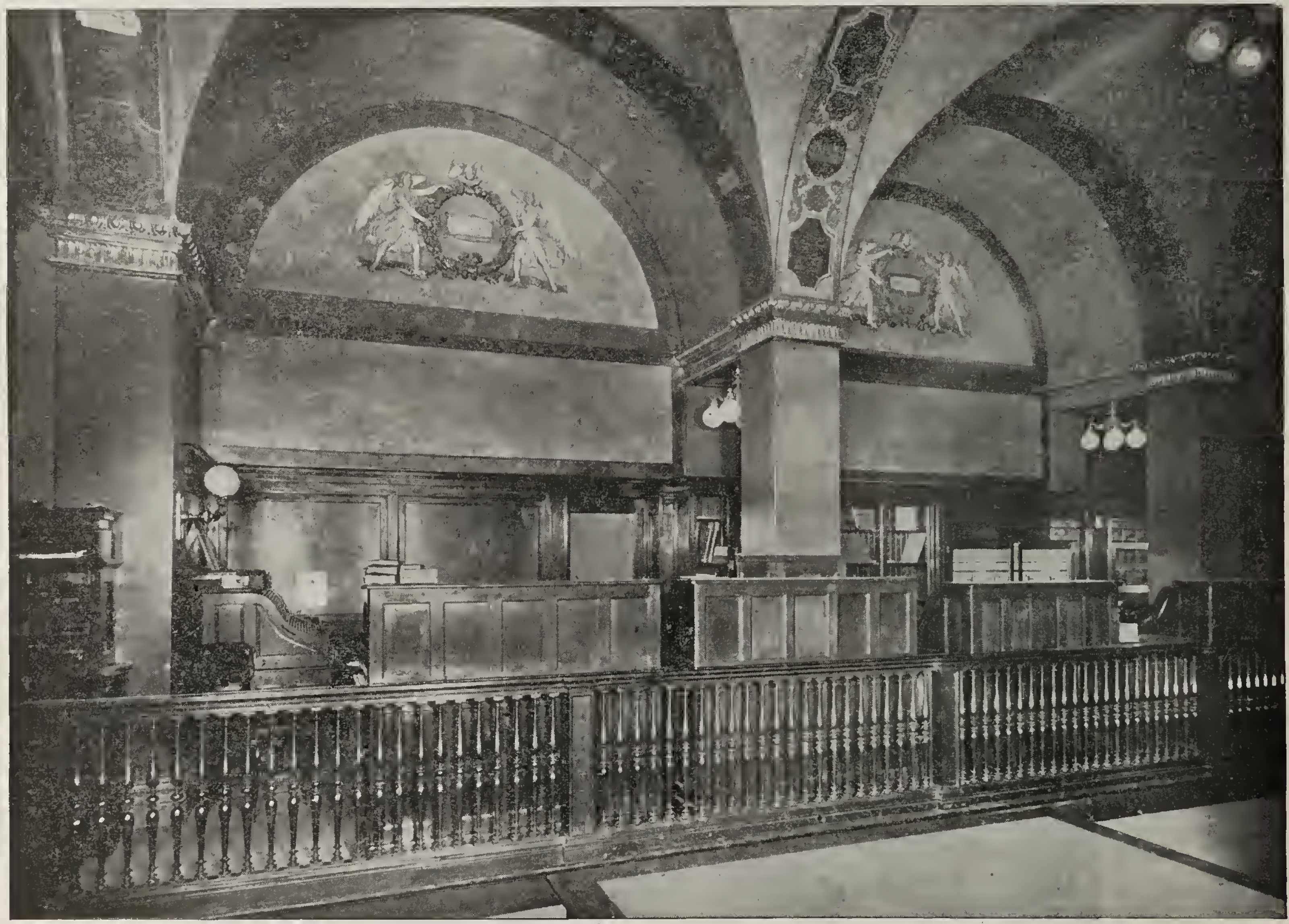
The happy symposium of terra cotta and brick is located at 1420 Chestnut street, with a 45-foot front and a depth of 232 feet. The material is Pompeiian brick (red), with terra cotta embellishments springing from a polished granite base. In form it partakes of the Spanish renaissance style of architecture, having the ornamental base, the plain central body corresponding to the shaft of a column crownéd by a well-broken sky line, or capital, forming in this case the tower, which is said to be one of the finest pieces of terra cotta ornamental work in the country. As will be seen from our illustration, it stands pre-eminently alone in the sense of graceful lines and dignity, displaying to the stranger and citizen within these gates the marvelous possibilities of earth's gray, coy and malleable material, reduced by man's labor, fashioned by the hand of the skilled artisan.

In the construction of this building, known also by the title of the Crozier building, nearly 1,500 tons of steel formed the base for the 2,018,755 bricks delivered and used in its construction. Twenty-four thousand cubic feet of cut stone, 50,000 square feet of marble for the floors and corridors, and nearly 24,000 feet of steam and plumbing pipe was used. The entire building contains some 500 doors and windows, and when gloom defies the light of day some 2,200 lights spring into existence.

The interior is identified with all the senses of graceful embellishments. Springing from the two rows of columns capped with egg and dark molding, one views the highly decorated ground arches, relieved by a series of ornamentation in sprig green and gold, containing symbolic book plates from the period of Caxton to the present day. And here and there, within the terra cotta wreaths, supported by angelic figures, the names of the world's great thinkers and writers, theological, historical, exegesis, biblical criticism and general literature—one hundred and sixty-three of them.

In vignettes, likewise along the side walls, are the names of the men eminent in their denomination. The store throughout is finished in quartered oak. Beneath the store the packing rooms and the machinery of the building. Here are the engines, furnished by Messrs. Ames & Co., of this city, for the elevators and fans and the dynamos, the one furnished by the American Blower Company, of Detroit, Mich., and the other by Walker & Co., of Cleveland, O. And thus throughout this well-constructed, well-planned, and, better, completed structure, all the agents of our present day devices, mechanical and electrical, material and embellishments, all find their place, until in its entirety the building clearly and precisely is lifted above the ordinary sense of commercialism. The stranger and the citizens might do well to pause, inspect and wonder, and then reflecting, ask himself the question, did he ever see better?

As an illustration of what may be done with the assignment and coupling of two materials, which the earth seems ever



Specimen Interior Arches, American Baptist Publication Society Building.

ready to give, these two buildings may well represent two of the best efforts made in the city of Philadelphia. It is my purpose later on to show externally and internally two other such illustrations, to prove also my assertion that brick and terra cotta are first cousins and have come to stay. The terra cotta was supplied by Messrs. Conkling & Armstrong. Frank Miles, Day & Bros. were the architects.

W. P. LOCKINGTON.

Ed. Note.—My thanks are due Mr. M. Strein, the genial manager of the American Baptist Publication Society for the use of the illustrations. W. P. L.

Written for The Clay-Worker.

LIGHT AND HEAT—EIGHTH PAPER.

By Master Mechanic.

IN THIS ARTICLE we will take into consideration the combustion of fuels and their appliances therefor. Having seen in our former articles what combustion and fuel really means, we now come to the point, how much and how little of the chemical compound of the air called oxygen is required to make the proper union between it and carbon.

We have three different systems for bringing the air with its oxygen in contact with the ignited fuel. First and foremost: Natural draft. This is accomplished by having vertical outlets into the upper air beyond the place of combustion. The gases of which, being rarefied by the heat (which means made lighter than the surrounding air) flow upwards, thereby making a suction, and drawing the air beyond the fire into it. The second system is forced draft. This is accomplished by air being forced from the front into the fires by artificial means. The modern and most approved way used mostly on steamboats, is to make the stokehole nearly airtight, forcing by means of blowers the air into it, so that there is a greater pressure in it than in the surrounding air. By these means the air rushes in under the grates and through the fuel. The third arrangement is induced draft. This is accomplished by means of exhaust fans beyond the fires. The action of the chimneys is thereby augmented, and the right amount of air for combustion is obtained. Both of these two last-named systems are largely used on boats, where the height of chimneys is limited. It is claimed that a saving of fuel is made by these artificial appliances over the natural draft.

An ideal furnace and system of firing would be in getting the full efficiency of the heat units contained in the fuel. This, however, has not been reached and is unattainable for the following reasons: Referring to coal. First, coal always has a certain amount of water in it. This has to be evaporated before the fire will take hold. The air that is used also contains moisture. Both of these have to be heated up to a temperature, so that the steam or gases are of equal temperature of the other gases going to the stack. Second, the air supply, unless superheated, which is seldom used, is on an average of about fifty or sixty degrees. This has to be heated and takes a certain amount of the heat contained in the coal. Furthermore, there is always an excess of cold air goes into the furnace than would be necessary if the molecules of oxygen were enough in excess so as to touch those in the fuel. As it is, we have to let the nitrogen go in with it, as it is in the majority and an intimate friend of oxygen that refuses to be parted, even in the trying ordeal of going into the fire. Sulphuric acid also detracts some heat. The heat and small particles that go from the fuel in the ash pit, as well as radiation.

In most cases, also, much unnecessary heat goes out of the stacks. Most of the enumerated losses are unavoidable, while this loss can easily be prevented. The heat from the ashes and fine coal in them can be brought down with proper care; also radiation can be reduced, and the excess of heat going out of the stacks. In brick kilns, as now in general use, this is not so easily done, but we are improving these, so that in course of times these will be scientifically economic also.

For steam boilers and some other classes of furnaces, many improvements to save fuel have been made of late. Radiation has been provided against as far as possible, and the outgoing gases measured by pyrometers and the furnace and boiler adjusted so as to only let out of the stacks heat enough to make the proper draft.

I would like to go into the efficiency of certain fuels, especially coal, at some length, if space did not prohibit the effort. The coal efficiency is dependent largely to the amount of moisture and ash or foreign matter it contains, as also the sizes of the lumps or particles relative to each other. I have selected a list on this subject made by Mr. George S. Barrus from tests on Cumberland and other coals, which I think is nearly correct.

COMPARATIVE EVAPORATING EFFICIENCY.

Kinds of Coal—	Water evaporated from 212 degrees by one pound of dry coal.	Relative efficiency in per cent., taking Cumberland coal as 100.
Cumberland	11.04	100
Anthracite, broken	9.79	89
Anthracite, chestnut	9.40	85
Two parts pea, one part Cumberland	9.38	85
Two parts pea and dust one part culm	9.01	82
Anthracite pea	8.86	80
Nova Scotia culm	8.42	76

The loss through the ash pit is often very great. From 10 to 50 per cent. of the fuel is lost there by improper grates and firing. Where fine coal is used the air spaces should not be over one-quarter of an inch wide. Some engineers recommend them as small as one-sixteenth of an inch. The grate area should be large for such coal, and the layer of fuel be kept very shallow. Artificial draft shows better results of this class of fuel than natural draft.

Within the last two weeks the writer visited a brick factory where the manner, how not to do the proper thing, was illustrated in a most pronounced manner. We found a dryer with steam pipes on the bottom of the tunnels, lying almost on the ground, with pools of water around them. The brick were backed in the yard for drying, however. Two kinds of moderate good construction were attached to a stack. A third kiln, which seemed to be new, was on fire, with the fires well burned down. Coarse grates were in the furnace, and piles of the finest kind of bituminous slack were in close proximity. This kiln had four stacks resting on the outer wall of the kiln, and seemed about 3 feet by 16 inches inside, and about 5 feet in height, the kiln being about 24 feet inside, of the round downdraft pattern. On top of the stacks were laid iron plates, so as to reduce the outlet to about 4 inches.

While looking at this kiln a man came along who informed us that the kiln had been on fire two days, and in another day they would finish. He commenced to fill the furnace with the slack, which made the black smoke pour out above it at a tremendous rate, and the kiln must have been cooled down at least 500 degrees for some time before the air could find its way up around the edges of the piles of slack on the grates. Yet they burned shale brick in three days.

You may ask how the brick made on this yard looked. Well, they were of a light cream color with a pink tint, with a ring to them them when struck together like that of two green bass wood boards. Yet they sold all they could make. The shale otherwise burns a deep red color. We judged from this that there are brickmakers yet at this enlightened age sadly in need of instruction in all the branches of the art. Even with this illy-constructed kiln a third more efficiency could have been obtained by the use of fine grates and shallow fires with close attention.

The readers of The Clay-Worker know that the firing of kilns is badly done in most of the factories, even those that have great reputations for making good ware.

We spent some weeks off and on in visiting some of those large factories. One I will mention had large rectangular down-draft kiln with twenty-four fire holes. The burner would wait until the fires were well burned down, then commence to shovel in coal to fill up the furnaces, which had the same effect in reducing the heat, and pouring the unconsumed carbon out of the chimneys, as that of the above crude operators.

It would seem like an innovation to recommend automatic stokers for these large down-draft kilns. Yet the first cost would be a small matter in the long run, as the kilns would be burned in a shorter time with less coal and better results would follow in the class of ware. When the men had only to keep the hoppers full of coal or slack, which then could be used instead of the higher-priced lump coal, they would soon learn that the usual rest between firing would come in when the hoppers were full.

Of course, with such mechanical appliances no smoke could emerge from the stacks as unconsumed carbon, which can be seen, neither would the loss in carbonic oxide occur, which cannot be seen. This generally follows after the smoke ceases, and for a long time, until the coal is thoroughly coked, two parts of carbon with one part of oxygen pass out of the stack instead of the gases of perfect combustion C. O.2. Carbonic oxide is slightly lighter than air, hence passes out of the stack very readily, while the gases of perfect combustion are heavier, hence only pass out by heat expansion and perfect draft.

REVERIES OVER A LUMP OF COAL.

A lump of coal lies in my hand,
Which starts a mighty train of thought;
How with its help o'er sea and land
Man's intercourse with speed it brought.

The poets never sang thy praise,
No minstrel tuned for thee the lyre;
Though thou hast giv'n the human race
Potential aid and fervent fire.

Thy heat sends steamships o'er the seas,
And speeds the cars upon the rails;
Thy agency in war and peace
Is potent sure and never fails.

The fervent heat which thou dost make
Brings metals forth from vitreous ore,
And many things from clay dost bake—
Brick, tile and pipes, and many more.

From sand thy heat forms panes of glass,
And many forms of taste and use;
With thine own heat producest gas
For heat and light, so most profuse.

The time is near when science will
Discard thee as a source for heat;
The arts, however, need thee still,
For in thee lies which naught can beat.

With feeble words we sing thy praise,
As turmoil over thee is made;
While strikes and trusts unduly raise
Thy values and the railroad rate.

BRICK MANUFACTURER INJURED.

Edward H. Bradley, a brick manufacturer of Layton Station, Pa., is in a critical condition, resulting from a peculiar accident. He was walking beside the Baltimore & Ohio track, when he was struck by the flying fragments of a railroad torpedo, which was exploded by a passing train. His right knee was fractured and cut, blood poisoning ensued and the leg was amputated.

Abuse is the unconscious tribute that failure pays to success.—Ex.

CLAYWORKING INDUSTRIES OF GREECE.

By U. S. Consul McGinley in Answer to Inquiries by the Editor of The Clay-Worker.

—Pottery.—

The MODERN POTTERY of Greece is principally of two kinds, viz.: (*a*) Ordinary, cheap crockery ware, for common or general use; (*b*) fine ceramic pottery, artistically made and finished by men who have studied the art at the Polytechnicum, and who model their work after the celebrated ancient pottery of Greece, imitating the shape, colors, finish, etc. Some of these clayworkers become very proficient and make fine imitations of many of the ancient styles.

In the preparation of the clay for pottery, brick, or tile, the Greeks sometimes mix it by hand, but often in a simply constructed clay-mixer turned by horse power.

The ordinary or common pottery is very cheap, and is used for all kinds of culinary and household purposes. Crocks, jars, jugs, vases, bowls, basins, pots, etc., of a reddish color, and usually unglazed on the outside, but glazed within, are in general use, and can be bought at very low rates. In many places, but especially on the island of Aegina, a cream-colored water jug or jar is made which is so porous that when filled with water the moisture keeps continually exuding to the outside and there evaporating, which wonderfully cools the contents, especially when the vessel stands in a draft. These cheap "water-coolers" are used by everybody, rich and poor, and great numbers of them are manufactured and sold every year. They are, and have been for centuries, a great blessing to the people of these warm regions. These jugs are very cheap, but friable. Many thousands of jugs of the red ware are continually in use for carrying and holding water.

Pottery manufactories are quite numerous. Here in Athens, there are a dozen or more such plants, the most noted of which are in the "kerameikos" (clayworkers') quarter in the western portion of the city and on the "Sacred Way" of the ancients. They make many kinds of crockery and some very good imitations of ancient vases, etc. In the Cyclades, and in all of the islands of the Aegean sea, there are pottery manufactories, and the pottery of each island has certain characteristics peculiar to itself, owing to the difference in the clay or the method used in its manufacture.

—Tiles.—

Roofing tiles are manufactured in immense numbers in Greece. In and near the cities and large villages there is scarcely any other kind of a roof in existence; but in the mountain villages, some of the roofs are covered with flat stones or slabs of stone.

Tiles are manufactured in or near every city or town of any size in the Kingdom, suitable clay for the purpose being plentiful and widely distributed. The tiles are made by hand, the only machinery used being a simple and primitive "mixer," turned by a horse or mule, which mixes the clay in a pit in the ground.

Nineteen-twentieths of the tiles used are of the old shape, and there are two sizes. Each tile is four centimeters (1.5 inches) wider at one end than at the other. The two sizes are of the same length—forty-five centimeters (17.7 inches.) The small size is eight centimeters (3.1 inches) wider at one end and twelve centimeters (4.7 inches) at the other; the large size is twelve centimeters (4.7 inches) wide at one end and eighteen centimeters (4.06 inches) at the other. Sometimes the tiles are laid in mortar, but usually they are kept in place merely by their own weight.

Of late years, a new tile, known as the "Belgian tile," is coming into limited use. It is flat and of a rectangular form, with hollows on the upper side to carry off the water, and with hollows and projections so arranged as to fit into the projections and hollows of the overlapping tile, thus binding each to the other and keeping them in place. The Belgian tile is the best tile for a steep roof.

With the exception of those located in and near Athens, the outfit of the Grecian tile manufactories is neither elaborate nor costly. A tile manufacturer of the smaller towns can often carry his entire outfit on the backs of two or three donkeys, and thus move his plant from village to village where there is a demand for tiles. Drain tiles and chimney tiles are made in considerable quantities. Nearly all the chimneys on dwellings in Greece are simply tiles built into the walls of the building and extending to three feet above the roof. Ventilators are made in the same way.

—Brick.—

With the exception of those producing marble—of which there are many good varieties—magnesite, or other minerals, the mountains of Greece are principally limestone. Very few cities or villages of the Kingdom are far from a limestone quarry, and the houses are frequently built of this material, many of the best buildings being faced or ornamented with marble. But most of the houses even here in Athens are built of stone and stuccoed on the outside—and often on the inside—and painted in good imitation of marble. This stucco lasts many years on the exterior of buildings in this climate, where frost is seldom seen, and is cheaper than marble.

In some country villages, where the quarries are very far away or the roads are bad, houses are often built of sun-dried brick; but in portions of northern Greece, especially in the small villages of Thessaly, houses are built by first erecting a frame of willow poles and rods and then covering this wicker-work with a coating of mud or clay mortar.

Sun-dried brick are used in considerable quantities. The humbler houses in the suburbs of the cities of Athens, Piræus, and Patras, and in many villages where stone is not plentiful or easy of access, are built of sun-dried brick. In fact, in some villages the houses are nearly all built of this material. Many fences or walls throughout the country are composed of blocks of clay one yard square and half a yard thick, made in a manner somewhat similar to the manufacture of sun-dried brick. The brick, as the name implies, are dried by the heat of the sun only. They vary in color, according to the color of the clay used, and measure about 12x6x2½ inches. These brick are made in every village, town and farm in Greece that has clay, and there are few places in the Kingdom that has no clay deposits. The annual quantity manufactured is not known. They are sold by the number, at from $1.75 to $2 per thousand. They are sometimes laid in lime and sand mortar, but more often in mud or clay mortar.

Kiln-dried or burned brick are manufactured in or near Athens, Volo, Chalkis, Pyrgos, and elsewhere in Greece; they are of a hard quality, and usually of a very light cream color. It is said that no soft kiln-burned brick are made. Kiln-burned brick are used for the erection of chimneys in factories, foundries, etc., partitions in buildings, bakers' ovens and furnaces, and sometimes for building drains and sewers. Iron chimneys or "smoke stacks" are seldom erected.

On account of the limited use of kiln-burned brick in the Kingdom, the manufactories of this material are few. There are but four or five of importance, and even these do not make exclusively.

Like the sun-dried, the kiln-burned brick are made by hand, the only machinery used being the simple "mixer" propelled by horse-power.

The kiln-burned brick measured about 11x4⅝x1¾ inches. One man can mold 3,000 each day. The annual product of the manufactories of the Kingdom cannot be learned.

After the bricks are molded they are allowed to lie in the sun until partially dried and stiff enough to handle easily. They are then built up in an "open-work" manner similar to the method used in the United States, so that the heat from the fire can reach each brick. The fuel used is nearly always wood; and the fire, never very hot, is kept up about fifteen days.

Kiln-burned brick are sold by the hundred or thousand directly to the consumer at from $3.50 to $5 per thousand. They are very seldom shipped by rail or water, as such transportation is too costly.

In building, the kiln-dried bricks are laid in lime and sand mortar, flat side down (never on the edge); but as the mortar is very often bad and gets soft in damp weather, cement is used in laying the brick in a construction which it is desired to make permanent.

Likes the Scott Car System of Handling Brick.

Editor Clay-Worker:

I began making brick in 1889, commencing at the very bottom rung of the trade ladder, making sand-molded brick in the good old way, by hand, and have continued in the business in a small way ever since. One of the first things which I did was to subscribe for The Clay-Worker, and have found it a very helpful and interesting paper.

In 1900 my plant was rebuilt for the manufacture of wire-cut shale brick. I am working the shale at present about 25 feet deep, but it can be worked 40 feet. The shale is blasted and loaded in carts and taken to the crusher, dumped on a platform which is above the crusher, so that the shale can be easily pushed into it.

Placing Brick in Kiln by Scott Car System.

I use a Frost dry pan, a Horton pug mill, and a Leader brick machine and automatic cutting table. Twenty thousand brick is our day's work, although they make them in seven hours or less, and have made them in four and three-quarters hours.

I am using Scott's patent car system for handling and drying, and find it the most complete system that I have ever used or seen. It is great, makes the work easier, saves in labor and saves the corners of the brick. The brick are burned in an up-draft furnace kiln, of which two are used, which hold six hundred and fifty thousand.

For burning I use coke and coal—the coke is used for water-smoking. It takes about two weeks to complete a burn from the time the fires are started. The price at present is from six to seven dollars per thousand. Our shipments are all by rail, local trade by wagons. Trade has been good all season. The only trouble has been to keep a supply of brick on hand.

Canton, Ill., Aug. 18. GEORGE B. ROLLER.

Written for THE CLAY-WORKER.

THE NEW YORK BRICK MARKET.

THE MONTH OF AUGUST is nearly at an end, and so is the manufacture of brick for the year 1902. A late start and an early shut-down of the yards this season has thrown a number of men out of work at a time of the year when all yards are generally busy turning out all the brick they can make. The yards are not stopping because there is not any more room to set brick, but simply because the demand for brick is so slow that what stock there is under the shed of this season's make will fill all orders which they will be called upon to fill, till they place new brick on the market, in 1903.

It's a very short season for those who work on the yard, for the foreman as well as the rest. He is hired the same as all the labor — so much per month, or paid by the day or day's make each week, or every two weeks. In his case it is a very short season as he cannot get another chance this season to take charge of a yard, and to get work in some other capacity is doubtful for some time to come. Is it any wonder that the floating class of men who come around looking for work in the spring is no better? They do not care how long the job lasts.

For the past five years the brickmaking season has been very short, especially on those yards that are not compelled by lease to make a given number of million, which are liable to stop at any time. The length of the seasons on the open yards have gradually decreased, so much so that when the old men tell of making ten months or more in one year, those who hear it think it quite doubtful; yet it is true.

In olden times they would mold as long as possible, the shed would be piled with green brick, every available space would be filled, and the hacks would be doubled. As soon as the last pit was out all the single men would be paid off, and those who lived in houses owned by the boss were kept at work. It was often Christmas week when the last kiln would be burned. Getting the kiln ready was mighty cold work. The way of getting the daub in shape to put on the kiln without freezing one's hands is never seen now days, and would be a new departure to the majority of those who work on the yards at the present time. Formerly a fire was started under the shed with cordwood, then old knives were taken which had been in the machine, these were put on the fire and got red-hot, and then one put in each pail of daub. This would make it warm enough to apply with some comfort. There was no loafing days on account of rain and there were always green brick piled under the sheds to dry, and they could be set in or the kilns walled, and thus steady time was always made. An early start in the spring, stripping the bank, etc., made a season of ten months a reality.

Pale brick are a decided loss to any brickmaker. In fact, any class of brick except a good hard one will not pay for the handling of them, but of necessity they must be taken out of the kiln to get at the others. In past years pale or lammies would bring from $3 to $4 per M., so that there was something left to help pay some of the direct loss. To-day pale brick have no call. When they did bring a fair price, they were loaded from kiln direct to the boat, so that there was only one handling. Sometimes they would have all the platting piled and then get a sail vessel to load a full cargo. The loss in handling was small, as the bats which fell out were not picked up. But when they are taken down and piled, and then loaded, there is one handling which is extra. They are expensive brick to handle at the best. When loading out of the face of the kiln and a spot was struck, or there was a crack, or along the head the fires had not worked up as well as they should have done, and there were two or three lengths of light brick, they were tossed down and the wheeler piled them on the kiln ground, not very systematically. He does not have time to start a double tier, but piles all he can on a single row, and down they come, with a number broken. All this kind of stock and handling causes a loss, which by the end of the season amounts to quite a sum. A local market is the only chance one has to dispose of lammies, and the call is so small that at the end of all the sheds there is pile for sale at any price. The seller can generally get from $1.50 to $2 per thousand, so the visible loss in pale and swelled brick is before the owner all the time.

—Why Make Pale?—

Some who are not conversant with conditions which govern the trade on tidewater, put in modern fixtures, as they do in other parts of the country. Can anyone afford to fit out a yard with all these kinds of fittings on a five-year lease, with a possible renewal, and pay for the clay at 60 cents a thousand, with brick ranging from four to five dollars? I think not. If the property is owned by those who run the yard, the low scale of prices would give them no returns. All sides of brickmaking have been thoroughly thrashed over, only to come to the conclusion that the old bridge of open yards and the old style of kiln serves the purpose of making brick where the average price the year through would not scale to the five-dollar mark, unless someone would take hold of it in a business way and fix a price and keep it there, but not for one year, as the last effort has, and then die. Making brick to-day with New York city for a market is a very uncertain way of making a living, without being able to lay aside anything for the days when one is old. When a yard a yard which is constructed to run four machines a day and finds it is policy to run but two, and yards with six machines run only two, as the demand is such that the accumulation of brick under the shed with two running will fill the shed before the end of the season, certainly does not appear to bear evidence of being a very thriving state of affairs. Such has been the case for several years. There is a yard in Haverstraw which makes as good stock as goes on the market, and the brick has a sale if any other does, and at the top figure. They have plenty of capital to back it, and men who will make and sell brick when they see a profit, and keep going, too, but they have stopped making brick, and they can make brick as cheap as any yard in the business. The parties who own it have done all in their power to establish a stated rate, thereby helping all as well as themselves. When such a yard closes its brickmaking season in the month of August, and there are others, too, nothing can be gained by continuing molding with the present outlook.

When the manufacturer sells to a local builder or to someone who expects to build he must not think he has made a sale, as someone may hear of the sale and make a cut in the price, and the first man will be left out. Strange way of doing business, yet it is done. One of the yards made a sale of eleven hundred thousand brick, delivered at the building, about six miles from the yard. In conversation with another brick man in regard to the sale, he asked if he had delivered any, for, if not, someone else might get the sale. Knowing that there was an agreement as regards the sale, there did not seem to be any likelihood that the first party would lose the sale. There were one hundred and thirty-five thousand delivered when he was notified that his brick would not suit; another party had the job of delivering. And the reason the first man's brick would not suit was because the purchaser could and did buy them for 25 cents per thousand less, for $6, when the first contract was for $6.25. I am pleased to say, however, that the party who undersold was not the one quoted above, who asked if any had been delivered. The transaction certainly does not look well for the party who backed out, or for the brickmaker who sneaked in with a cut. This is not the first or only case. Open-and-above-board fight for a sale is the only right one. Such ways of doing business will eventually have its regard.

—Activity in Building—

Is reported all over the country to be greater in the month of July this year than for the same month of 1901, but when the wheat is sorted from the chaff the brickmaker is not to be congratulated on the call for his brick, as in the majority of permits the plans call for frame structures. In Seattle, where 207 building permits were issued, only seven were wholly of brick. In St. Louis about an equal number of frame and brick buildings. It is better to have an activity even in frames, as they call for chimneys, foundations, etc., and every little counts.

—Finis—

Can be written over the door of the entrance to the office of the Consolidated Manufacturers and Agents Company, which started out on its short voyage a little over a year ago. Although the voyage was not as smooth as it should have been, still good weather helped them along. If the crew had been more carefully selected there is no doubt but that the voyage would have been of longer duration. It is not within the ken of man to make all things perfect so we will hope for a better selection of all material which goes to make an A1 ship, and, above all, a set of officers which the crew will have an abiding faith in. May the time be but a short time away when a vessel of this class may be launched for the brick industry of the Hudson river and adjacent waters, which will cause all to say that "it is a perfect thing; why did we not think of it before?" Before any other movement is thought of it would be good policy to see each for themselves where they have made mistakes. When satisfied that they have given serious thought to the matter, let it be known that all cannot be officers with good salaries. At a meeting with all the crew on deck, the 13th of August, two of the crew were selected to be in Fishkill Landing on the 30th of August and close up the affairs of the company. And this was the end of a movement out of which so much was expected and which would have been a great financial benefit.

—An Up River Movement—

Has sprung up and is called the Empire Brick and Supply Company, which was incorporated at Albany with a capital of $1,500,000. It is composed of material dealers, Goss, Edwall & Co., and the brick plants of Robert Main and Walsh Bros. & Co. A board of directors was elected this week, consisting of Wright D. Goss, Robert Main, William H. Edwall, Jerome Walsh and E. A. Walsh. The officers are: President, Wright D. Goss; vice president, Robert Main; secretary and treasurer, William H. Edwall.

Robert Main is connected with the Walsh Bros. in a large plant at Stockport-on-the-Hudson. The present season they have equipped the plant to be run by electricity altogether. In Goss, Edwall & Co., the company is Robert Main, and they are dealers in mason and builders supplies.

—The Market—

Has a full supply at hand each day, with no supporting hand to keep the bottom from falling out. If it continues at the same rate till the close of navigation the brickmakers will have an obect lesson of a loss of over a dollar per thousand on their stock. There are yards which are all through molding and finished and could send stock to market but the de,-mand is so slow that they will wait until late, to see if the market will improve in price and demand. The following are the ruling rates: $4, $4.25, $4.37½, $4.50, $4.75, $4.87½ and top, $5.

A. N. OLDTIMER.

Written for The Clay-Worker.

BUFFALO BRICK AND BUILDING NEWS.

PROSPERITY AND GOOD TIMES. what magic words, but such is the case everywhere that I know of, not only in this city, but all around us, the "brickies'" are busy. Bro. W. H. Brush says his men have had to handle brick with buckskin mittens on all summer, taking them out of the kiln as soon as they can handle them, in order to fill orders.

We commenced the season with a limited supply on hand, and the wet weather, with an increased demand, has kept all the yards on a hustle. If we don't have a late fall to enable the boys to get a little stock ahead, Buffalo will surely have a brick famine next spring.

A friend in Pennsylvania writes: "Never had such a good season. Have orders enough now to run us till next spring, so there is no question about winter work. Have paid a 26 per cent. dividend, with a little surplus left, and lots of betterments. The only trouble is to find good men to work the plant."

E. G. Riesterer, proprietor of the brickyard at Tonawanda, N. Y., has secured a big contract for a new paper mill being built down there. It will take all the brick he can make and he may have to call on Buffalo to help him out.

The accompanying picture is a snap shot taken by Mrs. Gustav Voelcker of her husband and Superintendent Morton. They were standing back in the rear of the clay shed at the Jewettville plant and were earnestly discussing the subject of the burning of the upper strata of clay, when Mrs. V., unknown to them, touched the button.

I would have liked very much to have given the readers of The Clay-Worker the benefit of the discussion by two such practical men, but, unfortunately, I was not near enough to hear it. Herr Voelcker regrets very much his inability to attend the last annual convention, but says he will surely not miss the next one. He has severed his connection with the Lancaster Brick Company, and is uncertain just where he will locate. He is negotiating with parties for his continuous tunnel kiln. I must give him credit for being a progressive German, has only been in this country about three years, he has mastered the English language pretty well, is an excellent draughtsman, has taken a course in mechanics with the International Correspondence Schools, of Scranton, Pa., and passed with 95 per cent. "Pretty good for a Dutchman, ain't it."

I visited our new race track at Kenilworth Park on Labor day, and was agreeably surprised at the substantial manner in which everything was finished. Brick has been extensively used in its construction. Brick posts two feet square, with iron caps and balls on top, are placed at intervals in the fence as you approach the grounds. The first story of the grand stand, the paddock and offices are brick, and a brick floor extends the entire length and width of the stand and out in front, besides outside walks of the same material. I noticed the familiar name of Brush in a panel in the brick used in the floor. It struck me as a sort of walking advertisement for Brother Brush. Hang your banners on the outer walls, brethren, make a good article and don't be afraid to put your name on it.

Gustav Voelcker and Supt. Morton at the Jewettville (N. Y) Plant.

Work on our great steel plant at Stony Point is being pushed by an army of 6,000 workingmen. They employ 150 engineers, ninety mechanical and sixty civil engineers, besides a force of one hundred clerks. They use immense quantities of both common and fire brick. I heard it estimated it would take twenty-two million brick before it was completed. They are building 454 brick houses at Smoke's Creek for their employes, and propose building a number of six-room houses northeast of the office building, which will also be rented to their men.

The rail mill, 1,762 feet long, and furnaces, one and two feet long, are finished, and Nos. 3 and 4 soon will be finished. The big ship canal when finished will give them one of the finest harbors on the lakes. They are working 550 men during the day and 150 at night. It will be 23 feet deep, 200 feet wide and nearly a mile long—deep enough to float our largest ore carriers. The plant is now producing finished steel for its own use, besides steel splice bars for the B. & S. railroad. It is expected they will be in operation on a big scale by the middle of next year.

One of our oldest brickmakers, Frederick W. Haake, passed away on Tuesday, the 9th inst., aged seventy-two years. He was one of the pioneers in the brick business in this city and raised several sons, all brickmakers. One of them, Frederick Haake, Jr., has been superintendent of the Star Brick Company, at Lancaster, N. Y., for a number of years. The Buffalo Brick Association, of which he was a member, met at their rooms on Thursday and adopted suitable resolutions of condolence.

NORTON.

EXTRACTS FROM REPORT of Dresden Chamber of Commerce, 1901.—The unfavorable condition of brickworks the preceding year became worse during 1901. In order to make sales those works that were not in the Dresden combine lowered prices, so that the combine was compelled to follow, bringing down the agreed price and, in some cases, disregarding this altogether, and on the 31st of December the Dresden combine was dissolved. There was not much reduction in wages, but those works that did run at all only did so for part of the season and on half time. There was a great over-supply of labor, but the work-people behaved very well. The makers found payments very difficult. At Pirna the price of brick, delivered at building, went down to $3.60 per M. (German standard, 9⅞x4¾x2½ in.), a price that had never been known before, and in which there was no possibility of profit. Conditions were made still worse by the preference shown by the government to government brickworks at Sedlitz in buying bricks for public works, and also in the increased price of fuel. Losses were heavy, failures were numerous and many instances were recorded of a year's credit being asked and given. The roofing tile and front brick manufacturers suffered equally. The makers of tile stoves felt the effect of the deadlock in building operations.

COMMERCE AND INDUSTRY, Berlin Report, 1901.—In consequence of the great and general depression in trade the brick and tile business was worse off than the year before. The Central Sales Office for common building brick reports that, as regards the Berlin market, about 10 per cent. of the manufacturers did not join the combine. These remained independent, both as to prices and output. At the beginning of the year the combine—an incorporated association, entitled "Central Sales Office for Common Building Brick"—fixed the output of the various works at 50 1-10 per cent. of their estimated output, but in consequence of the small demand for bricks this had to be still further reduced, and in June the output was reduced by a further 10 per cent. in order to prevent the market being glutted. Following an improvement in business, the demand increased in the autumn, so that sales for the whole year were not much less than for the year before. The prices per thousand were: For first grade, $6.36 to $6.50; second grade, $6.12 to $6.24; third grade, $5.76 to $6.00. These prices were free on barge at Berlin; free on cars was 24 cents per M. more. The combine included 182 works, with a total estimated capacity of 1,311,644,000 bricks. Twenty other plants joined it so far as regulating their output was concerned. These had a capacity of 155,200,000 bricks. Some changes occurred from the permanent closing of five works and the starting of three others, but at the end of the year there were 180 in the combine and twenty with controlled output, showing a total capacity of 1,460,984,000 bricks, all interested in supporting the combine. The central office sold about 500,000,000 bricks—to this must be added 150,000,000 bricks, which the twenty controlled-output works sold direct to contractors. Outside the combine there were only the machine-made bricks and the hand-molded klinkers, so that the total sales of common brick and klinkers (vitrified brick), notwithstanding the depression in trade, reached the high figures of 800,000,000.

The new building material—lime-sand brick—was put upon the market during the year. The lime-sand brick is offered as a substitute for the regular burned clay common building brick. It was employed in several large buildings, but it remains to be seen whether it is to be regarded as a serious competitor or not. The price per M. was $6.12. Hard-burned and vitrified bricks suffered with the rest. In the matter of front bricks the demand was, as in the year before, principally for red, hand-molded, from the Rathenow district. In addition to the normal size about 12,000,000 to 15,000,000 of the "monastery" size (11¼x5 5-16x3½ in. and 11 7-16x5½x2 in.) were sold. The front brick manufacturers are earnestly striving to prevent the use of the Rathenow hand-molded bricks and the monastery sizes, for which purpose they have formed the "Association of German Front Brick and Terra Cotta Manufacturers."

As in the year before, the light-colored, yellow, gray-white, natural-white and white glazed-front bricks found the most acceptance. The white porcelain glazed was divided into three classes. The prices of full size corner bricks were: First, $70.80; second, $57.60; third, $46.80. These porcelain-glazed bricks are used for hospitals, kitchens, lavatories, morgues, surgical operating rooms, cellars, dining and dressing rooms for workmen, closets, etc. They have recently been used for lining vats for chemical works and for gun-cotton factories.

The trade in porous bricks was quite lively and was better than the year before. These are used for partitions, ceilings, balconies, etc., and they are growing in popularity. Radial bricks for chimneys were not in such demand. What business was done was chiefly for abroad. It is a matter worthy of note that German builders of factory chimneys have such a reputation that they are called for by many countries and they take their bricks with them.

FIRST USE OF CONTINUOUS Kiln for Fire Brick.—The first continuous kiln for very high heats to burn highly refractory fire brick was erected by B. Kreischer & Son, at New York, in 1866, and started the beginning of 1867. In this were burned highly refractory bricks for blast furnaces and other metallurgical purposes, also gas retorts and fire arches for locomotives. The fire boxes of American locomotives are not, like ours, of copper, but of tough iron, covered with fire brick. The second continuous kiln for highly refractory ware was built in 1867 by the National Fire Brick Works, Philadelphia. Here in Germany we only used the continuous kiln for this purpose several years later, at Krupp's cast steel works, at Essen and other places. The greatest heat in a continuous kiln has, probably, been attained in that at fire brick works of Ad. Kluever, at Rendsburg, where Seger cone No. 33 was melted. This kiln is fired with generator coal gas. The first mentioned use anthracite.—Deutsche Toepfer und Zeigler Zeitung.

BURNING VITRIFIED BRICK in the Continuous Kiln.—The principal thing in burning vitrified brick is that the firing should be even and regular, and that after the full burn is reached there should be a slow cooling. This is not easy in the ordinary run of a continuous kiln without interruptions, but kilns with fire walls and continuous kilns built as separate chambers are well suited to this. To change the ordinary continuous kiln as used for burning common brick into a chamber kiln comes too high, but a fire wall or partition, like the Spitta fire wall, made out of the material to be burned, does very well. The fuel lies upon grates on the floor and does not come in contact with the ware. I burn the finest vitrified brick in a Hoffman kiln, using the Spitta wall system. Three-fourths of the bricks are No. 1 vitrified. It will be understood that in order to do this skillful burning is needed and the use of the draft gauge, water-smoking thermometer and Seger cones.

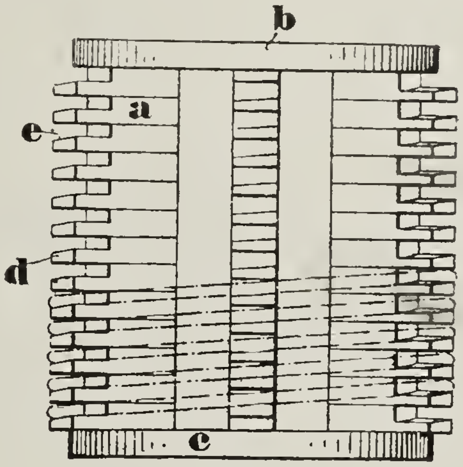
BURNING BY SEGER CONES in the Continuous Kiln.—We work a sandy loam that, when well burned, produces a brick that, though not having a remarkably good ring, is still salable. Our trouble is that the vitrifying point and the melting point of our clay are very close together, so that in full burning we are very liable to get misshaped bricks. One of our partners in the business wants us to work with Seger cones. We have a continuous kiln divisible into sixteen chambers 11 ft. 6 in. wide by 8 ft. high, without water-smoking arrangement. The divisions in the straight part of the kiln or burning tunnel are 16 ft. 5 in. long, the four rounding chambers at the corners are 27 ft. 10 in. on their longest sides. Each straight chamber has twenty fuel feedholes. There are no viewholes. Our partner maintains that the setting doors would be suitable places for viewholes, by building in iron tubes each time when walling up. We think that it is not possible, with cones at distances of 16 ft. apart and 27 ft. 10 in. in the corner kilns, which are set up near one of the fuel feedholes, to get a just idea of the temperature in between. Besides this we consider that the place at the setting door is the least suitable of all for determining the temperature of the whole chamber. How is it possible, with our kiln, to get even and positive results by means of Seger cones?

Answer.—Although most of the modern kilns have viewholes built alongside the fuel feed-holes, there are plenty of kilns in which these viewholes do not exist that, nevertheless, use cones with full success, and in such case viewholes are built in the setting doors. I also have a kiln without viewholes, notwithstanding which I have, for many years, burned only by the help of Seger cones. As these must be protected from the direct action of the blast or flame I use a covered box or hood of fire clay. These fire clay hoods can be easily pulled forward with the hooked poker, as the bottom upon which the cones are stuck projects and is shaped so that the hook can catch it. The use of the cones, in my case, is as follows: When setting the bricks I leave two rows, one two bricks above the floor flue, the other as nearly as possible one brick below the arch of the setting door. I do this by pushing back two rows so as to leave in each case an uncovered channel across the direction of the draft, and as nearly as possible in the middle of each of these channels I set a fire clay hood with the cones in. These cones are three in number and graded for melting point. In the walling up of the setting door, which is carefully built, double, with dead air space between. I have two holes at the right height in which I set iron pipes. These are closed with glass or mica plates. In front of the setting door, where the fire is going, I put a wooden screen as a still further protection from cold air. I set the cones in two positions, at the hottest end, where the heat enters, the other where it leaves the division, so as to determine the maximum and the minimum heat. The melting points of the cones must be so selected that the most fusible of the set of three melts before the ware is fully burned and shows the burner that he must stop firing; the next cone then goes over, but the third must stand up, as proof that the heat has not been too high. We cannot go beyond the maximum heat without damage to the ware, and it is absolutely necessary to reach the minimum. In this way I have, without the slightest difficulty, the means of watching the behavior of the cones and regulate the firing accordingly. In order to still further watch the course of the burning I use the Heinz hanging fire clay boxes in which sets of cones are fixed. These hanging boxes are made in such manner that they can be caught by the hooked clearing rod, or poker. After feeding the fuel in a fire hole one of the boxes can be put on a projecting brick so that flame can play upon the outside of the fire clay box. This method of overseeing has the advantage that it is not necessary to set the cones in the kiln at the same time that I set the bricks, but I can hang these boxes in any part of a firing shaft that I think desirable whenever it seems, from the appearance of the fire, that a test should be made. If your burners once accustom themselves to the use of Seger cones they will look upon them as indispensable, and you, too, will very soon find, from the saving in fuel, what an advantage they are.

TRIAL KILN for Highly Refractory Material.—If you want a trial kiln which will work with complete success and show samples that do not differ in kind, shape and color from the mass of your products, then you must have your trial kiln installed and run in a similar manner to your main kiln. If, for instance, you use gas fuel in the latter you must use gas in the trial kiln. I prefer and recommend from my own experience coke and anthracite, for, besides other important andvantages, when properly used, these fuels give us the cleanest colored ware and also provide the most rapid and cheapest method of burning that can be found. With anthracite coal the sharpest increase in heat is possible. The coke serves to hold the heat and equalize it without there being the least danger of its going back. The building of a trial kiln three and a half cubic feet capacity the way you suggest, is a foredoomed failure, even if it is built of fireproof material, with iron bands. etc. Such a kiln is also a failure if, as is usually the case, it is connected to some unsuitable draft. It must under no conditions be influenced by the action of any other draft than its own. According to my experience a kiln of this kind should be built of three or four pieces, made from highly refractory raw material, of suitable shapes so that there will not be any cracking at the highest heats in winter or in summer. No iron bands are used. A kiln like this only cracks when it is banded and incorrectly built. With the size which you wish the time of burning should be, I think, at most six hours, and the quantity of fuel consumed not more than 550 pounds. In one hour I get a white heat on 2-inch square tiles (about cone 12 to 15) and in half a day melt dozens of samples of frit glazes, colors, slips, clays, etc., packing them in and drawing out with the tongs.

TOOTHED CRUSHER or Large Smooth Rolls?—If your clay is very much mixed with stone and besides that is shaly or loamy in character, I would recommend a wet pan, and you can dispense with the crusher. If you then put a pair of smooth rolls of 30-inch, or, better still, 40-inch diameter and set these at 1-16-inch apart, your raw material will be thoroughly prepared and the work will proceed regularly and without fault. The advantage of the pan is that the raw material is sufficiently broken up and is brought into a good, homogeneous condition for working; by this means the press is relieved from strain, there are no breakdowns and you get a better quality of ware, making it more salable. There is a saving in labor, too, if the arrangements are right. When the clay is very stony the smooth rolls do not wear out so soon. Without the wet pan rolls soon wear out, for workmen are careless and stones that are too large to be gripped, even by rolls of the diameter given, are allowed to go in. These remain for a long time grinding on the rolls and destroy their surfaces very quickly.

WORMS FOR STILLS.—According to the methods of making worms for stills from stoneware, porcelain or similar material, the worm formed a part of the frame or stand, so that for every new worm a new frame had to be made and burned with it, as it is well known that a worm cannot be wound and burned upon a frame that is already burned. This appreciably increases the expense. To obviate this a new method is proposed, the invention of Dr. Gottfried Plath, German patent, 132099, by which the worm is burned upon a separate and special burning frame, of which it is as independent as it is of the frame upon which it will afterwards be used. The frame for burning on is made of separate fire bricks (a) which are built up into columns, a cover plate (b) and foot plate (c) hold them together, so that the bricks (a) and the plates (b) and (c) when they are locked together form a frame which can be taken apart. The separate bricks are of peculiar shape. The projection (d) has its upper surface (e) slanted to correspond to the incline of the worm. The projections (d) are so designed as to leave room for shrinkage for the worm, inasmuch as the frame does not shrink with it. The worm tube is now wound upon the frame, and in order to prevent it getting too near the center small wooden blocks are placed in each recess at (e) when winding the tube. These leave sufficient shrinkage room. When the worm is burned the frame and worm are taken out of the kiln, the cover (b) is taken off and the bricks are slipped out separately, leaving the worm free and ready to be placed on its permanent support.



AUSTRIA EXPORTS TO TURKEY.—The report of the Austro-Hungarian consulate at Constantinople shows that the business during 1901 in Austrian ceramic ware has sensibly diminished. In Turkish coffee cups Austria had been entirely driven out by Germany, which supplied all the cheaper qualities. A little of the finer ware came from France and Russia. In table and toilet services the Bohemian factories with difficulty held their ground, but even here the sharp competition of the German factories began to be felt. Italy has endeavored to get into the market, but so far without success, as the ware is badly burned and breaks readily. Stoneware is supplied by Germany, to the value of 255,000 marks; Belgium, 85,000 marks, and France, 45,000 marks. Austro-Hungarian stoneware has almost entirely disappeared from the market.—Thonindustrie-Zeitung.

WRITTEN FOR THE CLAY-WORKER.

PHILADELPHIA BRICKMAKERS JUBILANT WITH PROSPERITY.

WHILE THERE WAS a temporary lull, there was no actual cessation in the abnormal building activity of last month.

Our brickmakers welcomed the quiet period as a respite from the hard and incessant hustle of the past six months. Here and there a small break-down occurred, and both man and beast rested a bit. The boss kept up his activity by swearing.

As an example of how hard our men have been pushed for brick, the yard of McAvoy & McMichael, as I saw it this morning, would, perhaps, best illustrate it. (Unfortunately, the camera wasn't with me.) Orders were in for the fall trade, and the only source of supply was locked up in a newly burnt ten-arch kiln, and one green, ready for firing.

At Webster & Nephew's I found the latter sun-burnt and reminiscent, alive with knowledge of how "Murphy got that black eye," and mourning the loss of that deer (?) up in the Adirondacks, but now ready for anything. In answer to an inquiry as to trade, Mr. Keyser said: "We have the contract for the new building to be erected at Sixth and Market streets for G. de B. Keim, who was recently burnt out, and for the office building to be erected at 1009 Arch street. Between these two buildings we shall haul over a million good brick. Over in West Philadelphia an operation of some fifty-five three-story houses will soak up over a million brick, besides a number of smaller operations, and, as you see, there isn't a brick about the plant that isn't sold. Machine stretchers are an unknown quantity. Hand-made stretchers are selling high. Good hard are selling all the way from $8.50 to $10, and hand-made press brick as high as $23."

Over at McAvoy & McMichael's the black fumes from the firing of the kilns suggested strongly the use of soft coal, and the red brick office of the above yard, covered with Virginia creeper, was almost soot-hidden. The boys here have also their share of the big rushing orders, and are working day and night to keep the orders from accumulating upon their books. Down in the yard of Samuel Hubin's estate the same story is told.

This probably is best explained and understood from the figures of the Bureau of Buildings. During July permits were obtained for no less than 800 operations. Over 300 of these consisted of two and three-story dwellings. In this, the Eighth ward, one improvement alone is to be made in the erection of an office for the Land Title and Trust Company, at Broad and Sansom streets, to cost, approximately, three million dollars. This is to be twenty-two stories high, faced with the finest brick and relieved with the best terra cotta the Conkling-Armstrong Terra Cotta Company can produce. Already orders have been placed for nearly seven million brick, which this one operation alone will require. The total cost of the building operations for this city during July amounts to $4,913,835. The records for August call for 450 two and three-story dwelling houses, to be erected during this fall at a cost of one million dollars.

In the Thirty-fourth ward the total sum to be expended is $519,535: Two churches, at a cost of $125,000; the Orthopoedic Hospital, at $150,000, and the Bellevue Stratford Hotel, at Broad and Walnut streets, to cost over one million dollars for the edifice alone. This will call for nearly three million bricks.

From O. W. Ketcham, at the Master Buiders' Exchange, the same bright story is corroborated. Their orders called for the supply of the fancy Italian gray brick used in the facing of the Pennsylvania office building, at Fifteenth and Chestnut streets, of which H. H. Jekel was the architect, the interior brickwork coming from the yard of Webster & Nephew, while the face brick, to the number of half a million, was supplied by Mr. Ketcham.

The mammoth building of the Pennsylvania Sugar Refinery Company, at Shakamaxon street, drew upon them for one million and a half of their good brick.

The Philadelphia Brewing Company's new building, at Sixth and Clearfield streets, is another indicator of where the bricks show brightest and best. Here some 250,000 face brick of the iron-mottled or red colonial have been used.

In the late disastrous fire at 1219-21-23 Market street the splendid looking structure of Trymby & Co., built of iron and stone, was entirely demolished, while the narrow building at 1217, built entirely of brick and fireproof walls, withstood all the ravages of the flames that sent a dozen poor souls into the great beyond.

This has been lately rubbed down and cleaned, new window frames and doors inserted, and is now pointed out as the fire-resisting building, and is a big feather in the cap of those who advocate the use of brick and terra cotta.

By the way, Mr. Ketcham recently issued a very handsomely illustrated catalogue to the architects and members of the building profession, having for its title, "The Story of the House." This abounds with happy illustrations in pen and ink line drawings, showing exquisite attainments in the use of brick as a building material.

Following these, in a tabulated form and paneled tastefully, are the relative sizes of all bricks, from the short Roman to the Norman, starters, stops and angles. My thanks are here expressed for the copy received. It is quite a valuable acquisition.

The Master Builders' Exchange, the best directory in the world for the architect and his client, has been entirely renovated, and now stands clean and inviting to all who choose to enter its doors, to inspect the various materials that go toward the make-up of the house or office building.

The exhibit of the Eastern Hydraulic Press Brick Company is well worthy of an inspection. The bricks are set up in their respective courses, colors and sizes, while at hand is an illustrated catalogue of over 300 shapes, illustrating sizes and prices, with some capital half-tones of the finest world-known Italian buildings in Rome, Bologna and Pompeii, from the Palazzo Communale to the Casa Del Caracci.

It is these exhibits that make the work of the architect easy in the selection of the much-needed material. His client will not visit a brickyard, and there is little beauty to them in the bricks stacked up a million strong, but to see them set up in delicate shades of gray, buff, yellow, red and iron mottled, with a clear-cut course of the best mortar, this gives them immediately a mind of their own; and the architect can "specify," and brick so-and-so shall be "used."

Many large and important sewer contracts have been given out. Among the largest are those of Contractor G. A. Vare for the sewer at Frankford avenue and Thompson street. This is 2,700 feet in length, and will call for over one million hard rough sewer brick at $10 per thousand.

R. J. Dewey and Richard Higgins each have a section at Thomas' Run; Daniel J. McMichael is awarded the McKean street job; R. P. Bevis, the Disston street, and John McMenamey, the Princeton street sewers, and these will draw upon the brickyards for some three million brick. In all some forty other branch contracts have been disposed of, and these will call for not less than two million hard sewer brick.

John McAvoy reports increased activity at Perkiomen Junction, and splendid prospects for the fall trade. The company now commands the trade and has the contracts for Philadelphia and New York. One order for this month calls for an immediate shipment of a million (1,000,000) best pavers for New York State, and the prospects are that the output for this year will nearly double that of last year.

The many operations in the spring caused the brick men to wonder, and ask the reason why. One closely related to a large concern said:

"It staggered me when men came in to whom I could never sell a brick, and they eagerly placed their orders and accepted our quotations without a murmur. The situation mystified me. I hadn't caught on to the fact then that there was a scarcity in brick. Later on I realized fully the situation, and since I've sold hard brick for $9 and $10 on the cars, and in many cases $10 is quoted. Yes! this is going to be a bully year for Philadelphia brickmakers."

Following is the schedule:

Salmon, $5.75.
Hard sewer, $8.50, $9.
Hard, $9, $10.
Machine stretcher, $11, $12.
Hand-made stretcher, $13 up.
Repress stretcher, $14, $16.
Hand-made press, $19, $20 and up.

—Death of Mrs. Euphemia Bell McAvoy.—

One who may be termed the head of the oldest family of brickmakers, the mother of our esteemed brother, Thomas B. McAvoy, passed silently and painlessly away on the 29th of last month, and was interred in Mount Moriah Cemetery on the 1st of this month, aged eighty-years.

She was practically the mother-head of not less than five firms of brickmakers—Amos Dotterer & Sons, McAvoy & McMichael, McAvoy & Morris, T. B. McAvoy & Sons and McAvoy Vitrified Brick Company—and leaves behind her some forty grandchildren and nearly sixty great-grandchildren to cherish a memory that upheld the pride of her life, in the loving welfare of those around her. We say, "Resquiescat en pace."

W. P. LOCKINGTON.

MR. PLUMB A PRIZE WINNER.

We are advised by Mr. C. B. Platt, of Van Meter, Ia., that Mr. Fawcett Plumb, of Sreator, Ill., was awarded the prize for the best answer to the conundrum in the Platt kiln ad., on page 166 of the August Clay-Worker. Mr. Plumb's answer was " a thoroughly hot bottom." We have long suspected that Mr. Plumb was a Yankee, and hence a good guesser.

THE GROWTH OF YEARS.

C. & A. Potts & Co. Again Enlarge Their Plant and Introduce New Up-to-Date Features.

IT IS A TRITE old saying that "Large oaks from little acorns grow." This aphorism is well illustrated by many of our large industrial and manufacturing concerns, most of which start small and grow gradually. Slow growth in industrial affairs, as well as in vegetable life, means greater strength and durability. It is a sign of virile force when an old, established firm continues to grow and expand. This very satisfactory condition maintains with the well-known firm of Hoosier manufacturers, Messrs. C. & A. Potts & Co., of Indianapolis, who, having outgrown their old quarters, have recently built a very substantial addition to their plant, as the reader may see from the accompanying illustrations.

The firm began in a small way in 1885, first manufacturing the famous Potts disintegrators. At that time a small building, about 30x50 feet, was sufficient for their needs. In time they added stock brick machinery, mold sanders and all brickyard supplies to their line, and now a large and well-equipped manufacturing plant is kept busy the year round turning out Potts machinery, all of which they make complete, their plant now including a large foundry, a well-equipped woodworking department and extensive machine shops. In the latter has been installed one of the largest metal planers in the West. Its chief use is the planing of the front of their large iron brick machines, the work being done by the tool in a way that insures absolute accuracy, a very important matter with such heavy castings.

C. & A. Potts & Co.'s New Factory, Indianapolis.

The new addition to the Potts factory is, very appropriately, a handsome brick structure, the front of which is devoted to office purposes. While not gorgeous or extravagant in finish, the new offices are cozy. They are handsomely finished in oak. There are separate rooms for the bookkeeper, the stenog rapher, the general manager and the superintendent of the sales department, each opening off from a general entrance or reception room. A novelty to be introduced here, which indicates the up-to-dateness of Messrs. Potts, is the heating of all these rooms by electricity.

Immediately in the rear of the offices is a new engine and boiler house. In the former has been installed a new 100-horse-power Chandler & Taylor high-speed automatic engine, connected direct to a 75-horse-power general electric generator. From this generator the electric current is carried to motors in the different departments of the works. These motors are connected either direct to the tools or line shaft. In the boiler room they have a 125-horse-power tubular boiler, using an American stoker, by which the fuel is fed into the furnaces automatically. This has proven a very satisfactory improvement, as it enables them to use a cheap grade coal, thus cutting down the fuel bills, and also does away with much labor and the incident expense. In the engine room there is also an air compressor which furnishes power for penumatic hoists, which are used throughout the machine shops and foundry, by means of which heavy castings are picked up and carried from one portion of the factory to another as easily as a workman can carry a bucket of water.

In the foundry or molding department are found similar labor-saving devices. Among them an immense traveling electric crane, which runs the entire length of the building, which enables them to handle immense flasks, castings, etc., as easily as though they were but toys.

In the second story of the office structure they have a finely lighted draughting room, and an immense brick vault for storage purposes. The entire equipment is thoroughly modern, and they will be pleased to have brickmakers who may visit the Hoosier capital call on them and inspect their plant and machinery. They are located at 816 to 828 West Washington street, five minutes' ride from the Union Station on the trolley car.

(1) Clayton Potts in His Private Office. (2) Albert Potts in His Sanctum. (3) The Typewriter in Her Cozy Corner. (4) The Cashier's Desk.

Written for The Clay-Worker.

BUTTONHOLE TALKS.

The Original Cowboy—A Memory.

HE POINTED up at a water color hanging on the wall. I looked and saw a very good representation of sunny fields, farm buildings, trees and a cow standing in the shade. It was a good picture of a restful and beautiful country landscape, well rendered. It needed no recommendation, but spoke for itself. He watched me as I scanned it, and after a pause proceeded: "It's a fine landscape, but I bought it for the cow. I see more in it than you do or than the artist did, I think. I knew a boy, Gates, who spent much of his young life in travel in company with that cow. Not that he was always in close company either, but when she was out of sight he was worrying about her. That was a good many years ago, when the country was new, and large tracts of land were unfenced, and the custom in the villages was to let the cows run at will over these unfenced prairies. The cow for which this boy of whom I speak was custodian was fond of travel and never would he find her twice in the same place. Every night he had to hunt her, and when he started on his quest he never knew whether he was in for just around the block or would bring up in Alaska. One night, perhaps, he would find her on the "middle prairie," probably the next 'way on the north prairie, the next miles to the west with Lebanon Jones' flock. He wore out his legs traveling after her, and he wore out his brain scheming as to where she went, why she went and what she went for. Not for feed, surely, for Lebanon bred his stock to live without feed, while this cow's home was decorated with "bran mashes" and everything known to be seductive and that should tend to make a cow keep early hours and love her home. Nor was it society. No longing for congenial companionship affected her, for many and many a time was she found solitary and alone in some secluded retreat, always distant, however, but ruminating in stately, solitary, dignified grandeur as she meditatively chewed her cud and looked at him, hot and sweaty from his miles of travel, with eyes so placid and wondering. Looking so mildly interested in him and as though wondering where she had seen him before, and thereby bringing him swiftly and suddenly to a point of giving up all his dreams of growing to be justice of the peace or other high dignity, and deciding then and there that he would be a butcher and revel in her blood.

When he started on the uncertain hunt for her—uncertain in everything except distance and disappointment—boys whose fathers kept no cows called to him and mocked him, tantalized and tormented him with constant and repeated signs of the "two fingers," so that, as he traveled the hot and dusty cow path, he saw in his mind the gathering at the cool and shady "swimmin' hole," which he must leave behind in his quest for this long-range cow, for whose amusement he was wearing out his feet and his temper and generally souring his young life. He who felt in his bones that he was destined for better things—for great affairs, in fact—was now wearing out his life chasing a cow.

Then he would try to scheme—to put himself in her place, as it were. Of course, literally he couldn't put himself in her place, or if he could it wouldn't do any good, for her place was her stall, and she was never there except as a last resort. But he would scheme and think as to what her game would be this time—how would her mind run? Her mind never ran as his did, nor his as did hers, however, and when, draggled and covered with burrs, dust and perspiration, after miles of search, he found her about as far away from home as she could get, she would look at him with those mild eyes so innocently and flip her ears and start off fresh to go somewhere else—any old place, so it wasn't home. Then he would run to head her off. "Run" does not express it properly. It is inadequate to give any proper idea. He would put all his life into his exertions, would determine to head her off or die right there, and speed on until, his tongue hanging out and his breath all gone, she would skip past him with a sudden spurt that showed him she had only been playing with him before. Then he would hunt stones and tell himself, in gutterals, what he thought of her, then run some more, and then do it all over again. Then they would go off visiting together, or nearly together, taking in all the places she could think of except home; but home was a last resort, and she never came there until she had used up all the other places. Finally, when they had gone the rounds and at last, late, worn and generally desperate and bedraggled, they appeared at the home gate, having been cheered through the last stages by jibes and jests from the comrades returning from the swim, cool and happy, he is sternly called to account by his paternal ancestor for his tardiness and held in suspicion, notwithstanding his bedraggled appearance, of having been guilty of being off on a good time on his own account.

"The landscape is all right, but the cow adds the interest, brings in the action, for me and you can see why I prize it and what it means to me and the story it tells." GATES.

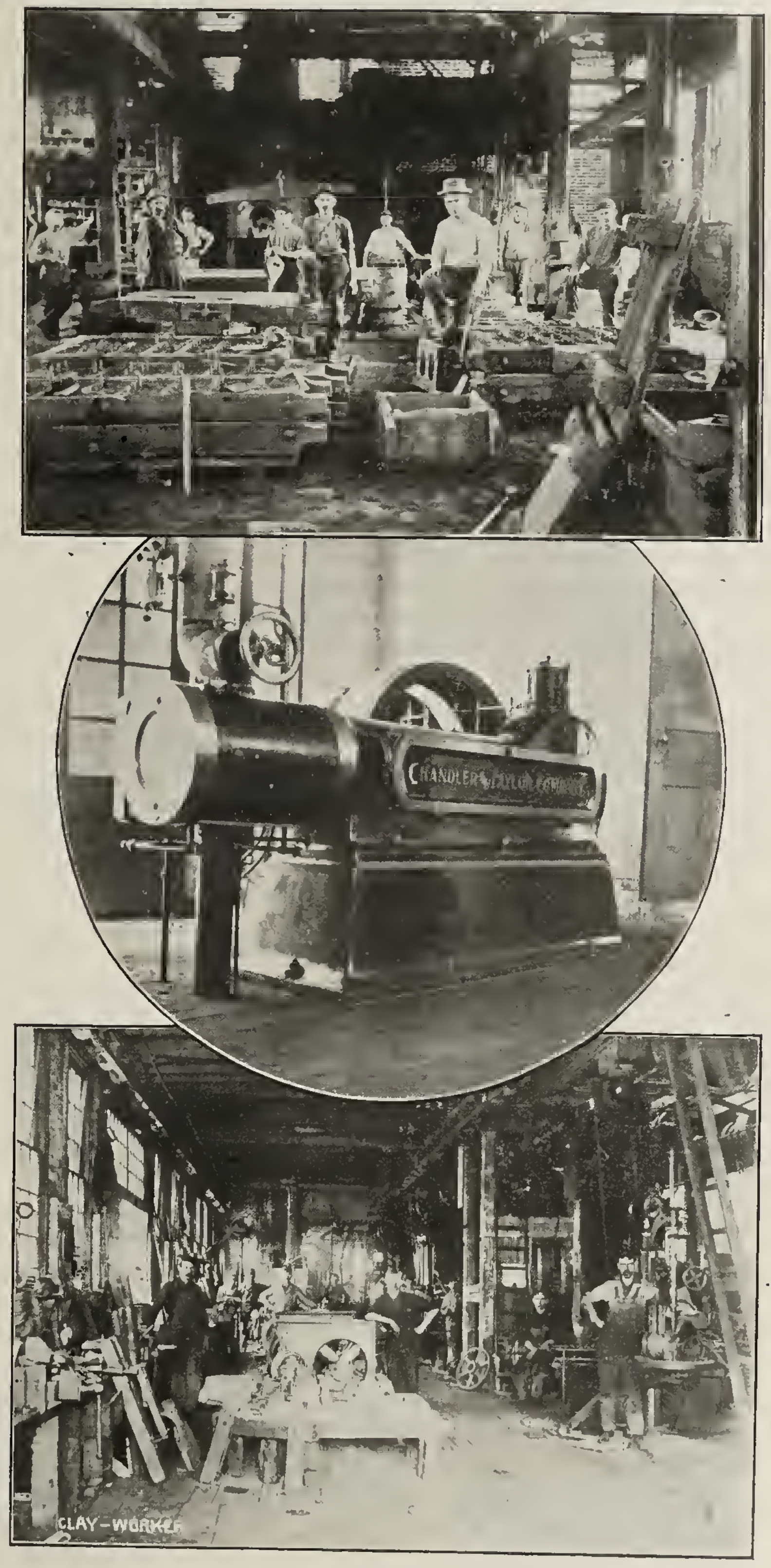
A VALUABLE KILN OF BRICK.

According to a local paper, the yard owned by Col. W. F. Cody, at Nebraska City, Neb., is guarded by a force of men to prevent the carrying away bodily of a large kiln of brick just burnt. A few days ago one of the employes of the yard, while assisting in tearing down the kiln, had a brick break in two in his hand and a nugget of gold was exposed. The nugget bore the appearance of having been melted from the sand of which the brick was composed during the process of burning, and it is believed that the yard is located on a placer bed.

BRICK MANUFACTURERS WILL BUILD A MODEL TOWN.

Chicago capitalists who have organized the Southern Fire Brick and Clay Company, at Terre Haute, Ind., with J. F. Michalski as president, have employed a corps of civil engineers to lay out a model industrial town at a point on the bluffs, a mile back from the Wabash river, near the Chicago & Eastern Illinois railroad, in Vermilion county, and which is to be named Orrville.

The company will build homes for the 500 employes, and they will be equipped with modern conveniences, such as electric light and water connections. The factory will be under the bluff and the workmen will go to and from their work on an incline railway. The company will have its own coal mine adjoining the factory and will furnish fuel for the homes of the workmen.



C. & A. Potts & Co.'s New Factory—The Foundry, the New 100 Horsepower Engine, the Machine Shop.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Perpetual Motion (Draft) Achieved Long Ago.

Editor Clay-Worker:

In your last edition I read an article about "Perpetual Motion or Perpetual Draft." I would like to inform the man who calls himself the inventor of the pneumatic motor that a motor of the very same description was invented and manufactured by my father (who has the motor running to-day, driving a revolving wheel in a show window) about fifteen years ago, when several articles were written about it in the newspapers. I would like to know how the so-called inventor can obtain a patent of a motor of which he is not the inventor?

Whippany, N. J., Aug. 23. MAURILIUS JENSEN.

Burning Questions.

Editor Clay-Worker:

I would appreciate very much some information in regard to burning brick. I am a young man and have not been engaged in this work very long. The kilns I am burning hold from 55,000 to 57,000 brick, and are of the round, down-draft type. We burn with coal and settle the kilns eleven inches in from seventy-two to eighty-four hours after the water smoke is off. Now, I want to know if that is too fast. Our boss says it is, and he also says we must not get the furnaces to a white heat, while I think it is necessary in order to get a good burn. I would be much obliged if some of your readers would give me some information A. O. DONNEL, JR.

Camp Run, Pa.

Reply to Above.

Editor Clay-Worker:

A good sized book could be written about burning brick and perhaps not give information that in your special case would enable you to get the best results. I can, however, in a few words outline a course which, if closely followed, will give you a better, more definite knowledge of the burning of your brick than can be obtained from questioning others. Provide yourself with the following apparatus: (1) A water-smoking thermometer, to be suspended in the top of your kilns during the water-smoking to enable you to determine how fast the temperature can be raised without detriment. (2) A draft gauge for ascertaining and regulating the draft at every stage of the burning. (3) A measuring rod for measuring the settle. (4) Seger pyrometric cones of the proper numbers, to determine when the temperature required for best results has been reached. (5) Kiln record books—one for each kiln.

Carefully observe and record all the facts you can throughout the whole operation as follows: (1) The kind and quantity of brick placed in the kiln and how set. (2) Readings of the thermometer taken every three hours during the water-smoking. (3) Readings of the draft gauge every three hours from the time of starting the fire until the burning is finished. (4) Measurements of settle taken every three hours from the time of reaching the settling heat until the burning is finished. This settle should generally be not less than one-fourth inch nor more than one-half inch in three hours. (5) Rate of cooling and any other facts that may influence the quality of the ware or the time of burning. (6) The condition of the ware in different parts of the kiln as observed during the emptying. (7) The per cent. of each grade of ware produced.

These kiln books should show a complete record of each kiln for every day of the year, whether the kiln is being filled, burned, cooled, emptied, standing idle or being repaired. This practice of making daily records of every operation and of all experiments is a very important one and is followed by the most skillful and progressive brickmakers. By comparison and generalization of the data thus obtained you will soon be able to make decided improvement and obtain such control of this most important operation that uniformly good results will be assured. A. LUMINA.

Will Enlarge Plant and Wants Information, Plans and Up-to-Date Equipments.

Editor Clay-Worker:

In order to get in closer accord with our business we have lately moved our office from the city to the works. While our plant represents an outlay of over half a million dollars it is of fifty years' growth, and though we have tried to keep up with the times, it is possible there could be many improvements. If in the preparing of the clays, machinery, drying and burning this can be demonstrated to us, we will be only too glad to replace present equipment and methods. This has reference to the many problems to be met with in a general fire brick business.

If consistent, will you kindly put us in touch with the people who make a specialty of this sort of thing, and greatly oblige yours truly, VINCENT P. RING,

General Agent and Engineer Christy Fire Clay Co.

St. Louis, Sept. 12, 1902.

The Situation in Chicago.

Editor Clay-Worker:

As is usually the case with us, the month of August has been a "between-seasons" month, and the building permits show a shrinkage in the investment of capital as well as in the frontage covered. It was to be expected that there would be a shinkage in the high figures that have obtained during the preceding months of the year. This shrinkage amounts to 868 feet of frontage and $398,200 in cost.

Inquiry among the dealers in front brick, as well as builders, finds them all busy, and all express themselves as not only satisfied, but pleased, with the business that they are doing. Some dealers are elated over the aggregate of their sales so far as quantity is concerned, but are inclined to depreciate the fact that they are selling their products at too low a price. There has been considerable complaint and much talk in the newspapers in regard to the high prices of building materials. These claims of high prices may possibly apply rightly as to iron and lumber, and possibly to some other building material, but they are entirely out of place when including any clay product used in the building art.

A prominent member of the Real Estate Board says: "August is the dullest month of the year, slower than July in the real estate business. Yet, in spite of this slowness, the month that has just drawn to a close has shown more business done in real estate than any August in any year for many preceding years, and prices have ruled higher. Not only inside the loop, but all over the city, real estate owners are holding their property higher than a year ago. While I do not look for any radical reduction in building material prices, I do think there will be a general and satisfactory increase in real estate transactions this fall, and I think that movement will begin to be felt right away."

On page 119 of your August issue you have an article reproduced from an "exchange" regarding "the use of roofing tile abroad," which gives a description of tile which were used in Greece and Rome. I call attention to this to say that the tile such as are described in that article are now made in the United States by at least two tile manufacturers. Spanish tile and the interlocking patterns of tile such as are much used in this country are not suited in design to the architecture that prevailed in the other countries named. The Akron Roofing Tile Company, of Akron, O., were the first to make a Roman design of tile here and have been followed by the Celadon Terra Cotta Company. The only roof of this design that I now recall that has been used in the West was used by D. H. Burnham & Co., architects, on the roof of the Liberty building at Kenosha, Wis. The tile were of a yellow and green mixture of color, glazed and then sand-blasted to overcome the shine or reflection given in the glaze, thus producing a dull finish. The same tile was used by the same architects on a large office building at Pittsburg, Pa. The Akron Tile Company now have a sand-blast department connected with their factory, and are producing very attractive effects by its use in deadening the shine of their glazed tile.

SCRIP.

Good Enough to Keep.

Editor Clay-Worker:

Inclosed herewith find postoffice order for amount of my subscription to The Clay-Worker. I am always pleased to receive my copy of The Clay-Worker and I spent many pleasant and profitable hours reading both the old and new numbers. I always save the papers for future reference, though occasionally lose one loaning it.

With best wishes, I am, sincerely,

Tenaha, Tex., Sept. 2. J. J. E. Gibson.

A Desirable Location for Brick and Tile Plant.

Editor Clay-Worker:

One of the best locations for a tile factory in Indiana is just outside the corporation of this town. The tract of land on which this excellent tile clay is located consists of 110 acres. Eighty acres of this land has clay to the depth of twelve feet, easy to dig, being covered by about one foot of soil. The land lies between the Big Four railroad and a gravel road. Thirty acres of this tract is admirably situated for a building site, lying immediately next to the railroad and adjoining the town corporation.

There is certainly an excellent opportunity here for those interested in the business. The clay has been tested for both tile and brick, and produced the very best results.

The land can be bought cheap for this purpose, and this town is one of the best shipping points in the State, located at the crossing of the Big Four and Vandalia railroad. Brick are selling here for $11 per thousand and there is a demand in this immediate vicinity for more than one hundred miles of large tile. I will very gladly give further facts to any of the readers of The Clay-Worker who are interested.

Colfax, Ind. C. W. NORTHRUP.

Iowa Clay News.

Editor Clay-Worker:

Business among the brick and tile and pottery makers of northwestern Iowa has suffered great inconvenience so far this season on account of excessive rains, which have in many instances caused a total cessation of operations and much loss from washing and loss of time. This condition is especially true of those plants located on low ground, where the drainage is poor and the facilities for getting clay are rendered useless in times of wet weather.

A decided change is manifesting itself this year in the demands for larger sizes of drain tile. Heretofore six and eight-inch tile were the popular sizes, but this fall an unusual demand is being made for ten and twelve-inch tile. This is due to the large amount of water that has fallen, and is responsible for farmers providing for a repetition of this year's unusual rainfall.

Building operations have been hindered equaly as much by bad weather, as the plants have experienced trouble from the same source. As a consequence building operations will be greatly delayed until the weather forces a closing down. The fields are not at present in a condition for farmers to do very much tiling, and the harvesting, which was delayed, is being followed just at present by a very active threshing season. As a result but little tiling will be done until late this fall.

The different plants about the country in the meantime will devote their time to getting up a big stock of the popular sizes in anticipation of a heavy spring trade. Some of them will put in steam heat in the machinery departments, with a view of running all winter or a large part of it. J. E. D.

Busy Times in the District of Columbia.

Publishers Clay-Worker:

Please find inclosed $2 for renewal of our subscription to Clay-Worker. So far this year we have done more business than at any time since the old firm has been in business and have quite a number of orders for the balance of the season. You will notice by our letter-head that we have incorporated, the heirs of William H. West having sold out to me and I have taken in my brother, L. Perry West, who is now treasurer of the company. No stock has been sold outside.

We use the wheel machine and repress all our brick, having a capacity of 50,000 machine brick and 17,000 hand-made brick per day, selling nearly all of the last named for front work, we having the reputation for making the best hand-made brick in the city. Our yard was first started by my grandfather in Washington in the year 1844, and has descended from father to son up to the present time.

The Potomac Brick Company, which started about two years ago in Virginia, not far from us, is the only new plant. They have a very nice yard and claim to have a capacity of 50,000 per day.

WEST BROS. BRICK CO.,

Washington, D. C., Aug. 27. Henry P. West, President.

Machine-Made Brick Popular.

Editor Clay-Worker:

Inclosed find subscription to The Clay-Worker for another year. We have been very busy this season. People are so well pleased with our machine brick that we supply about all that are used here, besides shipping a good many. We are furnishing all the brick for the rebuilding of Clover, a railroad town about twenty miles from here, which was entirely destroyed by fire last spring.

We find The Clay-Worker indispensable to us, as, indeed, it must be to every up-to-date brickmaker.

South Boston, Va. BOSTON BRICK CO.

A Problem for Machine Manufacturers.

Editor Clay-Worker:

Near our brick plant we have a large hill of clay containing considerable lime pebbles, on account of which we cannot work it through dry press and dry pans. Will you kindly advise us as to the best manner to treat the clay, and if you know of manufacturers making machinery for this purpose, will you please send us their name and address and greatly oblige,

Genesee, Ill. MOWBRAY & LOWES.

Lime Pebbles—How to Get Rid of Them.

Editor Clay-Worker:

I have a large bank of red clay in Antrim county, Mich., that has some limestone in it. I have had some of it made into brick, and the clay works very nicely and does not show any stone lime when it is being worked or before. I want to know if there is any way to overcome the effects of the lime so that the clay can be made into brick. GEORGE W. RAWSON.

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

NINETEENTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
27 Monument Place.] T. A. RANDALL & CO., Indianapolis.

XXXVIII. SEPTEMBER, 1902. No. 3.

CURRENT COMMENT.

Nearly five months have gone by with an active fight, too closely resembling civil war, within our land, and the end is not yet.

* * *

The armed camps in Pennsylvania are sullenly opposed to each other and there is no sign of relenting on either side. With murderous weapons in hand, an outbreak, which is liable to occur at any time, means flow of blood and loss of human life.

* * *

Surely, in this day and age, and in this, the world's leading nation of civilization and Christianity, some better means should be found to solve an economic question than such malignant, willful strife as characterizes the coal strike. An economic question like this, which affects almost every industry, ought to be solved judicially, like any other civil dispute.

* * *

There must be right somewhere, probably there is some right on both sides. It is of little credit to those men who have influence enough to end the disastrous coal strike that, for selfish reasons, they hold back and refuse all supplications to make an attempt to end the cruel situation. Some efforts by nobler men have been made, but they have met with little support from those who could and should have thrown a preponderating weight into the scale.

* * *

To find a remedy for such ills must be the earnest wish of every good citizen. Since no positive compulsion is possible, then moral pressure, by any man or men having the power or influence, would not only be justifiable, but a duty. No considerations of interest or sentiment ought to be allowed to stand in the way of exercising it. Pressure could be brought to bear upon both sides to submit to arbitration, with a full pledge to abide by the arbitrators' decision. After the question is once settled steps should be taken to prevent its recurrence. If it is admitted that there were far too many workmen for all to be employed the whole year, the miners' union might well be aided in preventing, if possible, this unhealthy surplus of labor in future, just as combinations and manufacturers seek to prevent a glut of their products upon the market. The time, too, has fully come when there is no longer need to encourage the introduction by immigration of the lowest type of labor into this country.

OIL FUEL.

The burning question of the day is certainly fuel, and the best solution in sight at the present time seems to be the use of crude petroleum. The recent tests on our war vessels have given complete satisfaction to naval officers and engineers. Fuel oil has been used for burning clay products for a number of years, and these products have included the poorest grade of common building bricks. When coal was at its cheapest, so long as oil was not more than $1 a barrel, the advantages were distinctly on the side of the liquid fuel, even though the method of using it was as crude as the oil itself. With high-priced coal and a reasonable price for oil the fuel question is simplified.

GOOD TIMES.

It is said that the best barometer of the economic condition of the country is the farmer's condition. When he can pay off his mortgage and borrow money at a low rate of interest on his crops the country is prosperous. Prosperity is still at the flood in the farmer States of the West, and there is no sign of an ebb. At the present time the prospect of moving to market more than 3,000,000,000 bushels of corn and wheat this fall is giving no little concern to transportation interests, and our treasury officials are seriously considering the situation in regard to the circulating medium that will be required for this great work. From the figures published by the Agricultural Department it appears that the wheat and corn crops alone will exceed by nearly 1,000,000,000 bushels the crops of last year. The cheerful outlook is improved by the belief that this abundant crop is not likely to be a glut in the market for there are other less fortunate countries that will need our surplus. Good crops mean good barns, good buildings, new homes, new industrial enterprises, and an increased demand for good bricks, tiles, terra cotta and all other clay products, which are becoming more and more indispensable for the health, comfort and well-being of a civilized community.

ARBITRATION AND STRIKE EVILS.

The Arbitration clause adopted by the United Board of Building Trades of New York and vicinity is a most important step in the right direction. This clause provides that in cases where trade disputes occur between any of the affiliated unions and the employers the union that is a party to the dispute may ask for the appointment of a joint arbitration committee of employers and employes to settle the dispute. The constitution also recommends the affiliated unions to make yearly agreements as the best guarantee against strikes.

The only way in which all disputes should be settled, between individuals, between labor and capital, between nations, is by arbitration, but arbitration is no new thing. We often lose sight of the fact that arbitration is thousands of years old. The first court of arbitration was where the differences between two men, instead of being settled by physical force—one of them pounding the other into submission—was decided by a judge. Every court of law is a court of arbitration, but of what effect would the judge's decision be without the police-man's truncheon at the back of it and back of this again the ranks of the militia?

The wicked, senseless waste of a strike should be as illegal as a street riot, or any other destruction of property. The workmen too often have wrongs for which they ought and must have redress. Under the present illogical system, when there is a grievance, the employes, without preliminary and impartial judicial investigation, acting at once as judge and executioner, immediately apply the punishment of a strike; or the employer uses the discharge, the blacklist or the lockout. For all these arbitration should be substituted, but that arbitration must be compulsory, equally just and equally binding on everyone.

IN YANKEE LAND.

A recent visit to Boston and other New England points afforded an ocular demonstration of the fact that the builders of the Hub are enjoying their full share of prosperity. The many new buildings in course of erection are very noticeable. Boston has a building law which restricts or limits the sky line to twelve stories. While none can go higher than this, nearly every new building now put up in the business district goes to that limit. A very noticeable feature of nearly all new buildings and a very pleasing one is that they are constructed of ordinary building brick. Terra cotta and stone are used for ornamental purposes, but the main walls are of red brick. Press brick do not seem to be in favor, except for resident structures. We were told that dry press brick were not at all popular, the idea prevailing that they are not durable in that severe climate. This is a false notion, but it seems to prevail there. It would seem as if the dry press brick manufacturers might do some effective missionary work among the Hub's architects and builders. The fact that such brick are used extensively in New York and other Atlantic Coast cities does not seem to count for much in the estimation of Boston builders. If they based their choice on the superior quality of their own local product, an excellent tempered clay red brick, there would be no occasion for criticism, but to say that dry press brick lack in any essential the quality of a durable material indicates a lack of information of the subject.

—Fiske's New Brickyard in Operation.—

It was our pleasure to visit the new brick plant built by the Fiskes at Dover Point, N. H. It is a stiff clay plant, erected under the direction of Parker Fiske, who has introduced his method of handling brick mechanically and in bulk, instead of by hand, a brick at a time, in the manner that prevails on all other yards. The Fiske system works to perfection so far as the handling of the green brick is concerned. The machinery had only been in operation a day or two, but we witnessed the modus operandi of filling and emptying the dryer and placing brick in the kilns. The ease and accuracy with which 1,500 brick were taken from machine to dryer, etc., proved the success of this feature of the Fiske plan.

The brick are made on a Freese machine—automatic side cut —and are piled five high on stationary racks extending along each side of the conveyor belt. When either of these racks are filled an electric elevator or crane is run over it, the lifting device is lowered into place and the 1,500 brick picked up and carried easily and quickly to a Crown dryer. After the brick are dried they are picked up in the same manner carried to the kiln, thus doing away with all trucking, tossing, etc., the brick being handled but once—when the boy picks them from the belt and places them on the rack. The dryer and kilns are unique in that they have removable tops. These are of fireproofed steel construction and are handled by the carrying crane with consummate ease. The kilns are of the continuous chamber type, the fuel being fed from the top. Each chamber holds 20,000 brick, which at present constitutes a day's run. This will be increased to 100,000 a day, as soon as they have sufficient kiln capacity to take care of the brick. Their present equipment will enable them to make that quantity. Should they decide to make double that quantity they can do so by putting in another machine and additional dryers and kilns. The plant has many novel features of great interest to brickmakers, and a little later we hope to have a full description of it with illustrations of all the principal features.

CONVENTION DATES.

The Wisconsin Clayworkers will hold their third annual meeting January 27 to 29, at Green Bay, Wis., the home of the Honorable William Finnegan. The title is now his by right, as he is a member of the State Assembly. That is, he has been nominated and, of course, will be elected. We cannot imagine such a thing as Finnegan failing to get anything he goes after

The next annual convention of the Illinois Clayworkers' Association, writes Secretary Stoll, will be held at Bloomington, Ill., January 6 and 7. A new hotel is now in course of erection which the secretary thinks will afford excellent accommodations, and the local brickmakers can be counted on to make the delegates happy so long as they remain in the convention city.

TRADE LITERATURE.

"A FALL SUGGESTION" is the title of a quaint little booklet issued by the Henry Martin Brick Machine Manufacturing Co., Lancaster, Pa., for the purpose of reminding brick manufacturers that now is the time to consider the matter of brickyard improvement for next season. The title page is illustrated with a very striking cut that is intended to make the reader smile. It may well be called a seasonable production.

* * *

"NOR RUST DOTH CORRUPT" is the appropriate title of a circular received from the National Musical String Company, New Brunswick, N. J. It announces that their Bell brand strings never rust or tarnish under any circumstances, and are peculiarly suited to brickyard needs and requirements. They will be pleased to have the readers of The Clay-Worker write them for a copy of this circular or other printed matter on the same subject.

* * *

"A. B. C." PRESSURE AND VOLUME BLOWERS is the subject of a new catalogue (No. 141) issued by the American Blower Company, of Detroit. It is beautifully illustrated and contains a table showing the capacity and prices of these blowers and fans, of which they make a very large variety. Readers of The Clay-Worker who are interested in the drying problem will find this a very interesting and helpful little book. Write for copy, mentioning The Clay-Worker.

* * *

THE JEFFREY MANUFACTURING COMPANY, Columbus, O., are sending out a pretty little brochure, the purpose of which is to give the reader a general idea of the line of elevating and conveying machinery manufactured by them, which embraces all sorts of elevating and conveying devices, screens, crushers, chains, buckets, mortar and concrete mixers, conveyors, cars, etc. A copy can be had for the asking.

* * *

"BRICKMAKING MACHINERY" is the title of a catalogue received from Illinois Supply and Construction Company, St. Louis, Mo., which contains handsome illustrations of Grath's dry press brick machines (steam and power), Grath's brick grinding machines and other brickyard supplies, including Grath's up and down-draft kilns, which are designed both round and square. It also contains sketches of model brick plants, which will be of interest to many brickmakers. Any of our readers may obtain a copy gratis on application.

* * *

GEORGE CARNELL, Philadelphia, Pa., has favored us with a catalogue of his Philadelphia brick machine and brickyard supplies, including tempering wheels (both steam and horse power) and power brick presses, soft-mud machines, brick molds, barrows, trucks, etc. He will gladly mail one of his catalogues to any brickmaker desiring it. Address him at 1819-1823 North Fifth street.

* * *

THE NATIONAL DRY KILN CO., Indianapolis, Ind., have out a new thirty-two page catalogue, which tells of the merits of their improved dryer and gives in detail the methods of construction and other information of special value to brick and tile manufacturers. The book also contains sectional drawings showing the manner of piping and general plan of construction and cuts of steel cars, both single and double-deck, turn-tables and other brickyard and dryer equipment. It is a neat little catalogue, a copy of which can be had for the asking.

* * *

THE AMERICAN ROAD MACHINE COMPANY, Kennett Square, Pa., are mailing a new catalogue of their Champion crushing, elevating, conveying, screening and quarrying machinery, also road and street-working machinery and contractor's tools and supplies. The frontispiece is a handsome engraving of their works—the largest in the world, they claim, devoted to road working machinery. The catalogue contains a large number of interesting illustrations and ought to find a place on the desk of every taxpayer who is interested in road improvements. They will send a copy to any of our readers who will write them, mentioning The Clay-Worker.

* * *

"ENGINES AND BOILERS" is the theme of the new catalogue received from the Frost Manufacturing Company, Chicago and Galesburg, Ill. The cover is a bright red, with the title, "Engines and Boilers," embossed in gold against a black background, a bold and contrasty combination. Within the covers are found beautifully drawn engravings of the Frost engines and boilers, and a series of tables giving the horse power or capacity of same, which range from 10 to 150-horse-power, and other information of value to engine and boiler users. The catalogue also contains a good cut and description of the noted Frost dry pan, with which our readers are more or less familiar. Those who are interested and have not received a copy are requested to send their address to the Chicago office.

* * *

MODERN CARPENTRY AND JOINERY is the title of an interesting and instructive book—a practical manual, the publishers call it—that is devoted to the art of frame building. The book was written by Fred T. Hodgson, M. O. A. A., a well-known technical writer, is well illustrated and substantially bound in cloth. Copy can be had from book sellers or from the publishers, Frederick J. Drake & Co., 352 Dearborn street, Chicago, Ill., for $1.

* * *

"GOING ABROAD" is the title of a very interesting book published by Robert and Linn Luce, 68 Devonshire street, Boston, which tells of the most interesting points in Europe and how to reach them. It is a hand-book for travelers which anyone contemplating a trip to any part of Europe may read with both pleasure and profit. Next to an actual visit to many of the interesting cities and resorts of the old country this little book comes the nearest to giving an accurate idea of the pleasures of such a trip than any work that has come to our attention. The price in cloth $1, paper 50 cents.

Wireless telephony may be realized some time and then our means of communicating by electricity will be revolutionized; but the art of advertising will remain practically unchanged until somebody invents a wordless language.—Trade Press.

TABLE OF CONTENTS.

New Brick in an Old Town 217
Brick and Lumber in Louisiana 218
What Clay Can Do 220
Promotion of the Brick Business.......................... 221
The Faithful Watchman....... 222
Brick Streets of Syracuse 223
Cost of Production.............. 224
Brickmaking Under the Shadow of the Rockies..... 226
Roseville Brick and Pottery Notes 228
Something About Old English Porcelain 229
Oil Fuel for the Clay Industries 230
Terra Cotta and Brick in Architecture 234
Light and Heat................. 237
Clayworking Industries of Greece 238
Foreign Scrapings.............. 242
The Growth of Years............ 253
Buttonhole Talks............... 254
Brick Manufacturers Will Build a Model Town.................. 255

CORRESPONDENCE:

Likes the Scott Car System of Handling Brick 239
The New York Brick Market.. 240
Buffalo Brick and Building News 241
Philadephia Brickmakers Jubilant With Prosperity......... 252
Perpetual Motion (Draft) Achieved Long Ago 256
Burning Questions.............. 256
Will Enlarge Plant.............. 256
The Situation in Chicago 256
Good Enough to Keep 257
A Desirable Location for Brick and Tile Plant................. 257
Iowa Clay News 257
Busy Times in the District of Columbia 257
Machine-Made Brick Popular . 257
A Problem for Machine Manufacturers 257
Lime Pebbles—How to Get Rid of Them 257
St. Louis Brick and Building News. 262

EDITORIAL:

Current Comment 258
Oil Fuel 258
Good Times....................... 258
Arbitration and Strike Evils .. 258
In Yankee Land................. 259
Convention Dates.............. 259
Trade Literature 259
Editorial Notes and Clippings. 261

MISCELLANY:

Building Statistics.............. 222
Brick-Yard Beverages 225
Brick Manufacturer Injured... 238
Mr. Plumb a Prize-Winner 253
A Valuable Kiln of Brick...... 255

Index to Advertisements on Front Inside Cover Page.

WANTED—A good second-hand dry pan; also about 3,500 feet of T iron.
MORRISON-TRAMMELL BRICK CO.,
Rome, Ga.

WANTED—One five or seven-foot wet pan and one medium-sized pug mill or union brick machine. Must guarantee good condition. Give description and price.
Address "SOUTHERN,
9 1 d Care of Clay-Worker.

WANTED.
One second-hand granulator.
One second-hand conical-shaped crusher.
One belt clay elevator.
One pug mill.
Address B,
9 4 d Care of Clay-Worker.

FOR SALE.
One flower-pot machine with five dies for 2½, 3, 5 and 6-inch pots; been used but a few weeks.
THE C. PARDEE WORKS,
Perth Amboy, N. J.

WANTED—A thoroughly competent setter and burner for round down-draft fire-brick kiln; also an expert superintendent for fire-brick plant.
THE INFUSORIAL EARTH MFG. CO.,
1604 Continental Trust Bldg.,
9 1 d Baltimore, Md.

MACHINERY WANTED.
Any one having stiff mud machinery for sale will please communicate with us. We are also in the market for a brick dryer. Address
THE BRANDT CLAY PRODUCT CO.,
9 tf d Binghamton, N. Y.

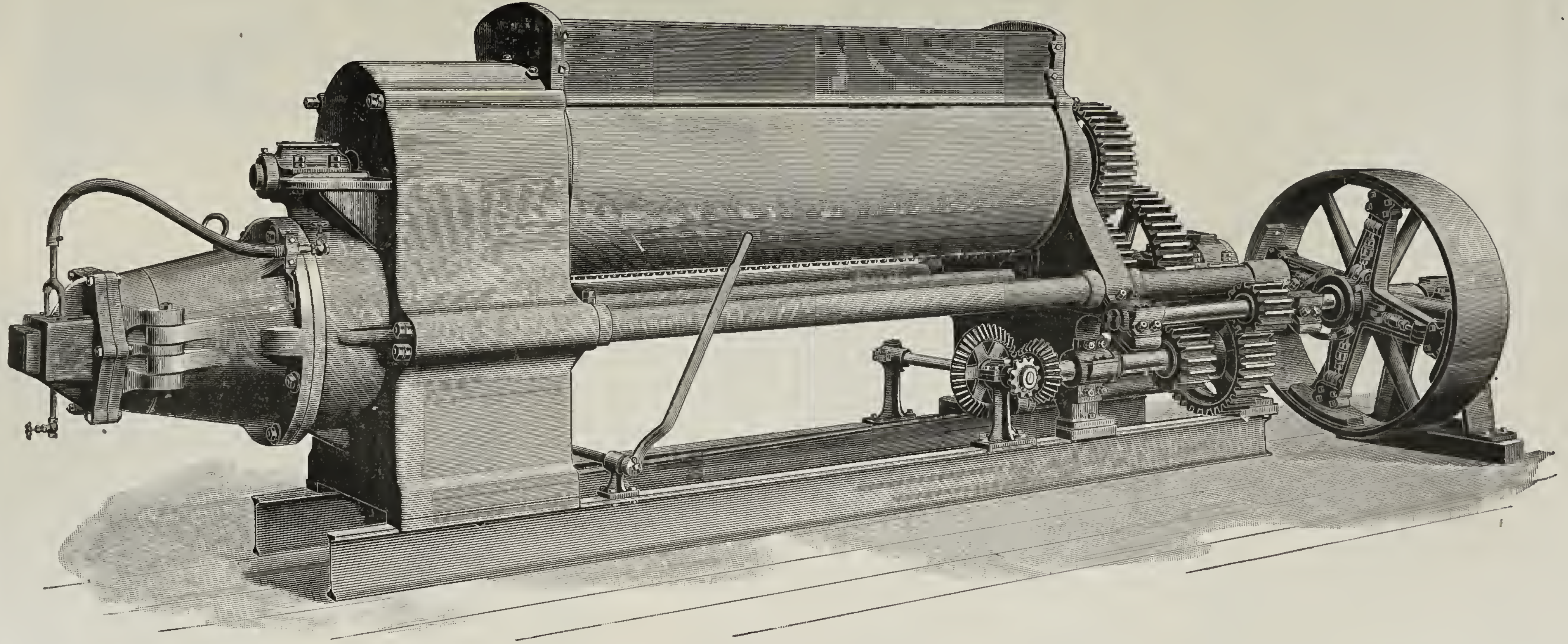
FOR SALE—A threc-mold Boyd brick press which is in good condition. Have given up the dry-press process entirely, else would not sell this press. Will be sold cheap for cash or on time to thoroughly responsible parties. Address
NEW ENGLAND STEAM BRICK CO.,
9 tf d Providence, R. I.

FOR SALE—Cheap, soft-mud outfit rigged complete, with steam power, one Grand automatic boiler, engine, clay elevator, sander; capacity 30,000 per day; racks, pallets, trucks, grates and doors for fourteen arches. Address
SUHREHMEIMIRH BROS.,
9 1 c Evansville, Ind.

For Sale, Wanted, Etc., Ads. Continued on Pages 267 and 269.

THE HEAVY BRICK MACHINERY

Is made by Raymond. ✠ It is not as Cheap as some others, but it lasts. ✠ It has Staying Qualities. ✠ You Avoid Expensive Break Downs, and Incidentally Break ups by using it. ✠ ✠ ✠ ✠ ✠



WE DON'T MAKE all the Brick Machinery sold in the U. S., but those who use it say it is the best. We have every reason to believe this is true because that is just what we try to make. We can attribute the unprecedented demand for our machinery to no other reason than the fact that it is strong and heavy and satisfies the trade. Users of our machinery are our friends because they get good value for their money.

The C. W. Raymond Co.

DAYTON, OHIO, U. S. A.

NEW YORK OFFICE: 39 and 41 Cortlandt Street.

WRITTEN FOR THE CLAY-WORKER.

ST. LOUIS BRICK AND BUILDING NEWS.

THERE HAS BEEN quite an increase in building operations lately, and the result is that the brick industries have been quite busy. Building operations for the month of August, just passed, were nearly $425,000 in excess of those for the same period of last year, according to the comparative statements compiled in the office of the Building Commission. Permits were issued during the month for buildings estimated to cost $1,207,416. For the same month last year the permits issued represented an estimated valuation of $785,171. During the past month 118 permits were issued for brick buildings to cost $1,088,765. During the month of August, 1901, 106 permits were issued for brick buildings to cost $659,451. In August, 1902, 173 permits were issued for frame buildings to cost $34,592. For the same period last year 132 permits for frame buildings to cost $29,250 were issued.

While several permits for large buildings have been issued during the past month, many more have been taken out by contractors for the erection of small structures, including many flats. Home building is far beyond what it ordinarily is at this time of year, but there are prospects of a revival in this line which may somewhat relieve the demands of tenants next spring, before which time the contemplated new buildings will hardly have been finished. The work now going on in the house-building line is mainly confined to the West End, east of Forest Park, between Easton avenue on the north and Laclede avenue on the south. Within that region, more contiguous to the World's Fair site than other parts of the city, there are a good many houses in course of erection, but many of them are being sold long in advance of their completion.

There are two enterprises on foot that may really be called hotel schemes, as each of them contemplate a building of not less than 300 rooms. A smaller house than that in such a large city as St. Louis should scarcely be called a hotel. Many such projects have been exploited in the newspapers within the past two years, but unfortunately for the city, none of them have materialized.

In East St. Louis, too, there is a building boom on. A conservative estimate by a well-informed East Side contractor was that there is now more than $2,000,000 worth of building either going on or contracted for inside the city limits of East St. Louis, and that before the end of the year double that amount will be on the books of the architects and contractors doing business on the East Side.

Another building in St. Louis that a building permit has been gotten out for is the building that the Bell Telephone Company will build on the southwest corner of Grand and McRea avenues. It will be a slow-combustion building, the exterior of which will be constructed of vitrified brick, with stone and terra cotta trimmings, laid in Portland cement. There will be no plastering, but in its place the entire interior of the building will be lined with enameled brick of various colors, to harmonize with the different departments.

Prices of brick continue to be the same as reported last month, viz.: Merchantable brick, $7.25; ordinary brick, $7.75; strictly hard, $8.25; red pressed brick, $17.50; sidewalk and paving brick, $8.50.

Frank Reinhardt, an oiler at the plant of the St. Louis Hydraulic Pressed Brick Company, was caught in a flywheel at the works, a few days ago, and met a horrible death.

The president of the Board of Public Improvements estimates that not less than 125 miles of streets will either be reconstructed or newly paved during the season of 1903. Brick will be the material most used. There will be few streets paved with granite.

The Fernholtz Brick Machinery Company is quite busy and Mr. Scott the vice president and general manager, says they have all the business that they can attend to. Since their removal to their new plant they have been unusually busy, notwithstanding that their facilities have been enlarged.

The William Patent Crusher and Pulverizer Company reports a very busy season. They have recently shipped machines to the following firms: The Pressed Brick and Tile Company, Winnipeg, Manitoba; the Johnstown (Pa.) Brick and Stone Company; the Eubank Pressed Brick Company, Paris, Tex.; the Anderson (Ind.) Foundry and Machine Works; Chisholm, Boyd & White, Chicago; the American Clay-working Machinery Company, Bucyrus, O., besides making shipments to Sidney, New South Wales, and Mexico.

No small portion of the immense amount of brick now being used in St. Louis is going into our sewers. A number of these great underground rivers are being constructed. Some of them are as much as seven feet in diameter. The work of excavation and construction gives employment to an army of men, and the brick consumed in their building represents a large revenue for our bricklayers. A. SAINT.

AMERICAN CLAY-WORKING MACHINE COMPANY MEN ENJOY ANNUAL PICNIC.

The fourth annual picnic of the employes of the American Clay-Working Machine Company, at Willoughby, O., which was held at Willoughbeach. was a great success. Over 1,000 persons were present, and the festivities lasted from early morning until late at night. All of the features that go to make up a successful picnic were in evidence.

An athletic programme of over twenty events had been arranged. Among the most interesting of these events were the wheel races and the horse race. The latter was won by a nameless horse owned and driven by John Pelton. The one-mile bicycle race went to Charles Bunnell, and in the three-mile race the place prize was won by Clifford Hayden, and the time prize by S. Toomey. A ball game between the married men and the single men demonstrated the superiority of the former, the single men being defeated by a score of 18 to 5.

The tug of war between teams from the machine shop and foundry resulted in a victory for the machine shop.

The swimming race was the source of much rivalry, but S. A. Rockafellow finally succeeded in winning.

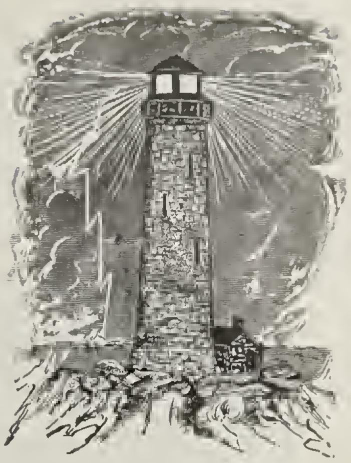
The Citizens' Band, of Willoughby, was present and played during the day. That nothing might be lacking for giving every one a good time, it had been arranged to serve soft drinks to those present without any charge.

Dancing in the pavilion during the evening brought the picnic to a happy conclusion.

RIVALS.

Mose Ketchum (who has just shot a hawk)—"You old rascal! many a spring chicken you stole around here dat I've been blamed for. And a good many of dose I might have had but for you."

LIGHT HOUSES

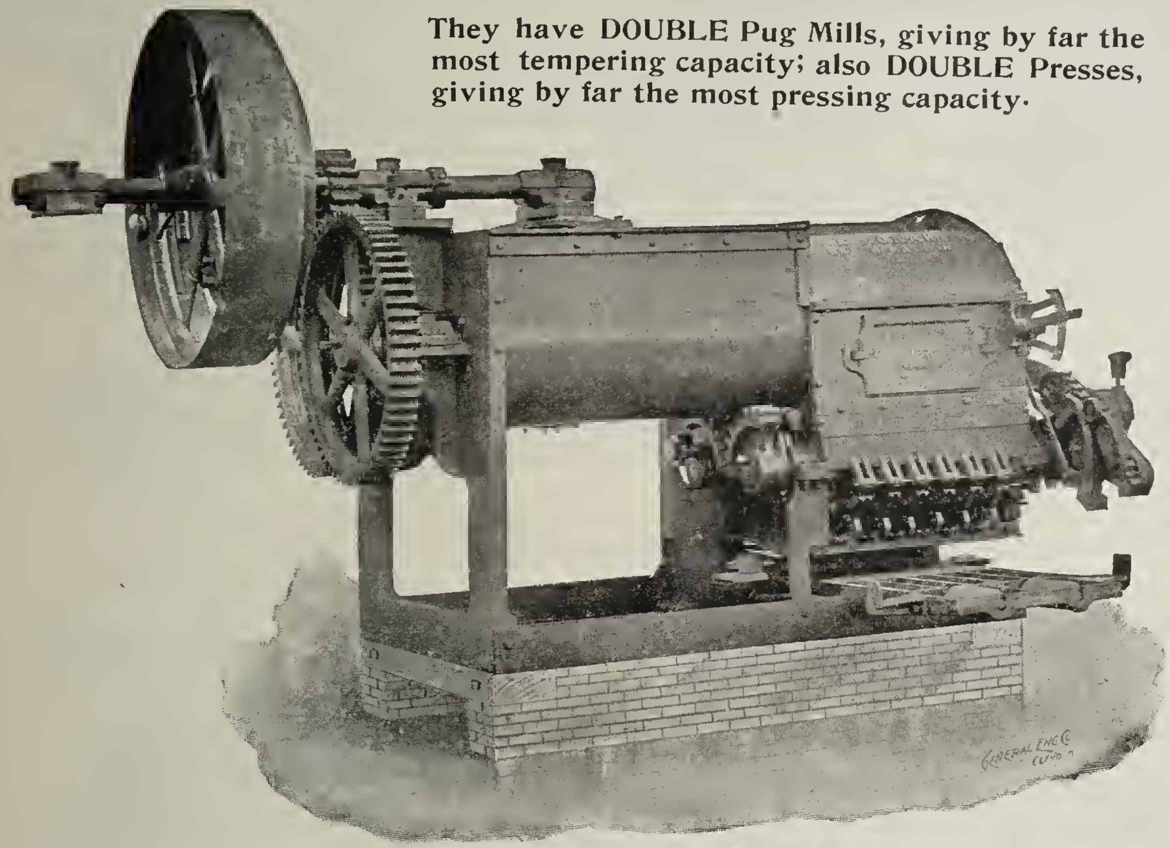


Do not have to hire bands or fire cannon to call attention to their shining—**THEY JUST SHINE.**

Thus it is with the two "soft-mud" machines we manufacture (one horizontal and one upright). **Each** is at the head of its respective class, and the number of each in use, (note the figures) **tells the whole story.**

Over 125 "MONARCH" BRICK MACHINES in use.

They have DOUBLE Pug Mills, giving by far the most tempering capacity; also DOUBLE Presses, giving by far the most pressing capacity.



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READ THIS.

A Fresh one Every Month.

◆ ◆ ◆

Ashtabula, O., Oct. 5, 1901.
The Wellington Machine Co.,
Wellington, Ohio.

Gentlemen — This is the fourth year that I have used the ten-year old "Monarch" Machine, and it has made about 1,500,000 each year since I came into possession of it. The past year it has worked better than any of the four previous years, and has given very good service.

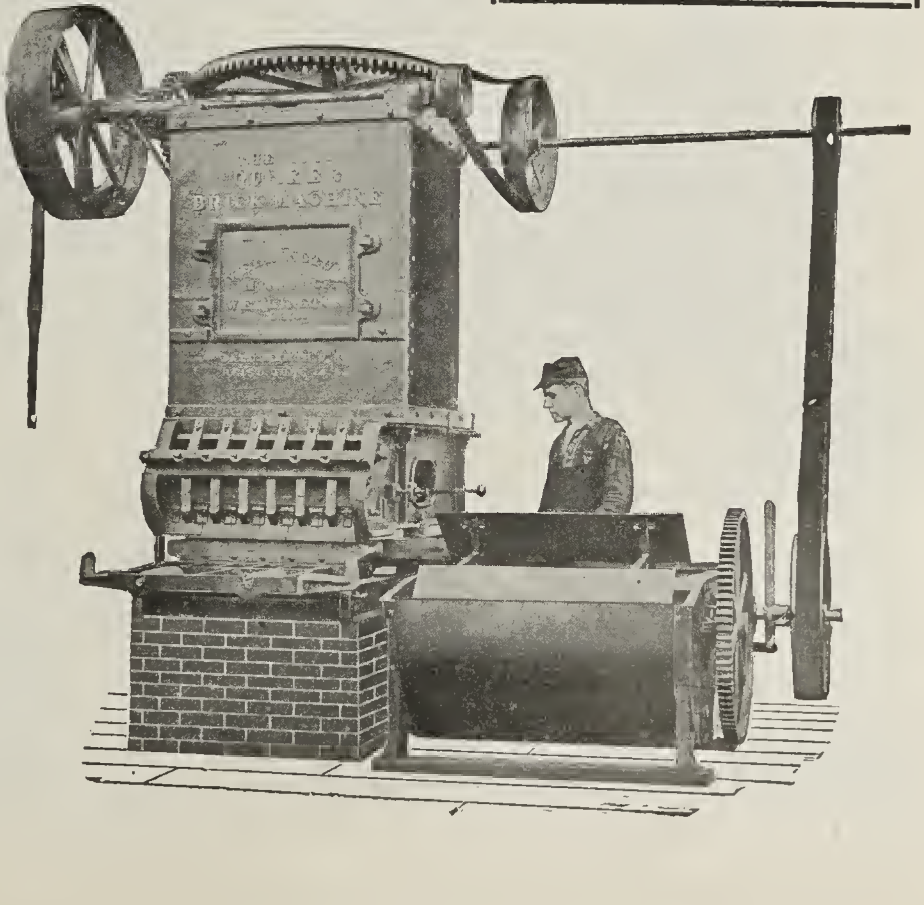
Yours very respectfully,
C. W. Simonds.

◆◆◆◆◆◆◆◆◆◆◆◆

OVER 500 "QUAKERS" in use, both Horse and Steam Power, now made entirely of Iron and Steel.

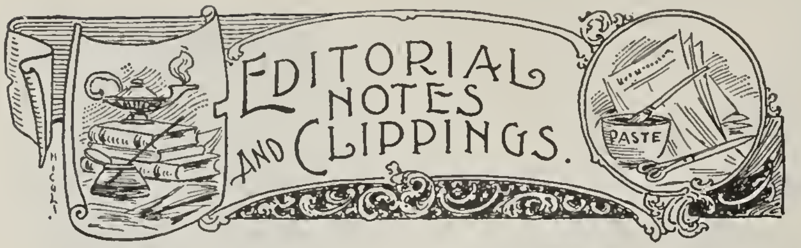
OUR MOULD-SANDER is the BEST, SIMPLEST AND CHEAPEST.

WITH our ROLLER-BEARING BRICK BARROWS you can wheel 20 per cent. more load and do it as easily. Order one subject to approval.



ALL OTHER SUPPLIES. Send for Catalogue.

The Wellington Machine Co.,
WELLINGTON, OHIO.



Central City, W. Va., is to have a new brick manufacturing plant.

W. S. Cook has purchased the vitrified brick plant at Mayfield, Ky.

The Fredonia (Kan.) Brick Company has been chartered with capital stock of $50,000.

The Garig Brick Company, Baton Rouge, La., sustained a loss of several hundred dollars by fire recently.

John Baeten sold his West Side brickyard at De Pere, Wis., to his brother, Peter Baeten, of Green Bay.

The Union Brick Company, of Union Center, Ill., has purchased the Burdick brick plant at Homer, Ill.

Henry Egert will establish a brick and tile plant at Nicholson, Ala., where he has a fine deposit of clay.

The Youghiogheny Brick and Supply Company has beeen incorporated to manufacture brick at McKeesport, Pa.

J. T. Rundell has purchased Mr. H. J. Beall's interest in the brick plant at Pony, Mont., and becomes sole proprietor.

The Sparta (Ill.) Brick Company has lately been incorporated by L. J. Sexton, F. E. Pinkerton and C. A. McLaughlin.

The death of Miss Grace M. Elder, only daughter of John M. Elder, occurred at the family home, Bloomington, Ill., Sept. 8.

Fire at the plant of the Shreveport (La.) Brick Company caused a damage of $3,000. The flames started in the dry kiln.

Labahn's brickyard at Evanston, Ill., was damaged to the extent of $4,000 by fire Sept. 7. The burned portion will be rebuilt at once.

The plant of the Suburban Brick Company, at Wheeling, W. Va., will be enlarged to twice its present capacity, which is 25,000 per day.

The Reynoldsville (Pa.) Brick Company has been incorporated with $25,000 by A. O'Donnell, Henry Herpel, G. W. Lenkerd and others.

George Russell, a pioneer brick manufacturer and contractor of Ashtabula, O., died at his home in that city at the age of seventy-nine years.

The Muller-Burns Fire Brick Company have their new plant near Chattanooga Tenn., ready for operation. They will make at the start 20,000 brick a day.

The brick plant of Levin T. Buck & Co., at Weems, Va., was damaged to the extent of $1,200 by fire recently. The burned portion will be rebuilt at once.

W. C. McGee, of Hastings, Neb., is interested in a $30,000 brick plant, to be erected at Fairbury, Neb., where he has immense deposits of superior clay.

The main shed of the Glens Falls brick plant, at Glens Falls, N. Y., was badly damaged by fire last month. The flames started from an overheated kiln.

Henry Cunningham, foreman of the Dagus Brick Company, Daguscahonda, Pa., died of typhoid fever at the Kane Hospital, Kane, Pa., Sunday morning, Sept. 14.

A new brick plant will be established at Pullman, Wash., by J. A. Terteling. The plant will have a capacity of 25,000 brick daily, and afterward a department will be added for sewer pipe and tiling.

In a recent letter J. C. Steele & Sons, Statesville, N. C., say: "The increase in our business has been so great we are compelled to have more room and are now building an addition to our foundry department. We have had an excellent trade this season and the prospects for future business are better than ever before.

C. & L. Merrick, Syracuse, N. Y., have recently booked an order for 600,000 brick to be used in the construction of new railroad buildings at Oswego and Watertown.

The engine house at Towers Bros.' brickyard, New Britain, Conn., was destroyed by fire recently. Work at the yard will be suspended until a new engine can be installed.

The brick plant of the Amos Kent Brick and Lumber Company, Kentwood, La., was burned to the ground Aug. 27. The loss is estimated at $12,000. The plant will be rebuilt.

The Brandt Clay Product Company, Binghamton, N. Y., advise us that they will rebuild their plant this winter and are in the market for dryer and stiff mud machinery.

By the explosion of a steam pipe at the plant of the Vane brick works, in Milton, W. Va., John W. Wysong, the engineer, was fatally injured and Henry Jenkins seriously hurt.

One man was instantly killed and several others narrowly escaped injury by the premature explosion of a charge of dynamite at the clay bank of the Cooper Brick Company, Akron, O.

George M. Crume, Cando, N. D., will establish a new brickyard at that place. The plant will be equipped with machinery from the shops of the Wallace Manufacturing Co., Frankfort, Ind.

The New Boston Pressed Brick Company, of New Boston, Bowie county, Tex., has been incorporated by T. A. Fuller, H. A. Burrows and Lewis Kapp. They have a capital stock of $20,000.

The immense plant of the American Clay Company, at North East, Md., has been completed and will soon be in operation. William Bermingham, of Philadelphia, is president of the company.

George Cook, who has been identified with the brickmaking interest of Newfield, N. Y., for a number of years, will erect a new plant at Ithaca, N. Y., for the manufacture of brick and drain tile.

Herman Brockschmidt, a contractor and brick manufacturer of St. Louis, Mo., was run over by a street car and killed instantly, Aug. 14. Mr. Brockschmidt was sixty-three years old and leaves a family.

The Troy (N. Y.) Brick Company, recently organized, with Mr. Thomas F. Morrissey as president, is putting in new machinery, including a ten-track dryer of the Standard Dry Kiln Company's latest pattern.

The Diamond Brick Company, Canon City, Col., report a very busy season. They are running a night and day shift and are a half million brick behind our orders. Among recent shipments was a carload of brick to Arizona.

The Empire Brick Company, a new corporation at 874 Broadway, New York, with a capital of $1,500,000, has purchased large tracts of land along the Hudson. Two big plants are to be erected at Glasco and Walshville, N. Y.

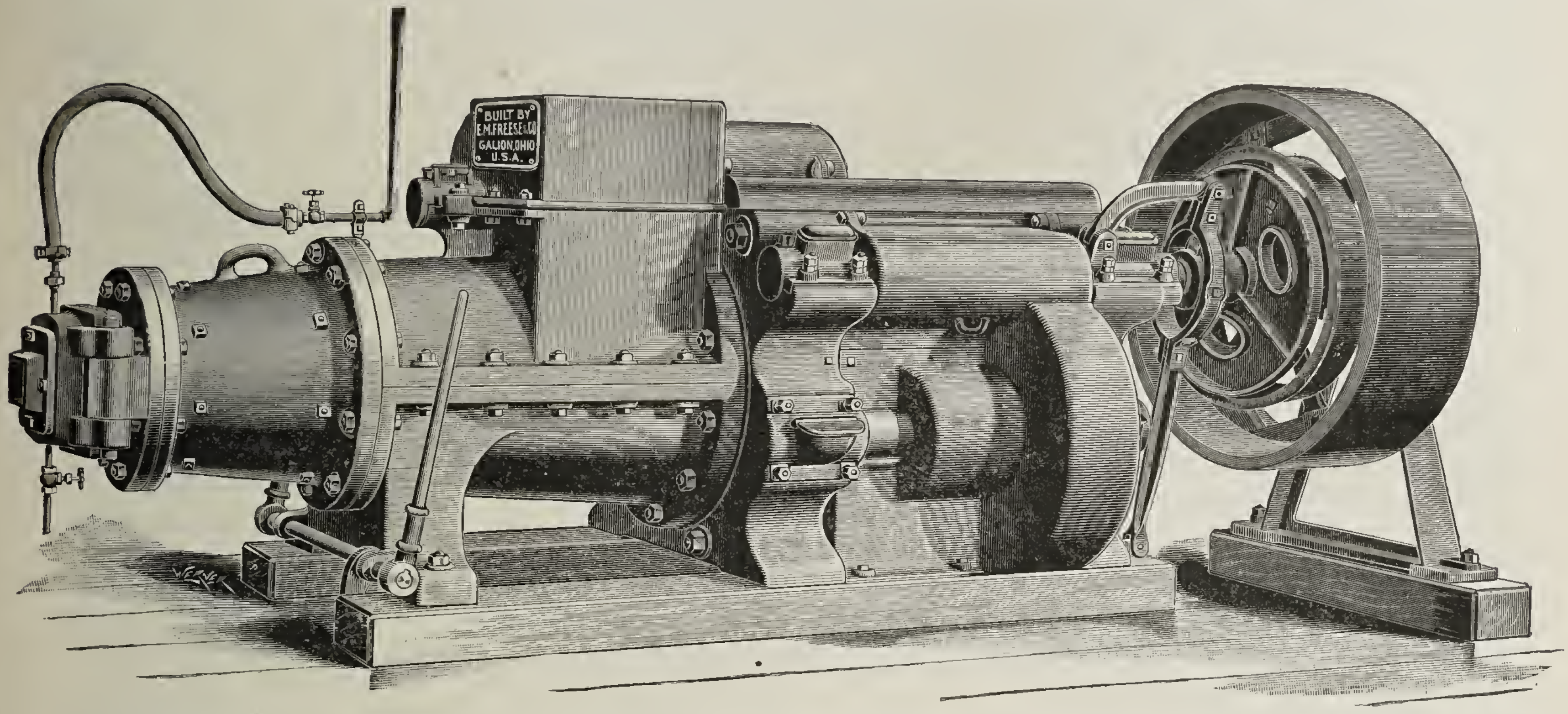
The Standard Fire Clay Company, of Fallston, Pa., capitalized at $35,000, has been organized by Joseph S. Edwards, of Rochester; James Garrett, Monaca, and John W. Edwards, New Castle. A plant will be erected at once.

Frank M. Buchanan, superintendent of the Cambria Steel Company's brickyard at Johnstown, Pa., writes that they have had a very busy season. They use a Chambers machine and average about 60,000 brick per day the year through.

The Standard Brick Company, Milwaukee, Wis., sustained a loss of $15,000 by fire Aug. 24. The engine house, a small house in which one of the employes lived, and a barn are the only buildings in the plant which escaped destruction. The origin of the fire is not known, but the flames were first seen in the

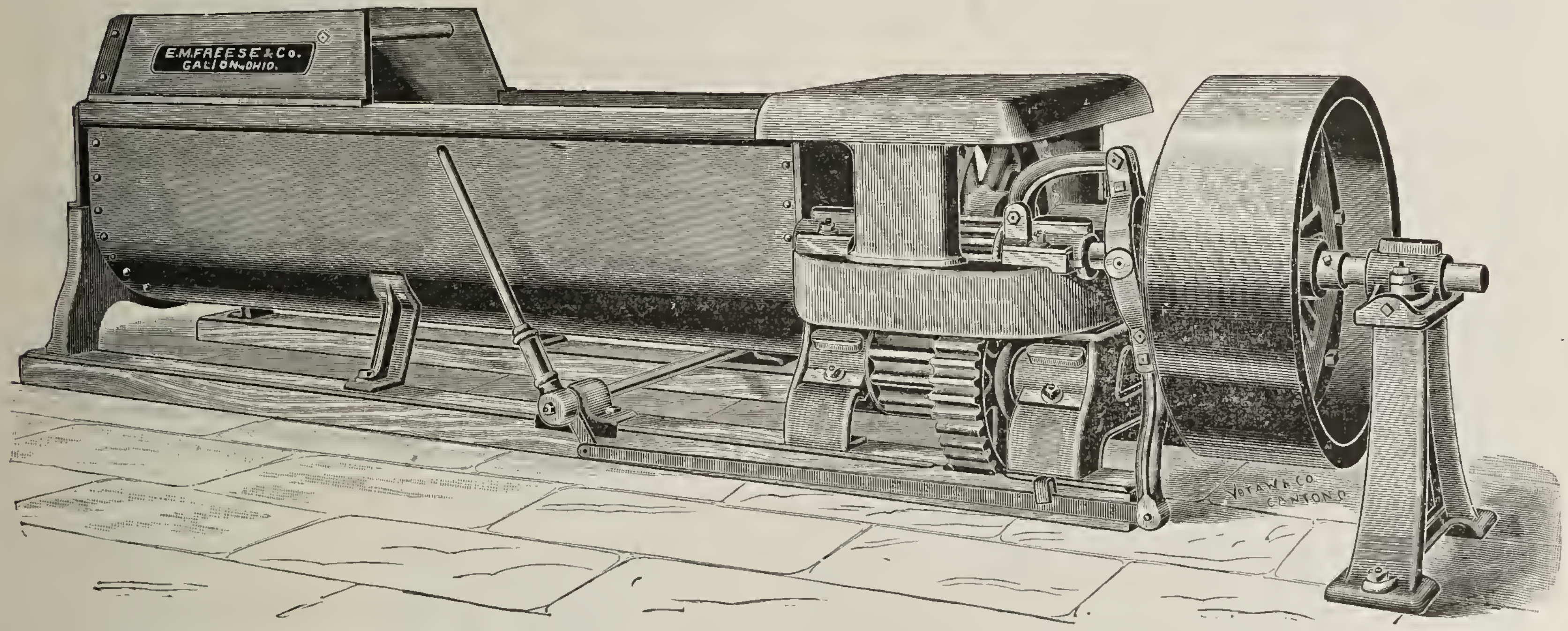
[CONTINUED ON PAGE 266.]

Our Mammoth Brick Machine



THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug=Mills Have Features of Great Merit.



THESE PUG=MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitted for making a fine quality of brick.

E. M. FREESE & CO., = = Galion, Ohio.

Mention The Clay-Worker.

EDITORIAL NOTES AND CLIPPINGS—Continued.

dry kiln and they had gained considerable headway before they were discovered and an alarm given. Repairs were made to the dry house earlier in the day, and it is possible that one of the workmen was careless. The plant was insured for $9,000.

The Ferguson Brick Company, of Troy, N. Y., are taking a long step forward in modernizing their plant. In other words, they are putting in a new Standard dryer of brick and steel construction. This is a sure mark of up-to-dateness.

The Decatur (Ill.) Brick Co. will establish a new dry press brick plant. The location of the plant has been decided upon and the machinery will be put in place during the winter and the plant be all ready for operation when the brick season opens in the spring.

The business of the Table Rock (Neb.) Clay Company has attained such proportions that it had to have more land for its use, and they have just purchased and had surveyed thirty-two acres of land, where a new plant will undoubtedly be erected in the near future.

The Climax (Pa.) Fire Brick Company's plant was partially destroyed by fire the last of August. The loss was fully covered by insurance and the plant will be immediately rebuilt. Henry Y. Haws, of Johnston, Pa., owns the controlling interest and Charles Luke is manager.

A settlement satisfactory to both parties concerned having been reached, the suit recently filed in the United States Circuit Court at Indianapolis by the Standard Dry Kiln Company against the National Dry Kiln Company, for an infringement of patent, has been withdrawn.

A kiln at the plant of the Missouri Fire Brick Company, St. Louis, Mo., was wrecked by the bursting of one of the iron bands at the top of the kiln. Men had been working around the kiln, but left on account of a heavy rain just a few minutes before the accident, so no one was injured.

The Rumbaugh Brick Company's plant, near Pitcairn, Pa., was damaged by fire Sept. 4. The workmen about the plant organized into a bucket brigade and by hard work saved the plant from serious damage. Flames were discovered in the oil house of the plant. It is thought that some person was stealing oil and dropped a lighted match on the oil-soaked floor. The house was burned to the ground and the five barrels of oil it contained were destroyed.

Chambers Bros. Co., Philadelphia, Pa., write that they are still very busy on this year's work. For some time past they have been running their plant until 9:30 P. M., and yet find it difficult to keep up with their orders which come from all sections of the country, North, South, West and East. A gratifying feature of their trade this season has been the large number of duplicate orders booked; that is, orders from customers who have previously been using Chambers' machinery and who wish to increase their capacity or replace machinery destroyed by fire, etc. Orders are always appreciated they say, but especially those from old customers.

A new company has been organized at Goshen, Ind., to be known as the Goshen Brick Company, with a capital stock of $10,000. The officers of the company are Charles W. Miller, president; Albert J. Irwin, vice president; Harry C. Dangler, secretary-treasurer and general manager. They have purchased Charles H. Crowell's yard and will make a number of improvements in same. Mr. Crowell is one of the stockholders. The president of the concern, C. W. Miller, is Republican candidate for attorney general. Mr. Crowell writes that all the officers are men of energy and push, and he expects great things to be accomplished at his old plant.

The Georgia Vitrified Brick and Clay Company, Augusta, Ga., have completed the organization of their company and have located the site for their plant. At the outset sewer pipe, paving brick, fire brick and various fire brick products will be made. The plastic clay is especially suited to making fine stoneware, and later on the company will establish a large stoneware plant at the same locality. The plant will be equipped with two sewer pipe presses, one capable of making the largest pipe—as large as double-strength thirty-six-inch pipe. It will be fully equipped with brick machinery with a daily capacity of 60,000 paving brick. The construction of the plant is under the general supervision of Mr. H. B. Camp, one of the leading clay experts in the United States, and one of the largest stockholders in the company. Work upon the buildings will begin within a few days.

The Laclede Fire Brick Manufacturing Company, St. Louis, Mo., advise us that they have recently moved into their new office, which they have had built at the factory, corner of Manchester road and Sulphur avenue. They say their new quarters are very comfortable and convenient, and they will be very glad to welcome visiting clayworkers at any time.

Charles Gehlhaus Company, Keyport, N. J., will soon incorporate with paid up capital $100,000. Their plant is located at Cliffwood, N. J., and was established about twenty-five years ago by the late Charles Gehlhaus, who manufactured common building brick only by soft mud process, by steam power. The capacity of the yard is 120,000 daily. The superior quality of his production is well known. Four sons—Otto, William, Charles and Fred—will hereafter conduct the business as above and plans are being considered for enlarging the plant. They contemplate also the manufacture of hollow and pressed brick. With a water front of 2,000 feet and a new railroad switch soon to be constructed, their facilities will be unsurpassed.

The Fernholtz Brick Machinery Company, St. Louis, have had an unusually prosperous season. During a recent trip of Mr. William F. Scott, the vice president and general manager of the company, through Texas, he sold a four-mold Fernholtz press to Michael Myers, of Dallas, Tex. They have recently shipped two four-mold presses and equipment to John Cubbins' Sons, Memphis, Tenn. This makes three Fernholtz presses now in use at the Cubbins' plant, one of which they have been using for seven years. Among other sales is a four-mold outfit to the American Brick and Tile Company, Oklahoma City, O. T., and the same sort of an equipment to George H. Wilson, Sulphur Springs, Tex. Mr. Scott says their business is increasing from day to day, and that all of their customers are friends.

THE DRINK HABIT CURED.

Home treatment for $15. A cure guaranteed or your money refunded by Dickey's liquor cure, nerve strengthener, blood purifier, manhood restorer, all in one. We make it, we sell it; we guarantee it to cure any case of the drink habit on earth. We send it to any address in the United States upon receipt of $15 and guarantee a cure or refund your money. Best bank reference given. Our business strictly confidential. Address DICKEY REMEDY CO., or P. O. Box 44, Shelby, Ind. 7 3 cm

SPECIAL "NEVER-BREAK" GOODS.

STEEL

Washers, Brick Pallets, Shapes.

Any flat, formed, sheared, pressed or Stamped Sheet Steel Work, 18-gauge and heavier. Describe what you want and tell us the quantity. We'll let you know the price and delivery.

The Avery Stamping Co., Cleveland, Ohio.

FOR SALE—A new iron Quaker brick machine. Good reason for selling. A bargain if sold at once. Address
W. S. VANDEVENTER,
9 2 c Mound City, Mo.

FOR SALE.

Brick plant in best town in Michigan. Can sell output at $8.50 to $10 per thousand. Will sell cheap. Address
CON,
9 2 cm Care of Clay-Worker.

WANTED—To purchase one second-hand machine for making drain pipe up to 18 inches. Must be in good working order. Address
I. M.,
9 1 c Care Clay-Worker.

FOR SALE—A large number of cast iron and steel, single-deck brick cars. These cars are equipped with anti-friction bearings and are in perfect condition. Of modern construction. Address
CARS,
8 4 d Care Clay-Worker.

Evens & Howard Fire Brick Co.

ST. LOUIS, U. S. A.

Sewer and Culvert Pipe. Locomotive Tile.
Furnace and Boiler Tile. Fire Brick and Cupola Blocks.
Flue Lining and Chimney Pipe.
Sanitary Earthenware. All kinds of Fire Clay Products.

The Crown Fire Clay Co.,
Akron, Ohio.

HIGH GRADE FIRE BRICK,

For Lining Kilns, Etc., a Specialty.

Also Hollow Blocks, Flue Linings, Wall Copings, Etc.

When writing for prices, state for what purpose brick are to be used.

Catalog Free.

Too Many Brickmakers

Use Cheap Brick in Kiln Construction. The Best is the Cheapest no matter what it costs. We can supply your wants in strictly

High Grade Fire Brick,

At MODERATE PRICES.

SEVEN WORKS in two States on THREE COMPETING TRUNK LINES.

Reese-Hammond Fire Brick Co., General Offices, BOLIVAR, PA.

Correspondence Solicited. Annual Capacity 100,000,000.

Let us quote you prices on Savage Fire Brick **FOR** Bag Walls, Kiln Linings, Boiler Settings.

Savage Fire Brick Co.,

Pittsburg Office, 810 Park Bldg. KEYSTONE JUNCTION, PA.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than $1.00.

WANTED—First-class sewer pipe burner. State references and wages.
8 2 d BOX 13, Clay-Worker.

WANTED—Reliable man with established trade desires to represent sewer-pipe factory in east New Jersey. Address
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9 1 d Care of Clay-Worker.

FOR SALE AT A BARGAIN—A fifteen-inch cylinder Mascot brick and tile machine, made a Bucyrus, O.; practically new machine and in good condition. Price very low. Address S. CHENEY & SON,
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FOR SALE—An up-to-date Edison Mimeograph for duplicating letters, statements, etc. Used but little and guaranteed in perfect condition. A bargain for anyone desiring a machine of this sort. The equipment cost $16; will be sold for $10, cash on delivery. For full particulars, address
9 2 p COPYIST, care Clay-Worker.

TILE PLANT FOR SALE.

Inland brick and tile plant for sale on new railroad survey. Unable to supply demand. Five acres land, good house, 22 h.-p. engine, one Brewer No. 5 brick and tile mill, one Quaker mud mill; dry-shed capacity 60,000, kiln 60,000. Will sell for $1,500. Good reason for selling.
Address H. A. CHENEY,
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FOR SALE.

One 9-foot Dry Pan, iron frame.
One Arnold Steamer.
One Revolving Screen.
One Miller Hand Press.
One 15-H. P. Portable Engine and Boiler.
THE T. B. TOWNSEND BRICK & CONTRACTING CO.,
7 tf d Zanesville, Ohio.

FOR SALE.

6 Martin horse-power brick machines.
10 Carnell horse-power tempering outfits.
15 trucks for off-bearing.
100 molds used three weeks.
2 Chambers Bros. steam tempering outfits, new.
1 Carnell steam repress.
1 Rider & Ericson hot-air pump.
Address E. F.,
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WANTED—A practical, progressive brickmaker, who has had fifteen years' successful experience as superintendent and manager of large works and has special knowledge of face brick, fire brick and paving brick manufacture, desires permanent position where honesty, sobriety and competency will receive substantial appreciation. Conditions must be favorable for large, profitable business, and location suitable for family residence. Will invest in business if satisfactory. Address
A. LUMINA,
9 1 L Care of Clay-Worker.

WARNING TO INFRINGERS OF HOLLOW CONCRETE BUILDING BLOCK PATENTS.

Notice is hereby given that all makers or users of hollow concrete building blocks are liable for damages and royalties, and all such buildings erected will be held for the same unless licensed by Harmon S. Palmer, the patentee and owner of all rights of the following patents: Hollow concrete building blocks, patented May 28, 1901; machine for molding hollow concrete building block, patented May 25, 1899. Any machine using removable bottom plates on which the block is molded, and by which it is carried away from the machine, is a direct infringement and all such will be prosecuted. Send for illustrated catalogue and patent papers. H. S. PALMER,
8 2 c Washington, D. C.

See Wanted, For Sale ads. under Table Contents.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.

IF THE BRICK interests of San Francisco have no grounds to complain of the inroads made in the brick trade by the increased use of cement for foundations, etc., they certainly have some ground for self-congratulation in the inroads which brick, terra cotta, etc., are making in the general building trade. Of the total amount of building now going on in the city, nearly $7,000,000 worth can be counted, which comes within either the fireproof or the semi-fireproof class. This amount represents buildings actually being constructed, and does not take into consideration a goodly number of large semi-fireproof buildings, for which construction permits have now been obtained.

The same disposition to abandon wood for less inflammable and more substantial material in the construction of business and semi-public buildings has commenced to manifest itself in other directions. Only a few years ago the number of residences in San Francisco built of stone or brick did not exceed two or three. Since then San Francisco's millionaires have turned to terra cotta, pressed brick, etc., and now dwellings of this kind can be counted by the dozens. Still more noticeable in this regard is the revolution in church structure. In fact, the city seems to have passed as completely from the epoch of frame structures as from the wooden sidewalk period.

It is announced that the Board of Public Works will almost immediately begin work on the reconstruction of a number of the city sewers. Sixty thousand dollars has been appropriated for this purpose by the Board of Supervisors.

A stockholders' meeting of the National Brick Corporation of San Francisco will be held in the company's office at 28 New Montgomery street, on Sept. 25, for the purpose of deciding on the proposition of creating a bonded indebtedness of $200,000.

E. C. Clapp and Hyrum Thorsen, proprietors of the Annabella (Utah) pottery, now have their kiln completed and are busy putting in a large quantity of jars, flower pots, etc. They expect to begin burning within a very few days.

Crowe Bros. fired their third kiln for this season at Fieldbrook, Cal., a few days ago. The kiln contains 250,000 bricks. Crowe Bros. purpose burning two more kilns before the rainy season sets in, the whole aggregating 1,000,000 bricks for the season. After the close of the present season and before the opening of the next they will put in new machinery consisting of a pulverizer to mix the clay and a steam shovel to move the clay from the pit. A large patent down-draft kiln will also be erected, and the dry-yard will be floored with two-inch plank. The off season for brickmaking will be devoted to sawing laths, thus keeping the works running the year round, using the power on the brick machine in the summer and in making laths in the winter.

The Lordsburg Brick and Construction Company, of Lordsburg, Cal., reports the sale of 200,000 bricks for use in the new Carnegie library building at Pomona, Cal. A new kiln will be prepared soon.

The St. Louis Fire Brick and Clay Company, of Los Angeles, Cal., has filed a notice of the increase of capital stock from 70,000 shares to 150,000 of the par value of $1 each.

The Copper Queen Mining Company, of Douglas, Ariz., has let the contract for 4,000,000 brick, which are being made at the rate of 48,000 per day at the yard, about twelve miles northeast of Douglas. The bricks are to be used in the large store building to be erected by the company.

The Couer d'Alene Brick Co. fired its first kiln of 100,000 brick at Coeur d'Alene, Idaho, on Aug. 8, adding a new industry to that town. The plant will have a capacity of 40,000 pressed brick per day. It is modern in every respect. Dry kilns will be built for the purpose of keeping the plan running during the winter months. The machines are now turning out brick for the next kiln, which will be ready for the market in about three weeks. The plant is the property of John F. Hutter, a well-known contractor of Spokane, Wash. The clay which is used is of a quality that will make a high-grade of brick.

J. W. Keller, of Victoria, B. C., has made a proposition to the City Council of Vancouver, B. C., to establish a pottery there. Mr. Keller offers to purchase suitable land in or near the city, on which buildings and kilns will be constructed. A plant will comprise steam crushers, roasters, tile and sewer pipe presses, and all modern pottery appliances is to be installed, suitable for the manufacturing of sewer pipe, drain tiles, flower pots, etc., all of the best quality. The cost of the buildings and the plant will be $40,000, of which he wishes the city to give half.

Scott & Fahey are stacking up about 5,000 brick daily at their yard in Enumclaw, Wash., and will soon fire the kiln. As soon as the brick are ready they will commence building their kiln for the manufacture of stoneware. The kiln will require about 40,000 brick.

A new industry has been launched at Snohomish, Wash., known as the Snohomish Brick and Tile Company. The company will engage in the manufacture of brick, tile and other similar articles. The company has been incorporated and has a capital stock of $5,000 fully subscribed. The officers of the company are as follows: President, J. H. Russell; vice-president, C. J. Wiley; secretary and treasurer, H. E. Wiley. The trustees are: J. H. Russell, C. J. Wiley, H. E. Wiley, J. A. Russell and H. J. Clough, all of Snohomish.

The third carload of machinery for the Vitrified Brick Company at Boise, Idaho, arrived recently and the work of installing it began at once. This work is rather slow, as much of the machinery is massive and somewhat difficult to handle. It is expected that everything will be in readiness some time this month. There are four cars of machinery yet to arrive. C. W. Raymond & Co., of Dayton, O., have the contract for furnishing all the machinery. The brick for the down-draft kilns have been made and work on the patent kilns will begin soon.

The brick kiln at Elgin, Ore., has been completed and is now burning.

Preparations are being made to open an extensive brickyard at Vernalis, San Joaquin county, Cal. Wells are being bored to secure sufficient water and a fine quality of clay for brick work has been found near the town. About twenty-five men are now at work and the force will soon be increased.

The Reno Pressed Brick Company, at Reno, Nev., reports a fine trade. The machines are running day and night in order to keep up with orders. The plant is being enlarged from time to time.

SUNSET.

San Francisco, Sept. 5.

SHE HAD THE WEIGHT.

Pat—"Shure, this is phwat a man gits fer marryin' out av his class."

—Judge.

Brick Pallets.

It is the opinion of the best Manufacturers that the Pallet System is the most economical method for making bricks. White pine lumber is conceded to be the best and most economical material for pallets. We make them. A word to the wise is sufficient. Send postal card for circulars.

Mershon, Schuette, Parker & Co.,

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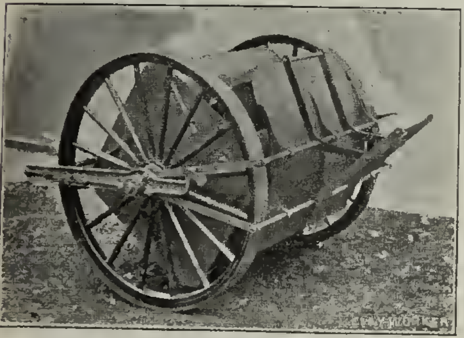

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Do you want to save MONEY? If so, use the

"Quincy" Improved Dry Clay Gatherer,

The best and most economical method of gathering Clay for Brick and Tile Manufacturers.

Will save at least 50 per cent. over any other method.

Manufactured by

Central Iron Works,

QUINCY, ILL.

ORIGINAL

GANDY STITCHED Cotton Duck

BELTING.

Unequalled in strength and durability, especially adapted for heavy work, and for all places where belts are exposed to atmospheric changes, heat, steam, water, oils, alkalies, etc. Every belt bearing our trade-mark "ORIGINAL GANDY" absolutely guaranteed. BEWARE OF IMITATIONS. Manufactured solely by

The GANDY BELTING COMPANY,

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Write for New Catalogue.

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F. E. SWIFT,
7 tf d Washington, Ia., U. S. A.

NO DRY PRESS BRICK PLANT complete without the Carmichael Clay Steamer.

T. W. CARMICHAEL,
Inventor and Manufacturer,
6 d tf Wellsburg, W. Va.

WANTED—Superintendent for fire-brick, paving brick and building brick works with a capacity of 100,000 brick per day. Brick are made by soft mud, stiff mud and dry-press processes. Superintendent must be a good organizer of men, of successful experience, strictly temperate and should have a good knowledge of fire clay.

Address BOX 13,
9 1 d Care of Clay-Worker.

FOR SALE—Books for brickmakers. Inexperienced workmen will find them a source of valuable information. Brickmakers' Manual, $3.00—a practical treatise on the everyday details of brickmaking; Clay Glazes and Enamels, $5.00, tells how to glaze and enamel brick and gives valuable recipes; Vitrified Paving Brick, $1.00, tells all about the best materials for and methods of manufacturing paving brick; Tables of Analyses of Clays, $1.00, gives the analyses of many American and European clays. Any or all of these mailed, postage prepaid, on receipt of price. Write for lists of other valuable books for clayworkers.

Address T. A. RANDALL & CO.,
3 tf r Indianapolis, Ind.

See additional ads. under Table of Contents

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Brickworks Engineer.

2717 Warner Road. Cleveland, Ohio.

Expert investigation of brickmakers' troubles. Mechanical devices and implements for special purposes.

Smokeless furnaces for boilers, dryers and kilns.

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Brickyard Equipments.

The Henry Martin Brick Machine Mfg. Co. (Inc.)

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Third Edition.
Revised, Improved and Enlarged.

A practical Treatise on the Manufacture of

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Including Stiff Clay, Dry Clay, Hand-made, Pressed or Front, and Roadway Paving Brick, Enameled Brick, with Glazes and Colors, Fire Brick and Blocks, Silica Brick, Carbon Brick, Glass Pots, Retorts, Architectural Terra Cotta, Drain Tile, Glazed and Unglazed Roofing Tile, Art Tile, Mosaics, and Imitation of Intarsia or Inlaid Surfaces. Comprising every product of Clay employed in Architecture, Engineering and the Blast Furnace With a Detailed Description of the different clays employed, the most Modern Machinery, Tools and Kilns used, and the processes for Handling, Disintegrating, Tempering and Molding the Clay into Shape, Drying, Setting and Burning. By Charles Thomas Davis. Third Edition. Revised and in great part rewritten. Illustrated by 261 engravings. 662 pages, 8vo. Price, ...**$5.00**

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Tuition is free. Laboratory fees are nominal Faculty of over one hundred instructors Equipment very extensive.

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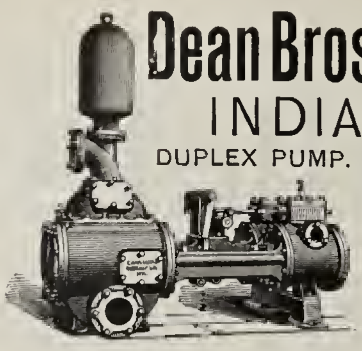

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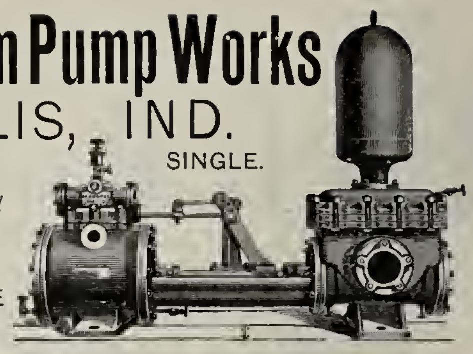

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and make as good and uniform product as those who are using our screen? **WE GUARANTEE THEM.** Just allow us an opportunity, and we will show you how it is done. **DO NOT WAIT UNTIL NEXT YEAR** as there is no time like the present. We want to hear from you.

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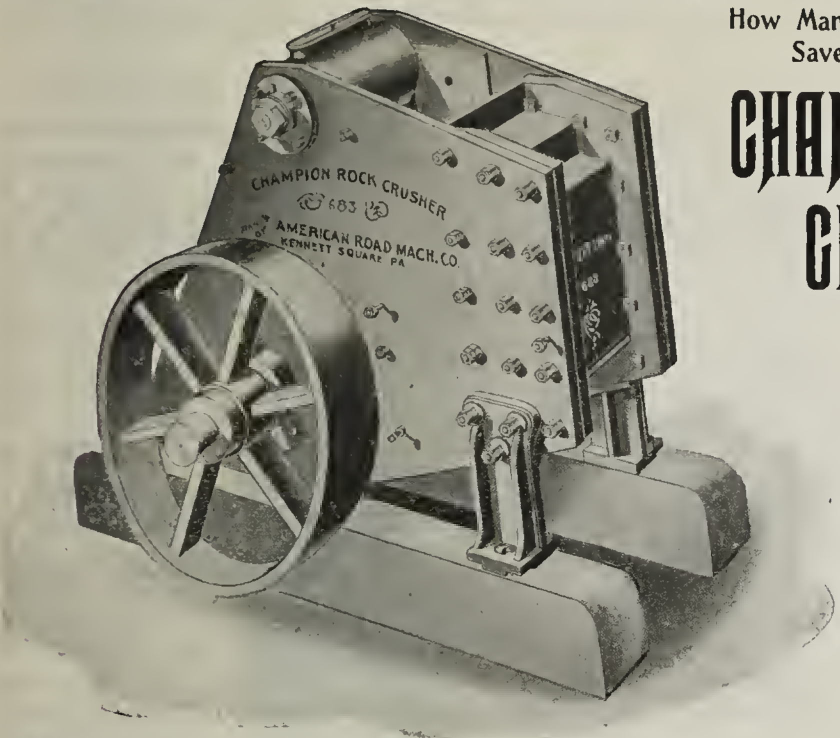

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You can save the cost of the machine in a few months.

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Suppose we figure with you.

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Successors to NOLAN, MADDEN & CO.,

Manufacturers ... of

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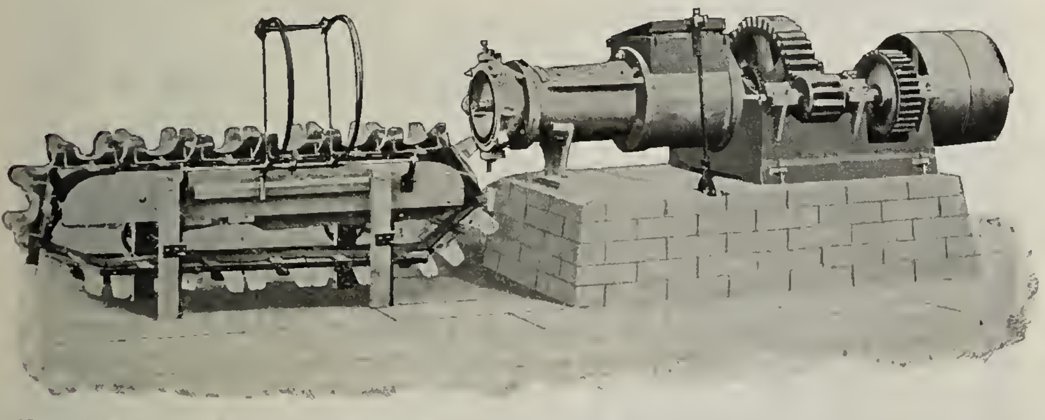

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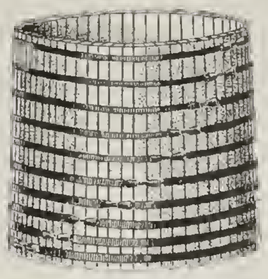

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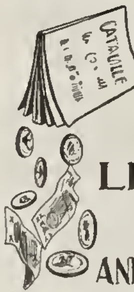

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Is the Drier which dries the Brick safely, quickly and thoroughly in the shortest time and with the least cost and labor. This the **Phillip's Fan Dryer** will do. The first cost of construction is moderate and cost of operation is much less than old style dryers. Soft Mud, Stiff Clay or Dry Press Brick dried speedily and economically. The **PHILIP'S DRYER** is no experiment but is now in successful operation in a number of plants in the U. S. and Canada. **Phillip's Inside Fan Heater and Dryer,** proves to also be a "Condenser."

Relief from back pressure guaranteed.

Exhaust steam alone ample for heat supply.

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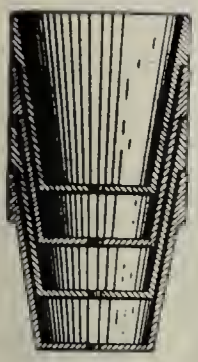

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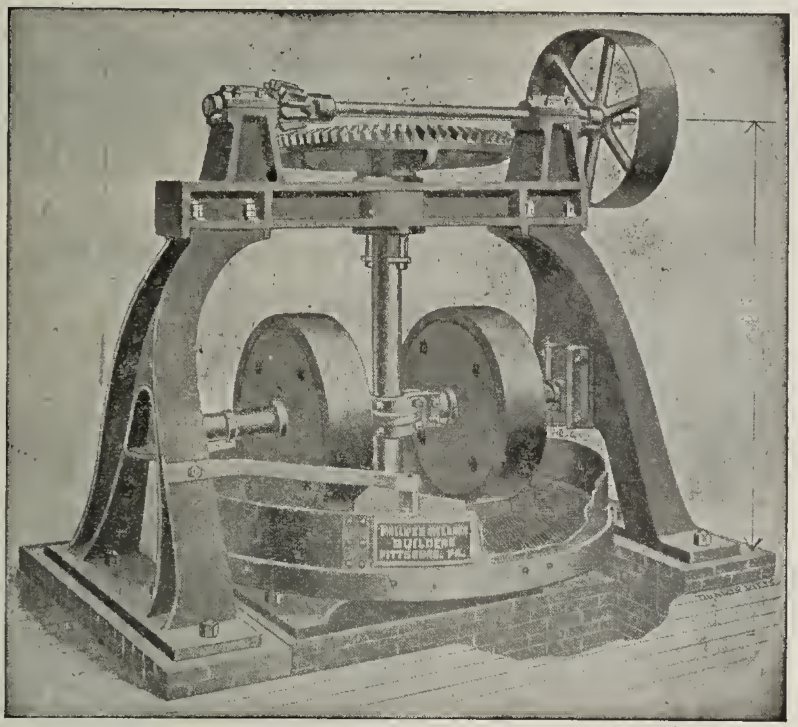

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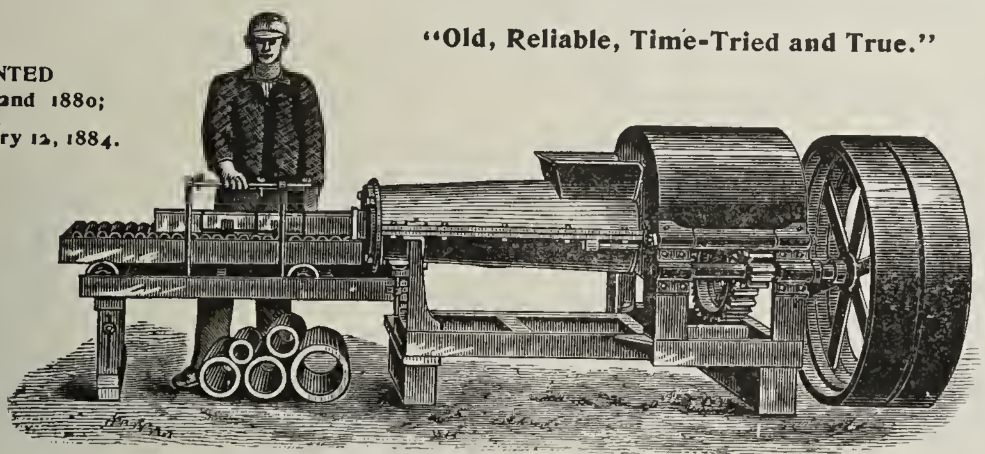

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THIS MACHINE works clay direct from the bank for both brick and tile. Bricks are taken direct from the machine to the hacks and need no repressing for the finest fronts. It has but one set of gears and makes all kinds of brick and different sizes of tile by changing dies. For strength and durability we except none. We challenge the world to produce a combined machine that will do the same amount of work with the same amount of power. We manufacture Crushers, Trucks and Barrows. End-cut, side-cut paving brick and Board Delivery—make perfect edges and corners.

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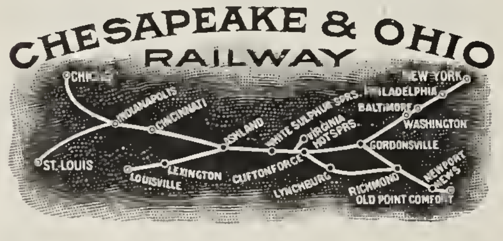

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For End Cut, Side Cut and Automatic Tables. Satisfaction Guaranteed. Send for samples and prices.

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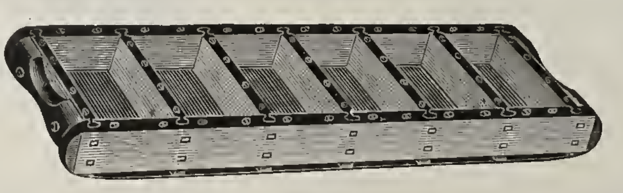

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Six-Brick Machine Moulds	$1 50
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These Moulds are well made of the best materials, and are up to anybody's standard. If they are not so, send them back.

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Arranged to suit all locations. These kilns can be seen burning Roofing Tile, Dry Pressed, Facing, Paving and Common Building Brick.

Points of Superiority—Cheapness in Construction. Easy to Understand and Operate. Perfectly free from any Nuisance. Will save more than one-half of the fuel used on others Kilns. Specially adapted for Utilizing Waste Heat for Drying Purposes, and which is being done most successfully.

A more Successful Kiln for Burning Paving Brick will be hard to find than the one at the Works of the Eastern Paving Brick Company, Catskill, N. Y. For Further Particulars Address,

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It has no rival. Some of the largest brick plants in the country use it exclusively. Cost of construction within reach of every brickmaker. Price for license to use so reasonable that no one can object. Write us for descriptive pamphlet, prices, etc., address

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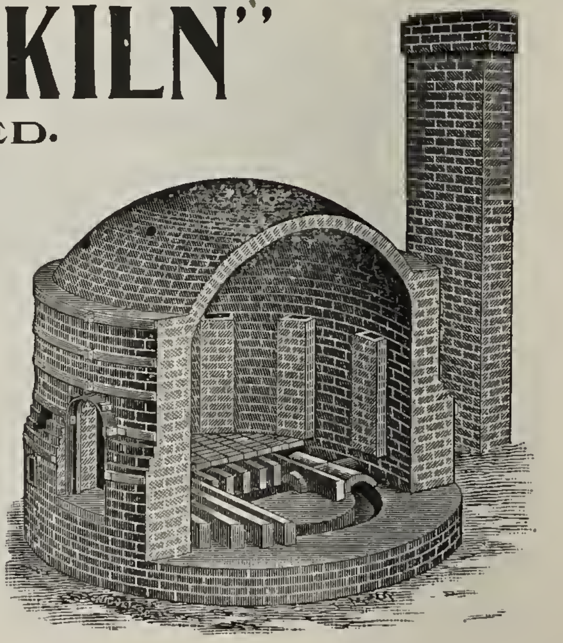

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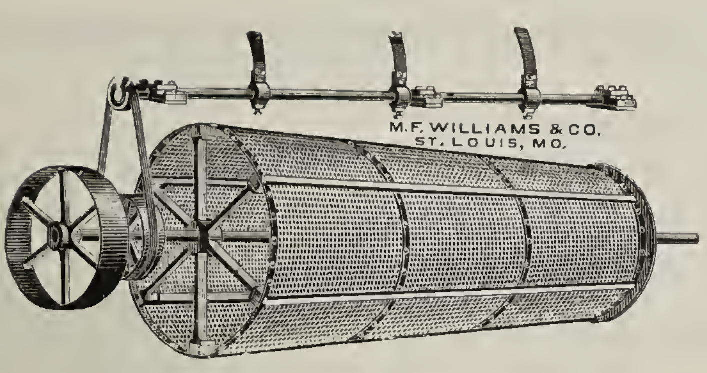

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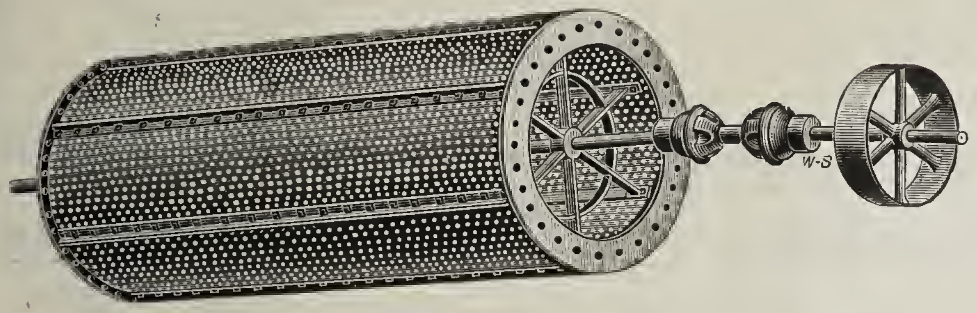

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It is equally as efficient in large or small yards. It can be used either for open air or artificial drying. We guarantee that one man can take from 25,000 to 40,000 green brick from the machine and place them upon the hacks in one day of ten hours, and the same amount from the hacks to the kiln, and place them in easy position for the setters to handle them.

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Write for testimonials and for full information.

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Oxide Tin,
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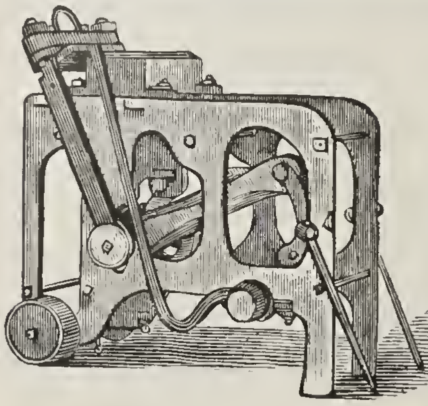
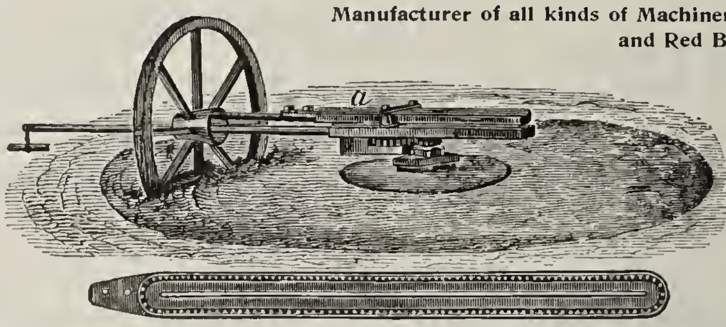
Philadelphia Brick Machine Works.

Fire and Red Brick Presses all Sizes. Machinists and Engineers.



RED BRICK PRESS.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

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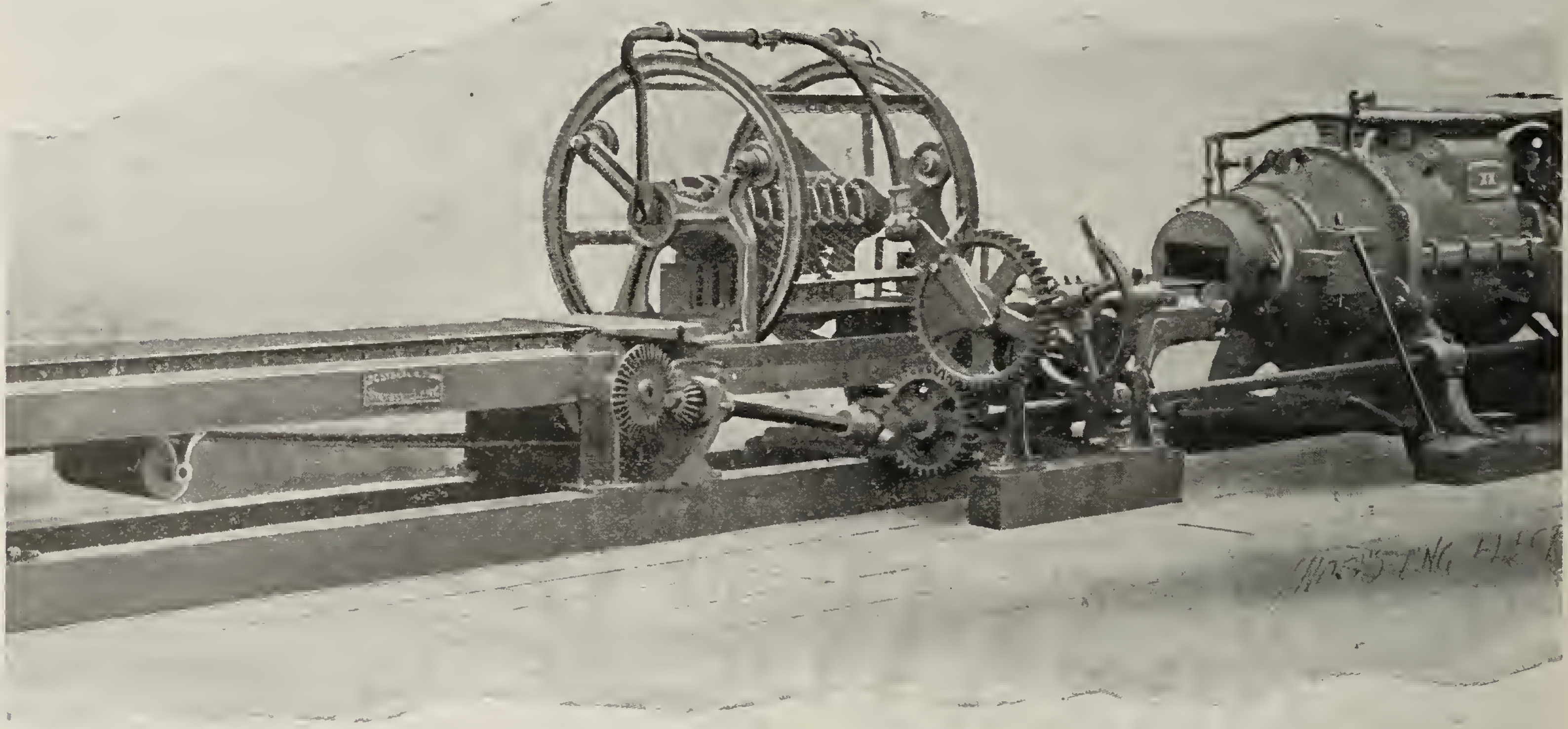
Highest Development IN THE ART OF Brick Making.



Steele's Improved Brick Cutter.

BRICK MACHINES.—Three sizes, capacities ranging from 12,000 to 50,000 per day. Complete equipments for the most economical yards. All kinds of brickyard supplies. Write for Catalogue and Prices.

J. C. STEELE & SONS, Manufacturers "NEW SOUTH" Brick Machinery,
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These Molding Machines have been in constant use for over 40 years, and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

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We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country. Correspondence solicited.

Mention The Clay-Worker.

Standard Steel Music Wire

TRADE MARK.

STRENGTH, QUALITY, DURABILITY, TONE.

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Absolutely Highest Grade.

The wonderful tensile strength of Standard Wire specially adapts it

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The price, too—an important consideration—is moderate.

Although it has been on the market but a short time it is used by many of the largest brickmakers in the business, and wherever it has been once sold it is always demanded.

Put up in 1-lb. and 5-lb. coils.

Let us send you samples and prices.

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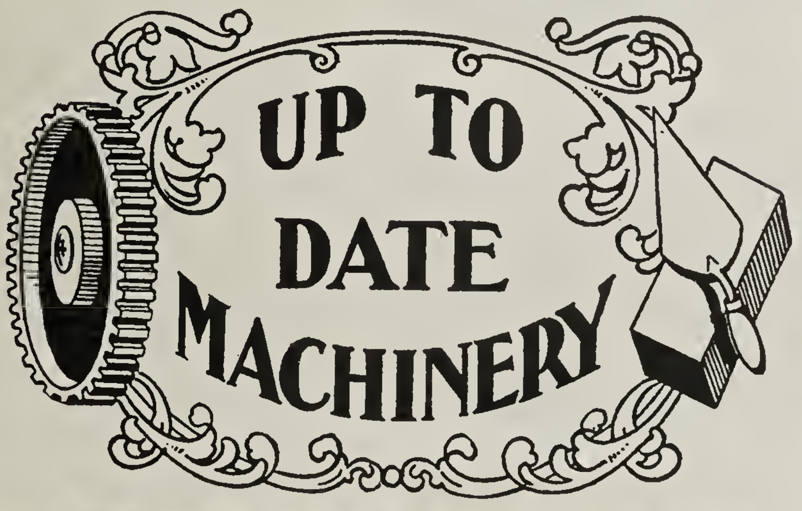
Send for our UP-TO-DATE CATALOGUE.



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If you wish to pay even $1.00 PER GALLON FOR PAINT.

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The "STAY-THERE" paints stay wherever they are put; they are adapted to HOUSE, BARN, FACTORY, WAREHOUSE and other kinds of painting, and are sold under a BINDING GUARANTEE NOT TO CHALK, PEEL NOR BLISTER.
Will cover more surface than other paints.

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Agencies in Nearly All Large Cities.

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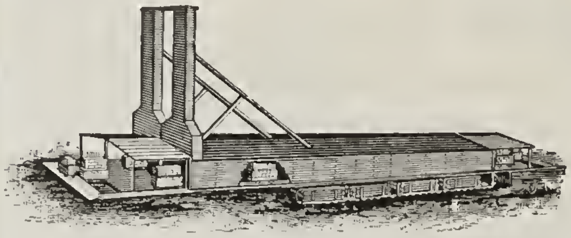
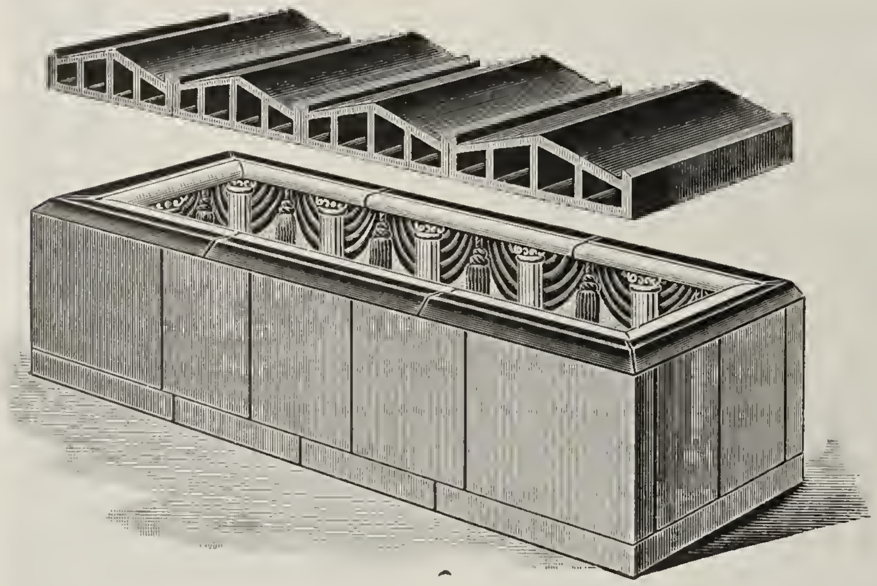


Chicago Iron Clad Dryer
AND
Barron's Tender Clay Dryer.

These dryers are the results of a quarter century of experience in drying by steam heat, are more economical to install, and will dry brick at half the cost of any other known process. Results fully guaranteed.

BARRON DRYER CO., 630 Temple Court Bldg. CHICAGO, ILL.

SOMETHING NEW IN CLAY.



Are You Looking for a Money-Winner?

YOU HAVE FOUND IT IN

The Kaufman Burial Vault.

It is a vault made from clay on your ordinary brick or tile machine, and burned in your ordinary kiln.

ITS OBJECT—To supersede the cheap pine box, the expensive stone or steel vaults now in use, and to furnish a sealed resting place for the dead. The price of the vault places it within the reach of all, and its beauty and neatness removes half the terror of interment. It is as lasting as the hills and as free from decay as the pyramids. This is not an experiment, but a well-tried and assured success.

OUR OBJECT—To interest good manufacturers in our business with a view of disposing of territory not already occupied.

Why will you wear your life out making tile or brick at a small profit when, with the same effort, you can make big money in a few years making the Kaufman Burial Vault?

We are thoroughly protected by patent. For further particulars address

KAUFMAN BURIAL VAULT CO., London, Ohio.

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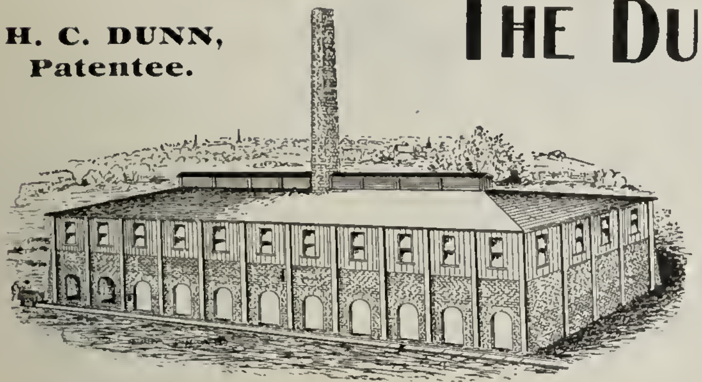
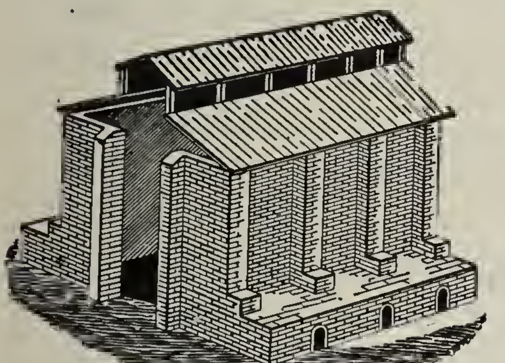
THE DUNN CONTINUOUS BRICK KILN.



Burns 8000 brick with one ton of coal.
Requires only two men to operate it.
Is in full operation daily.
Absolutely the most successful kiln of its class ever offered American Brickmakers.

Write for Description and full Information.

I. M. JUSTICE, Sole Agent, **Derry,** Westmoreland County, **Pa.**

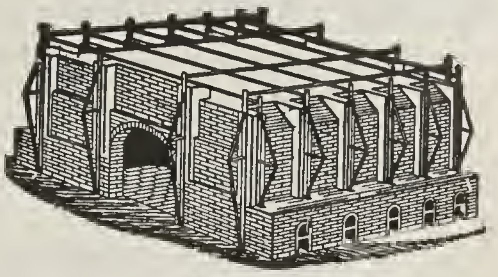


Up-Draft Kiln.

LOUIS H. REPPELL'S

IMPROVED-KILNS

For Burning all Kinds of Wares.



Down-Draft Kiln.

Having had years of practical experience in the management and actual burning of all kinds of kilns, claim it to be THE BEST Up-Draft KILN IN THE MARKET.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns.

For further particulars and full explanation, address

LOUIS H. REPPELL, 2,422 Chestnut St., ***Kansas City, Mo.***

The EUDALY DOWN DRAFT KILNS.

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM.

These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant, Burns uniform and all hard. Economical in construction and operation.

The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

W. A. EUDALY, 509 Johnston Bldg. Cincinnati, Ohio.

YOUR KILNS

SHOULD
BE
ROUND

SAVING
FIRST COST
REPAIR
COST

SHOULD
BE
THE BEST

TO MAKE
THE BEST
WARE

SHOULD
BE
PLATT TRIPLE
DRAFT

AND THEN YOU ARE IN THE BUSINESS TO STAY—AND TO MAKE MONEY.
"NOTHING SUCCEEDS LIKE SUCCESS"

Except a Clayworker With an Economical Kiln.

THIS KILN Removes all possible objection to the ROUND KILN of large diameter. It combines with the simplicity of the old types

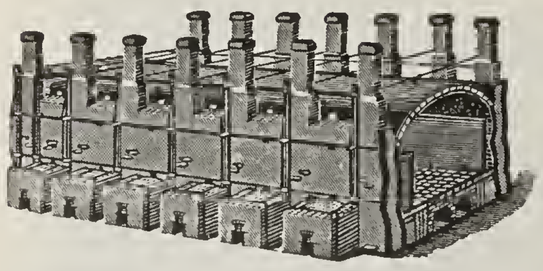
ABSOLUTE EVEN HEAT DISTRIBUTION REGARDLESS OF DIAMETER.

Its three positive floor outlets are distinctly independent, consequently the finest regulation is always obtainable, making the draft force in center area equal with the surrounding area, or giving any section all the draft, if desired. Accomplishing quick, even burns. Giving a kiln of unequalled heat power, and suited to general clayworking uses. Solid or perforated floors.

C. B. PLATT, INVENTOR.

PLATT TRIPLE DRAFT KILN CO., Van Meter, Iowa.

The Bushong Down Draft Kiln.



PATENTED JUNE 1806.

BURNS any kind of fuel.
USES less fuel than any other Kiln.
RESULTS are uniform.
NO damaged wares.
SAVES time and labor.

USED by some of the largest plants.
NO experiment.
IT'S success has been proven.
FULL control of drafts.
ONLY Kiln built that has Double Draft.
REDUCES burning time 24 to 48 hours.
MOST economical in construction.

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M. M. BUSHONG, Esq.,
Phoenixville, Pa.

Dear Sir:—Answering yours of September the 27th, we have been using one of the Bushong Down Draft Kilns the past fifteen months and are well pleased with it. We get a larger percentage of No. 1 pavers with a little less fuel than any other kiln on the yard.

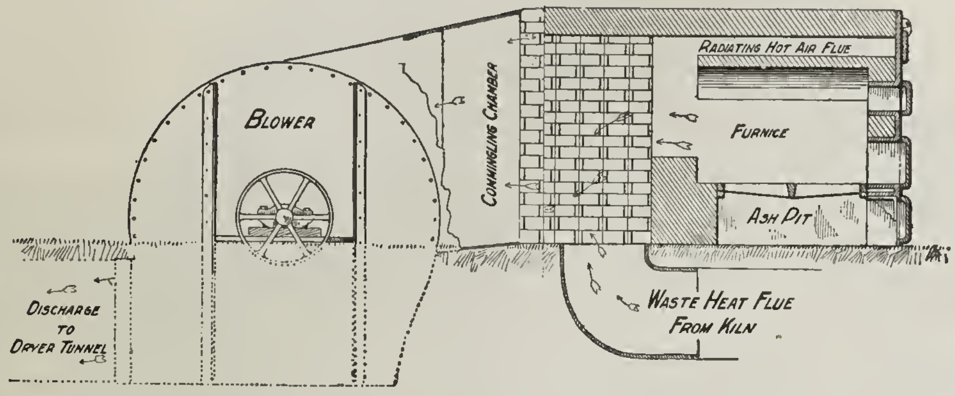
Yours truly,
THE BARR CLAY CO.,
Per C. C. Barr, Treas.

M. M. BUSHONG, - Phoenixville, Pa.

Mention The Clay-Worker.

Economy Waste Heat and Radiating Floor Fire Proof Dryers and Oil Burning Systems are Constructed on Scientific and Economical Principles.

ECONOMY DRYERS
Will Dry Brick
and Tile at
LESS COST
than any other
DRYING SYSTEMS
ON EARTH.



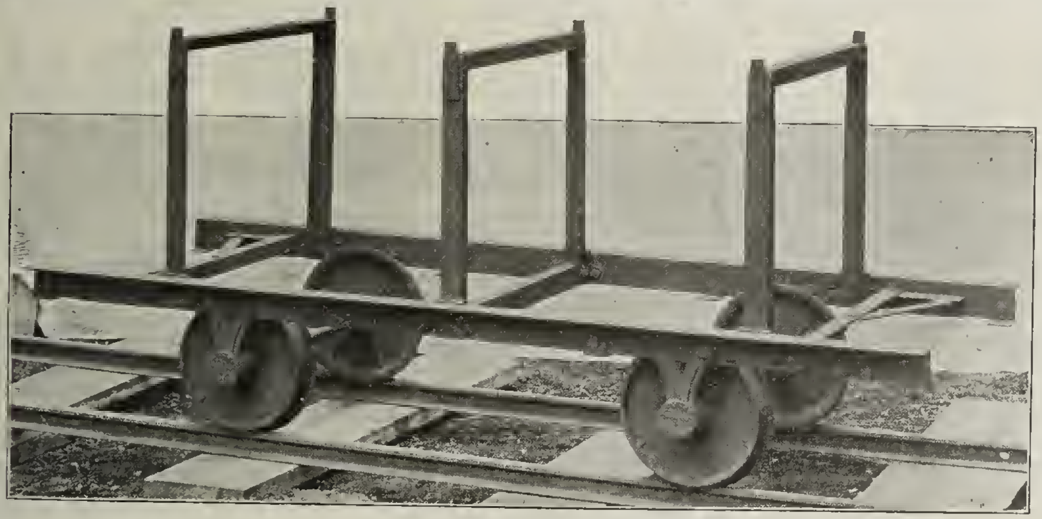
ECONOMY OIL
BURNING SYSTEM
Will Burn Fuel
Oil More ECONOM-
ICALLY than
any other OIL
BURNING SYSTEM.

If you want an up-to-date Dryer or Oil Burning System write to the

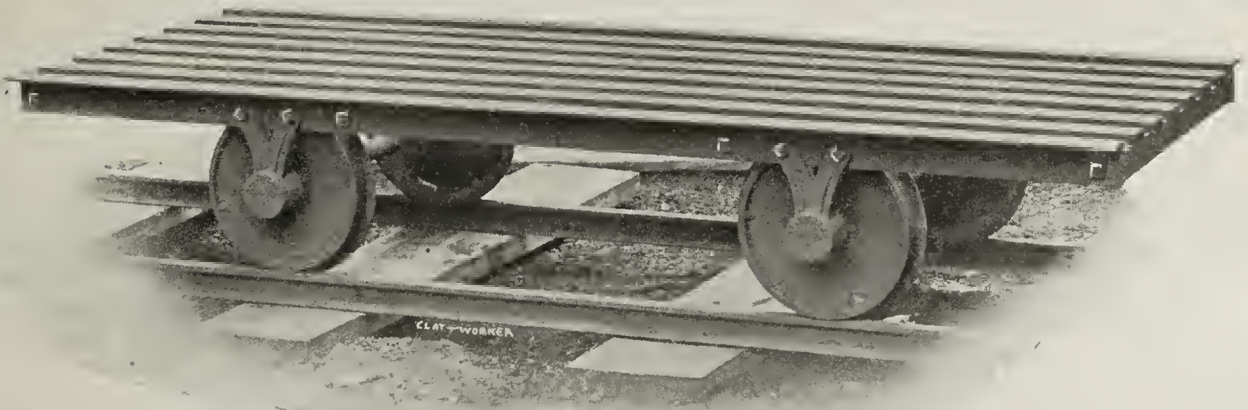
ECONOMY DRYER AND OIL BURNING COMPANY,

ST. LOUIS, MO.

☞Our illustrated catalogue, A, gives full information. Write for it, mentioning the Clay-Worker.



No. 245.
DOUBLE DECK CAR.
FOR WOODEN DECKS.
Angle Frame.



No. 222,
STIFF MUD
FLAT CAR.
Steel Deck,
Angle Frame.

The Cleveland Car Company, 148-152 Scranton Ave.,
CLEVELAND, OHIO.

The NATIONAL DRIER

Is One of the Best Investments Ever Made at Our Plant.

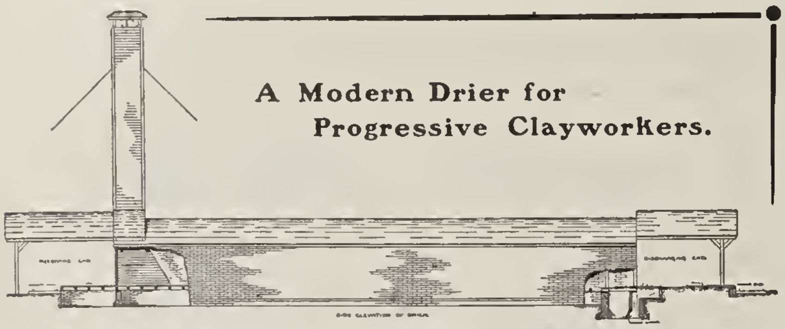
CHRISTY FIRE CLAY CO.
ST. LOUIS.

THE NATIONAL DRY KILN CO., May 14th, 1902.
33 West South St.,
Indianapolis, Ind.

GENTLEMEN—We take pleasure in giving you the result of our experience with the Tunnel Drier System recently purchased from you. We find that the use of exhaust steam during the day time with about 40 lbs. pressure of live steam at night, dries our product thoroughly in 48 hours, and in view of the fact that our former system required an average of 120 hours, you can readily imagine that we are very much gratified. The economy of labor, saving of fuel, and increase of capacity resulting from the installation of your system, make the expenditure one of the best investments we have ever made at our plant. Yours truly,

W. C. MORRIS, V. P. & G. M.

A Modern Drier for Progressive Clayworkers.



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Is free from complicated Features. If you want IMPROVED METHODS, put in the modern up-to-date

NATIONAL DRIER

Our Steel Roller Bearing Cars are Unequalled.
Let us send you a circular, it will interest you.
Our guarantee protects from all chances.

The National Dry Kiln Co.,
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21,000 OFFICES IN AMERICA. CABLE SERVICE TO ALL THE WORLD.

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Matawan N.J. Aug. 21

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Auditorium Annex, Chicago.

We are drying seventy five thousand wire cut brick per day with two tons soft coal.

The Cliffwood Brick Co.

1 P.M.

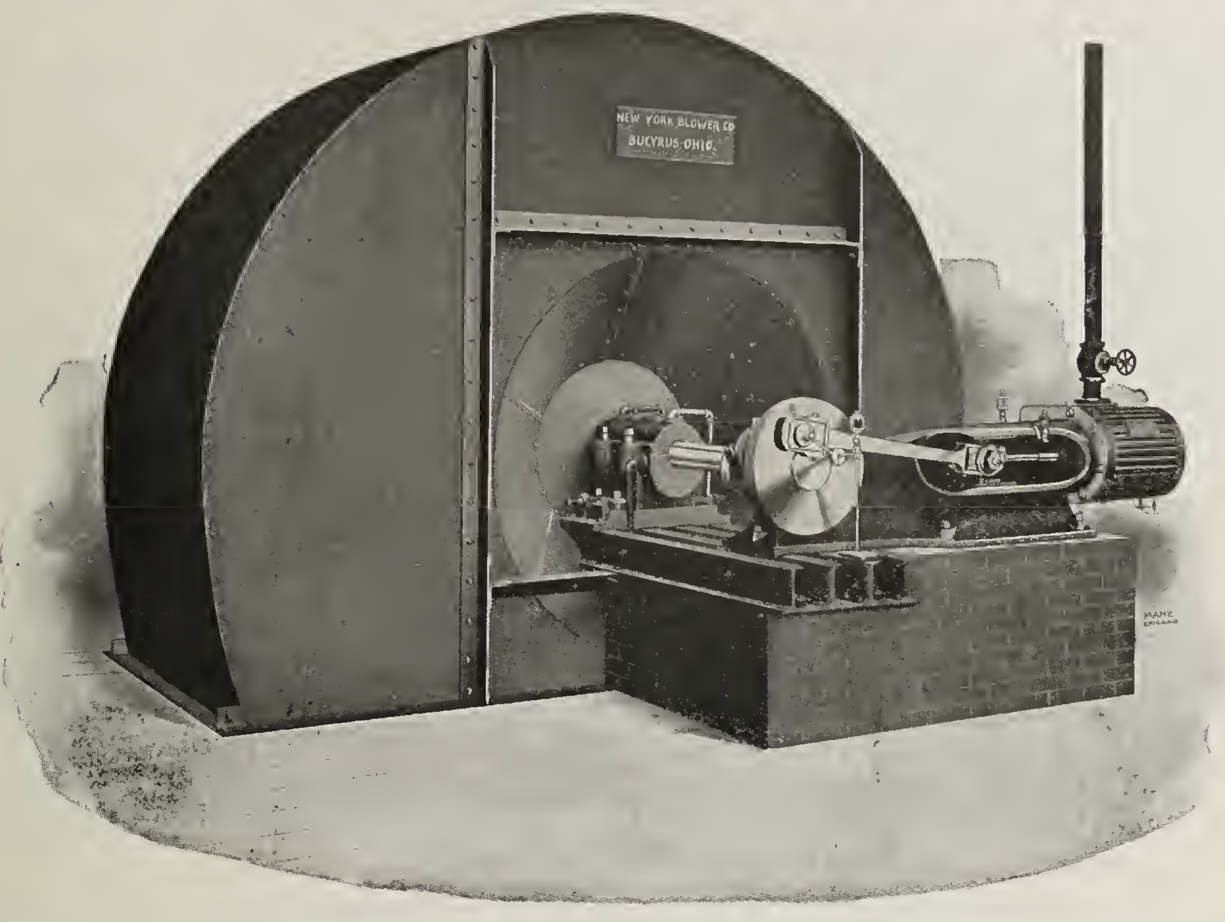
Does this suggest anything to you? If so, address——

The Crown Dryer Co.,
New England Bldg. CLEVELAND, OHIO.

DRYING ECONOMY.

Our Dryer is superior to others by reason of improved methods, low cost of construction and economy of operation. If you're interested in dryers write for particulars. Ours will prove a good investment.

We also manufacture Conveyors, Exhausters, Heaters, Fans, Engines and Mechanical Draft Apparatus.



The New York Blower Co., Bucyrus, Ohio.

New York Office, 39-41 Cortlandt Street, New York.
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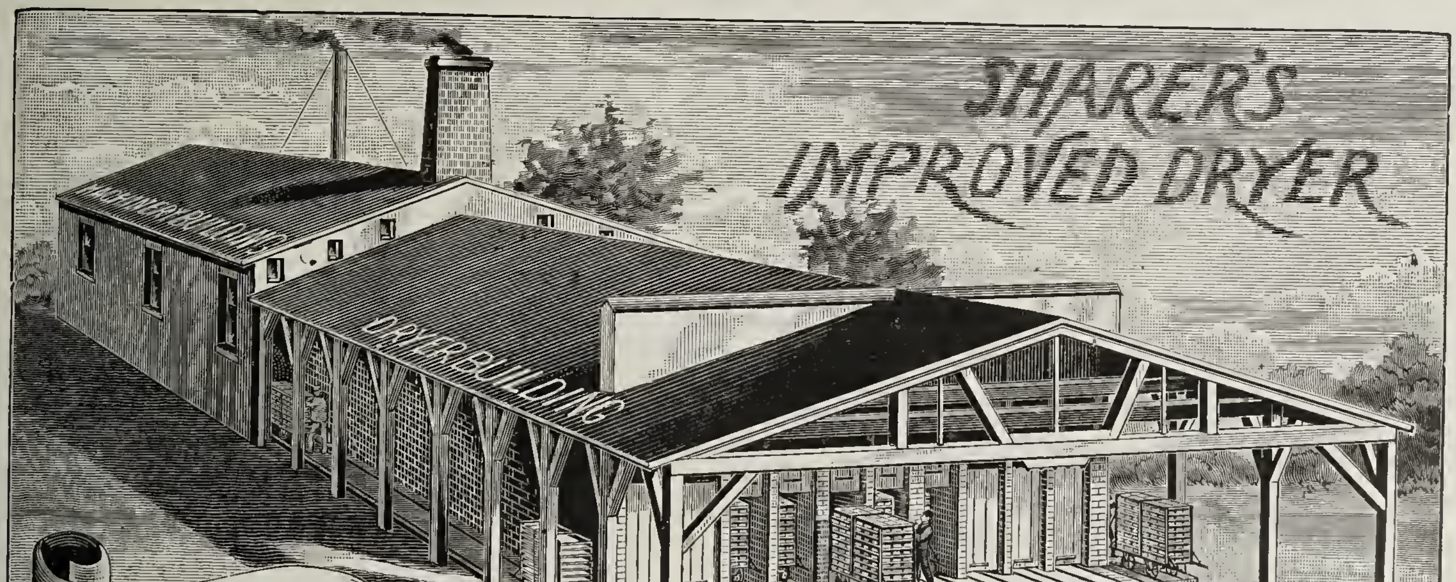
Geo. W. Sharer,

**Brick Manufacturing Expert,
Constructing Engineer,
Contractor and Builder.**


SHARER'S
IMPROVED DRYER
MACHINERY BUILDING
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APRIL 7TH 1885 No 315,848
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COMPLETE Dryer and Kiln outfits, and Complete Plants a specialty. Address **Geo. W. Sharer,** 2228 Tioga St., **Philadelphia, Pa.**

Mention The Clay-Worker.

A STEAM SHOVEL

MODEL "G," 2½ YD.

Is the most economical appliance for excavating clay.

Never strikes, and is therefore more reliable than hand labor.

Will work in all kinds of weather, insuring regular supply of material.

More thoroughly mixes the different stratas than is possible to do by hand.

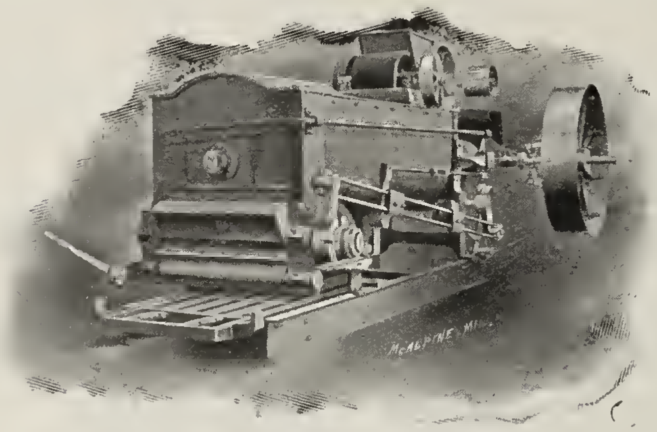
Will prove a paying investment in any yard where the material is taken from a face.

For many years we have supplied Steam Shovels for Brick Yards, and our machines are in successful use in the yards of many of the largest and most succcessful brick manufacturers of the country. We build machines having dipper capacities from ¾ cubic yard up to 4½ cubic yards, and can supply them with friction feed on boom or with independent engine feed.

If interested write us for illustrated catalog.

STYLE "C," ¾ YD.

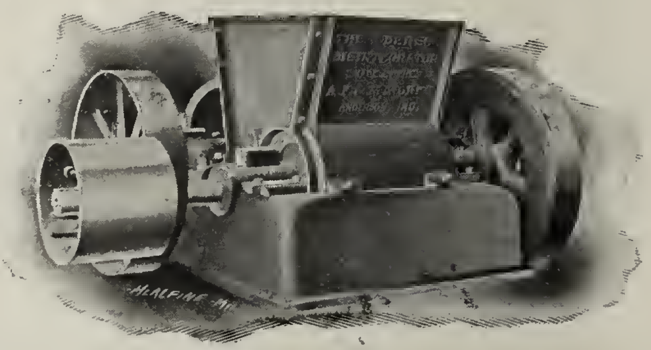
THE MARION STEAM SHOVEL CO., 610 West Center Street,
MARION, OHIO.



Horizontal Anderson Brick Machine.

DON'T PURCHASE UNTIL YOU WRITE US.

We can save you money.



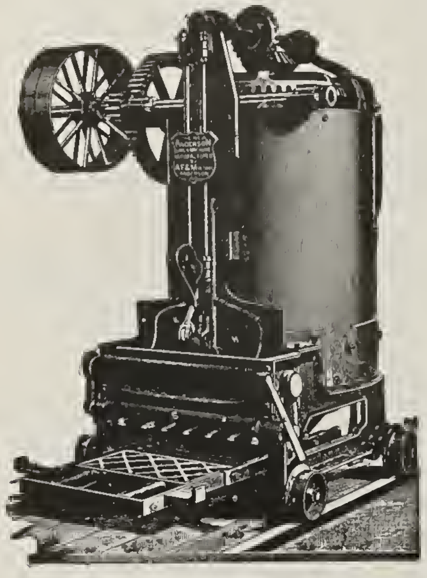
Best Disintegrator on the Market.

MANUFACTURERS OF . . .

New Departure Tile Machine,

The only machine for making Tile from 3 to 24-inch Diameter.

Pug Mills, Molds, Trucks and Barrows,
And all Brickyard Supplies.



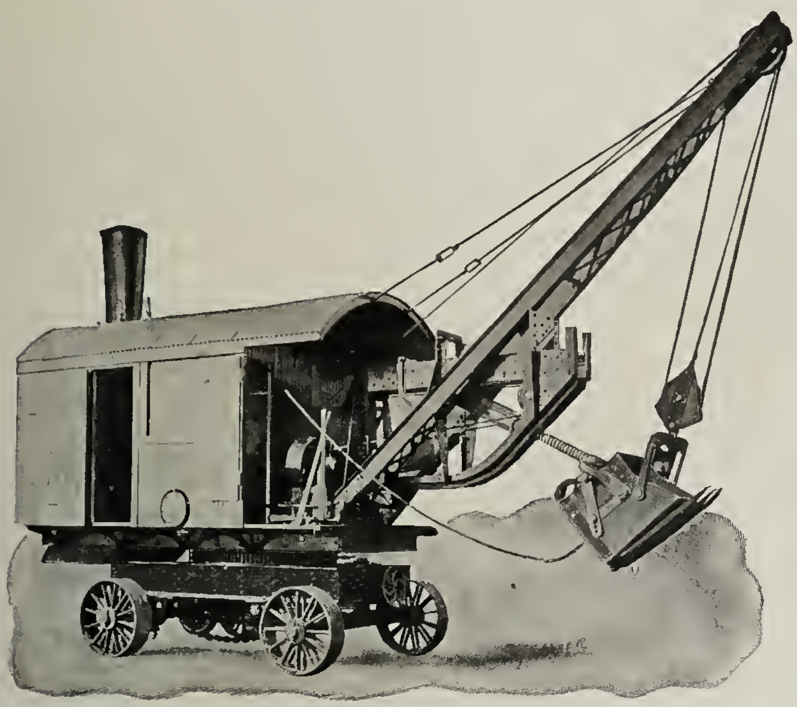
Steel and Iron Upright Stock Brick Machine.

1899 Horse Power Machine.

The Anderson Foundry and Machine Works,
Anderson, Ind.

Handle Your Clay With One Man and

The Thew Steam Shovel.



The Thew Improved No. 1 Shovel.

●●●●●●●●

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

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Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

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Made in all sizes.
Mounted on Car Wheels
or Traction Wheels.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 150,000 brick per day.

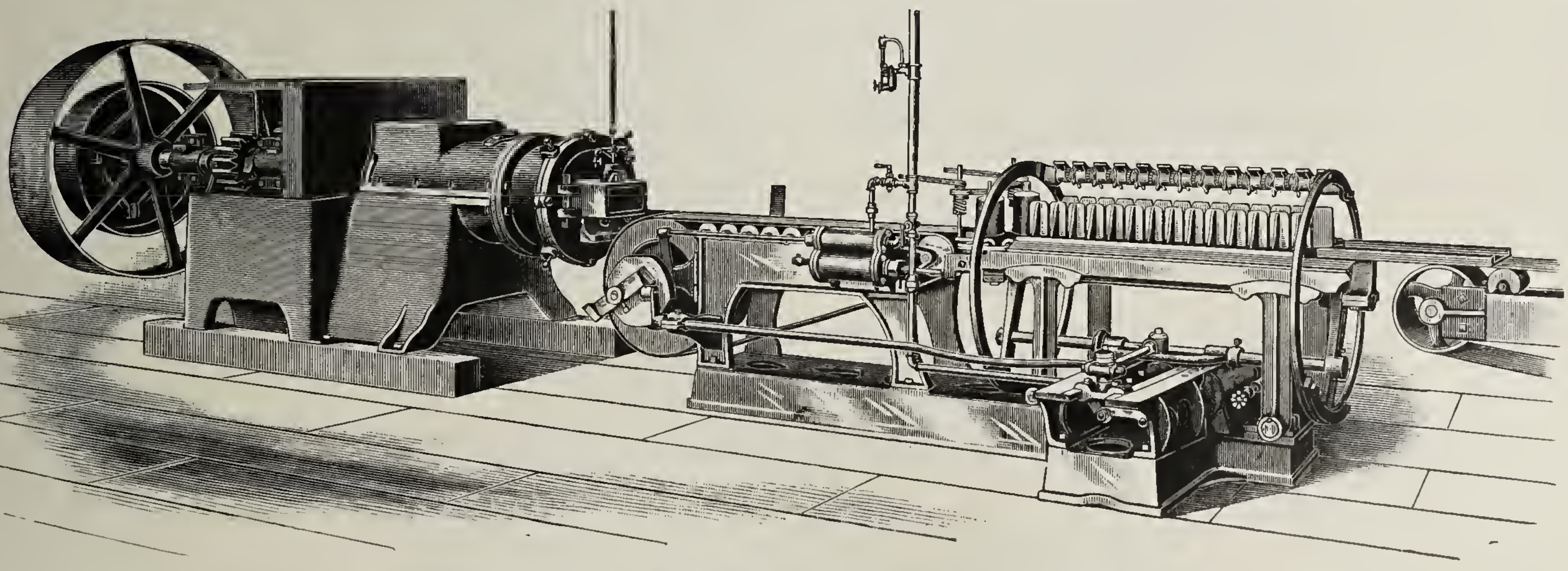
WRITE US FOR CATALOGUES OR INFORMATION.

The THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.

NOT BETTER THAN THE BEST!

But Better Than the Rest!

AND THE PRICE IS RIGHT!

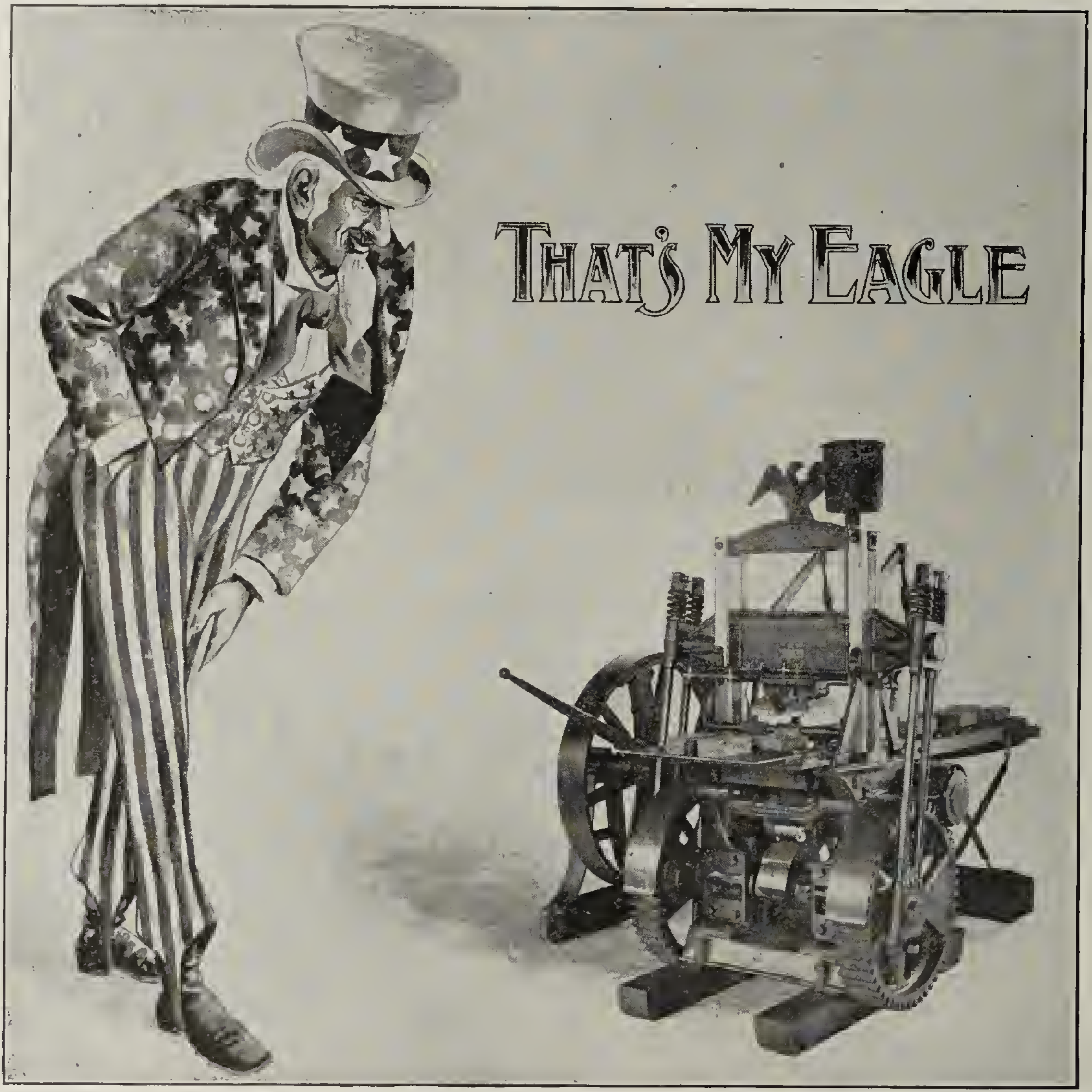


LEADER No. 25, With Side Cut Die and Automatic Cutter.

LEADER MANUFACTURING COMPANY, = Decatur, Ill.

Mention The Clay-Worker.

UNCLE SAM is proud of the Eagle. So are we. So are all the clayworkers who have bought Eagles. Why is it? People are never proud of a poor thing or a disappointing investment. They all like the Eagle because it is a fulfiller of guarantees, because it stands for quality, because it's a willing worker, because it saves its cost in repair bills, because when the whistle blows it's ready and able to run, and is willing and able to run overtime, or all the time, without complaint. If you're going to buy a repress and are willing to buy on a business basis of economy, you'll be safe in investigating the record of the Eagle. We'll send you facts and figures for the asking, and a list of users. Wire or write.



We also build the only complete line of clayworking machinery in the various processes. Every machine a winner because it's **"Built Right and Runs Right."**

The American Clay-Working Machinery Company,

Bucyrus, Ohio, U. S. A.

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3 Gore St., Picadilly, Manchester, Eng.

See Ad. on Page 294.

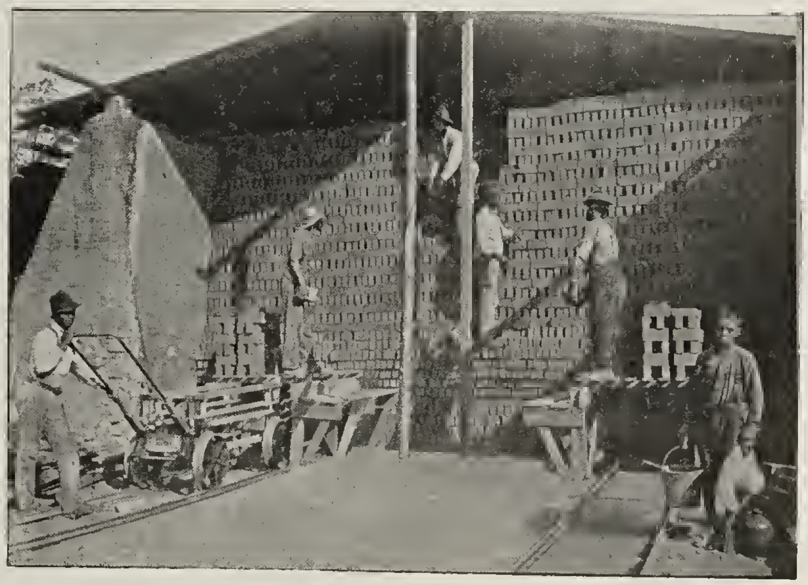
A PERFECT CAR SYSTEM

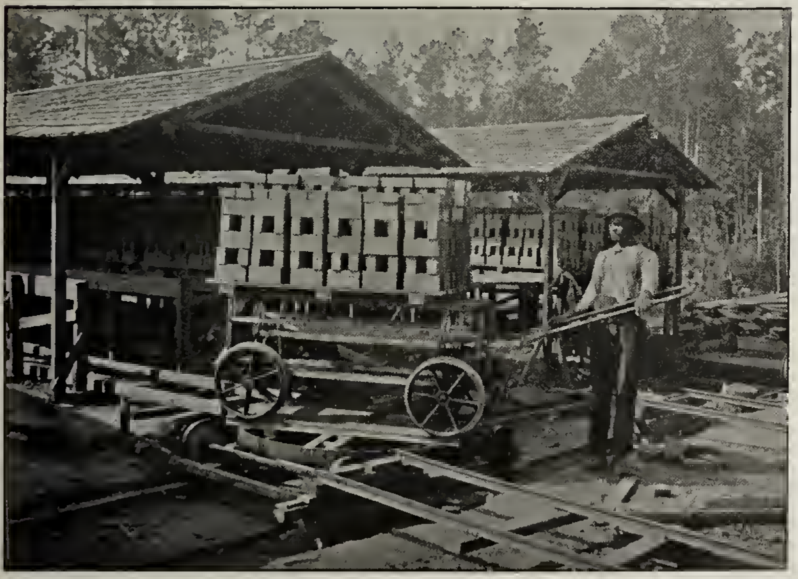
For Either Soft or Stiff Mud.

With only TWO CARS

One man will handle 40 M brick per day.

No Fan to Run. No Boiler to Steam.
No Pipes to Burst. No Fireman to Pay.
No Dryer. No Fuel.





We Guarantee This to be the cheapest, best and only out-door car system ever offered the brick manufacturer. We guarantee to handle from the machine and put on the yard in good condition, from thirty to forty thousand green brick per day, with one man, and same amount to kiln. We guarantee our patent car and system to perform the work for which they are built, and all the workmanship and quality of material to be first class. Our Covers and Storm Curtains give absolute protection from rain and storms and also protects tender clays.

THIS SYSTEM consists of two elevating and lowering brick cars for a thirty to forty thousand capacity brick plant; these take the place of several hundred common cars. The car is made of channel steel, with movable deck, which is raised and lowered by a compound lever. From two to five hundred brick are taken from the machine and placed on a pallet, the lever lowered, raising pallet off the rests. The load is then on car, which is run on the yard to the rests along each track; the lever is again raised, thus lowering deck of car which places load on the rests.

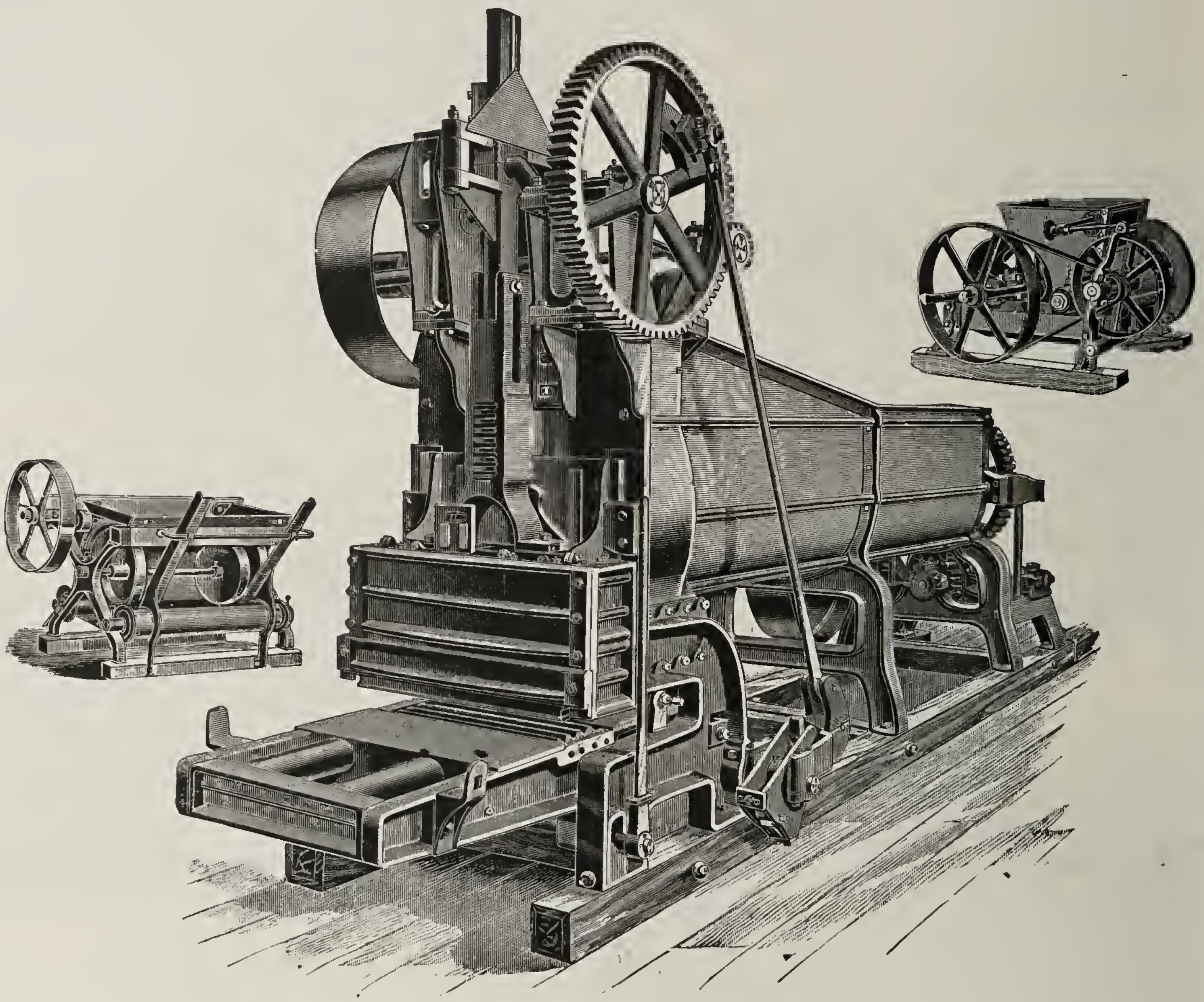
Scotts Patent Brick Car Co.,

Knoxville, Tenn.

Write for catalogue and plan showing method of handling soft mud brick, also the nearest point you can see our system in practical operation.

THE POTTS Horizontal Brick Machine

With a Potts Disintegrator on the rear end and a Potts Mould Sander along the side



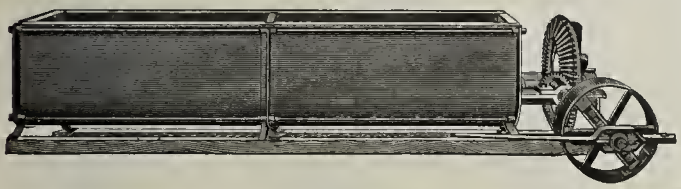
makes an outfit which will give pleasure to every brickmaker using them. With the above outfit the clay can be worked direct from the bank, and brick made which will have no equal for **CLEAN**, sharp corners and smooth surfaces. For **STENGTH, DURABILITY, SIMPLICITY, QUALITY and QUANTITY of MATERIAL** used in their construction and **WORKMANSHIP** they have no equal.

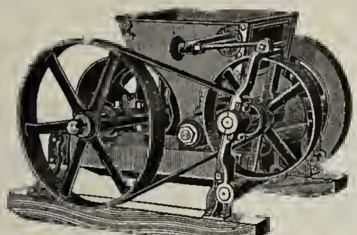
Don't be mislead by claims made by competitors that their machine is just as good as the Potts. That machine is yet to be made.

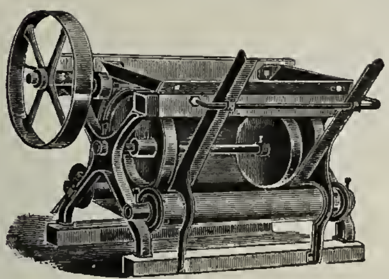
Write for Prices.

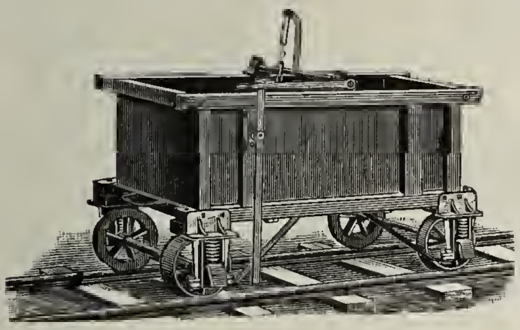
C. & A. POTTS & CO., - Indianapolis, Ind.

BRICKMAKING MACHINERY.

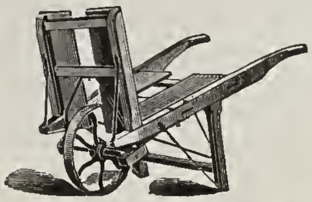


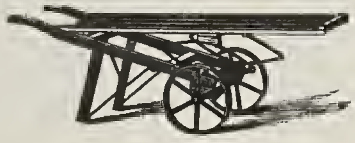


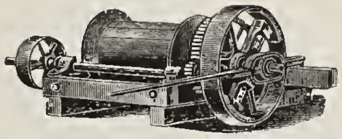


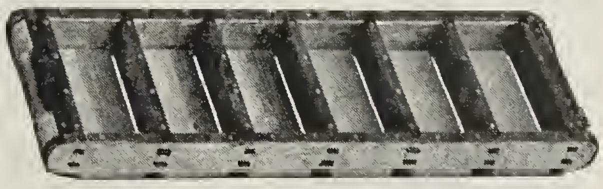


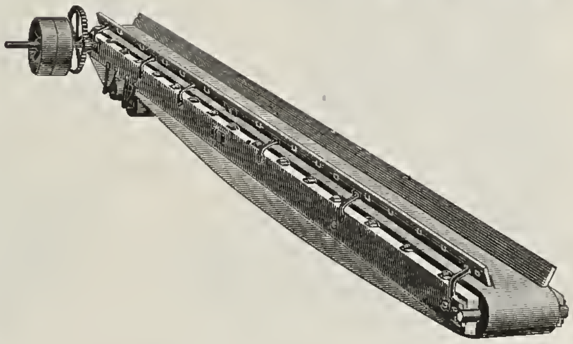
Pug Mills,
Disintegrators,
Mould Sanders,
Trucks and Barrows,
Winding Drums,
Clay Cars (any style)
Cherry Brick Moulds,
Elevators,
Granulators,
Pulleys,
Shafting,
Hangers,
Belting,
Kiln Castings.











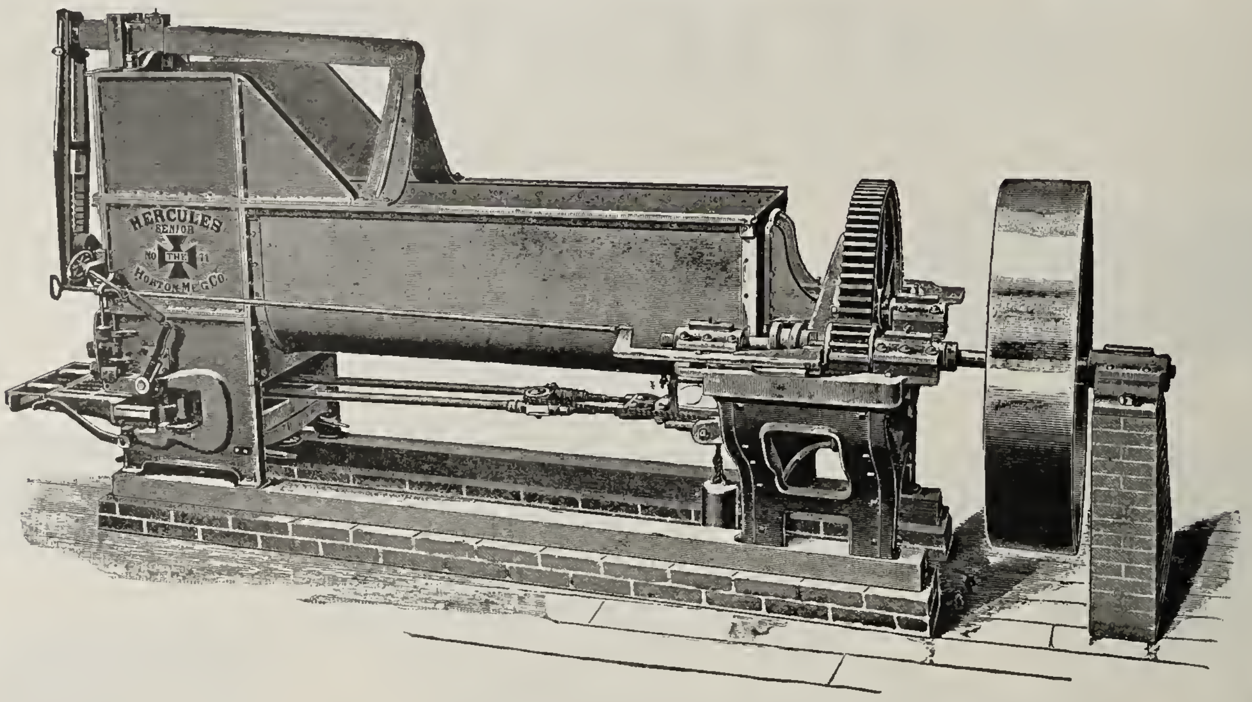
WE MANUFACTURE ALL OF THE ABOVE, SO CAN GUARANTEE QUALITY OF MATERIAL AND WORKMANSHIP. WITH OUR IMPROVED AND MODERN TOOLS WE ARE IN POSITION TO FURNISH THE BEST AT LOWEST POSSIBLE PRICES.

IF IN NEED OF SUPPLIES OF ANY KIND, WRITE FOR PRICES.

C. & A. POTTS & CO.,
Indianapolis, Ind.

Mention the CLAY-WORKER

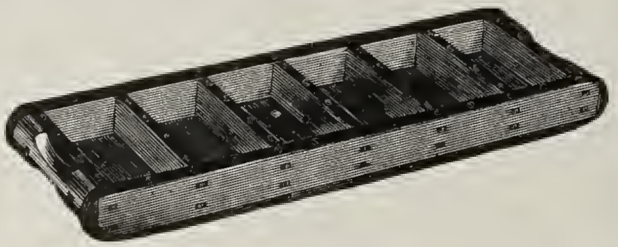
The HERCULES Works the Clay Stiff.



MOLDS.

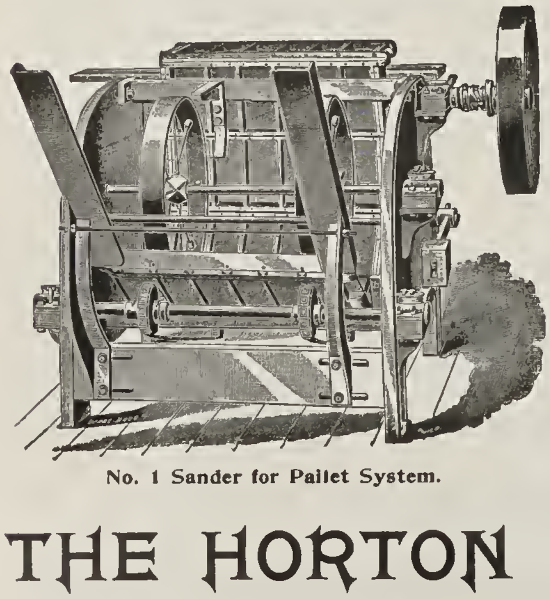
Iron Standard Horse Power Brick Machine—The Leader of all Horse Power.

Is one of our Specialties. Either Hand, Machine or Shapes. We have a shop full of Special Machinery for the Manufacture of these as well as Trucks of all kinds, Wheelbarrows. Dump Cars, and Carts. In fact everything used on a Brickyard.



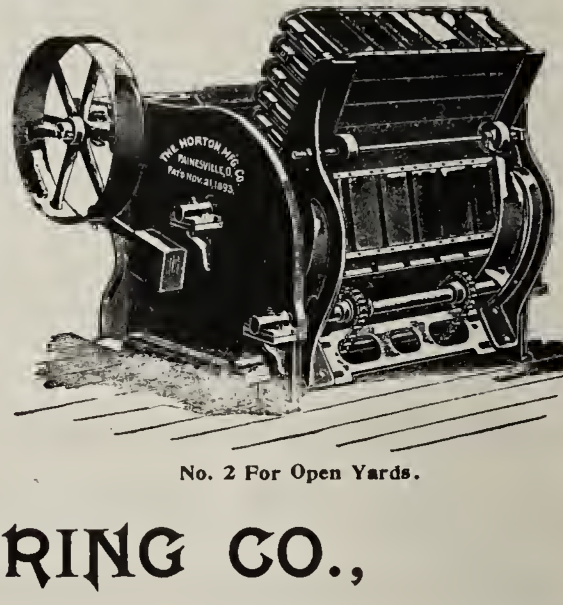
Standard Steam Power Brick Machine—Just the Machine for Medium Sized Yards.

The Mold Sanders That "Sand"



No. 1 Sander for Pallet System.

TWO
STYLES.


THE HORTON MFG. CO.
PAINESVILLE, O.
PAT'D NOV. 21, 1893.

No. 2 For Open Yards.

THE HORTON MANUFACTURING CO.,

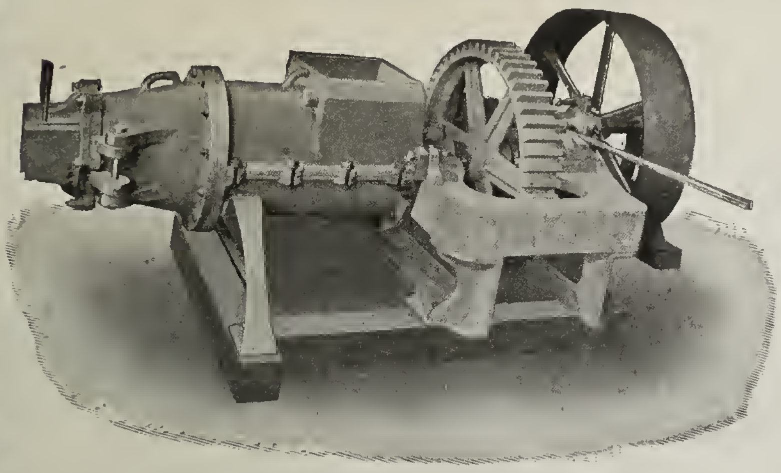
Mention THE CLAY-WORKER.

Painesville, Ohio, U. S. A.

BRICKYARD SUPPLIES

We always have a large stock and guarantee prompt delivery.

The Henry Martin Brick Machine Mfg. Co.,
LANCASTER, PA.



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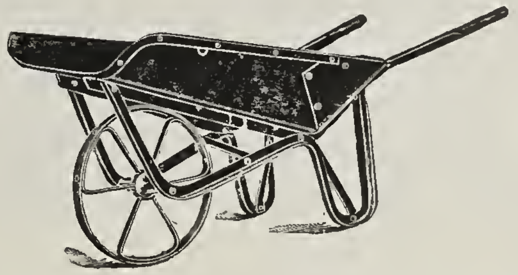
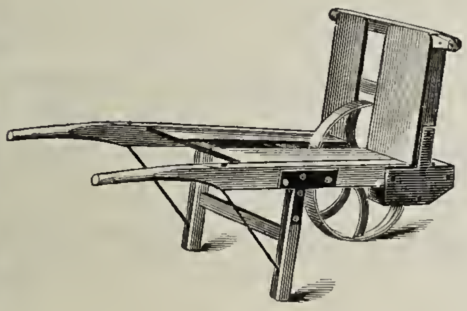
Our No. 2 Auger Machine is especially suited for drain tile, hollow brick, etc.

◆ ◆ ◆

Have you seen our new Steel Dump Barrows? They are just the thing for handling clay, sand, ashes, etc.



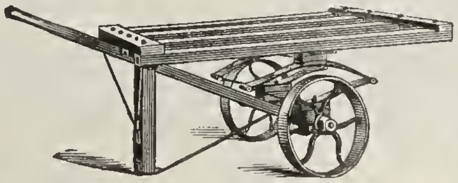
DO YOU HAVE A COPY OF OUR GENERAL CATALOGUE?



Brick plants equipped complete in every detail, including all the machinery, dryer and engine and boiler.

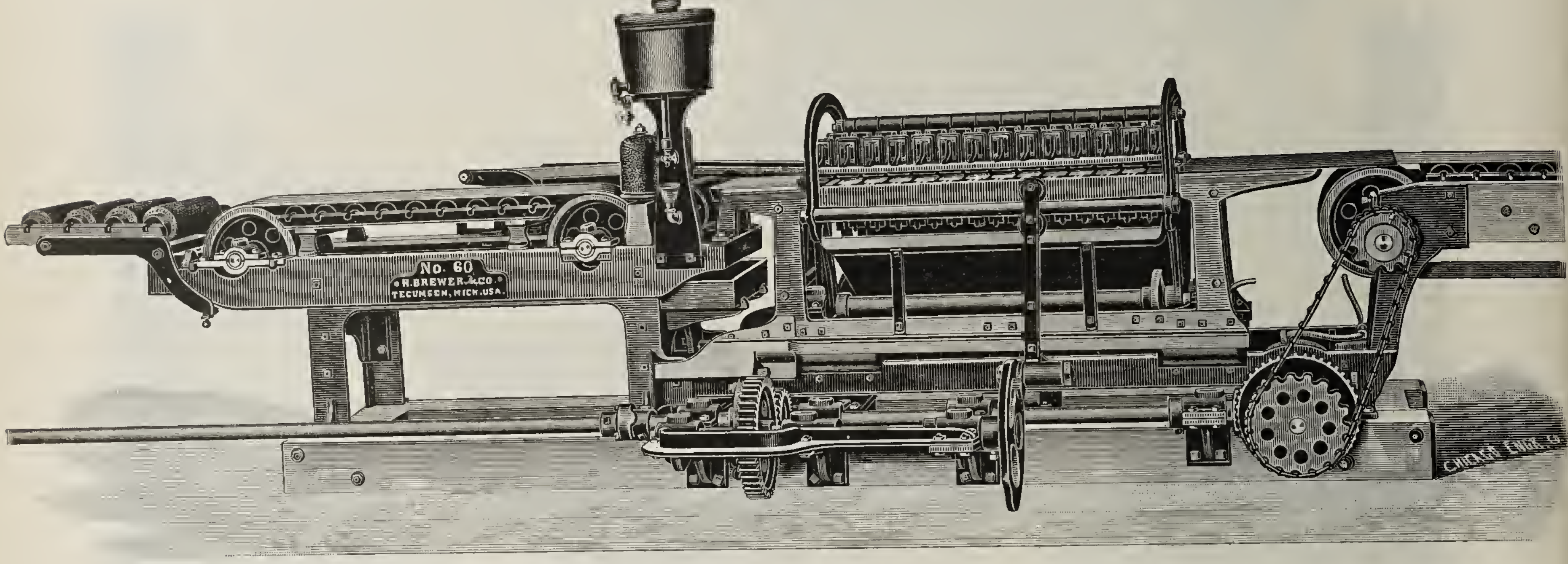
Send us a sample of your clay. We will examine it without charge.

We furnish everything a brickmaker needs.



NO WASTE

The Brewer No. 60 Automatic Brick Cutter does not cut a stub, thick or thin brick, but makes every inch of the columns into regularly dimensioned sections


No. 60
H. BREWER & CO.
TECUMSEH, MICH. USA.
CHICAGO ENG. CO.

THE BREWER NO. 60 AUTOMATIC BRICK CUTTER.

It is a machine of simple design and few parts, using a shorter and smaller wire than any other automatic cutter on the market.

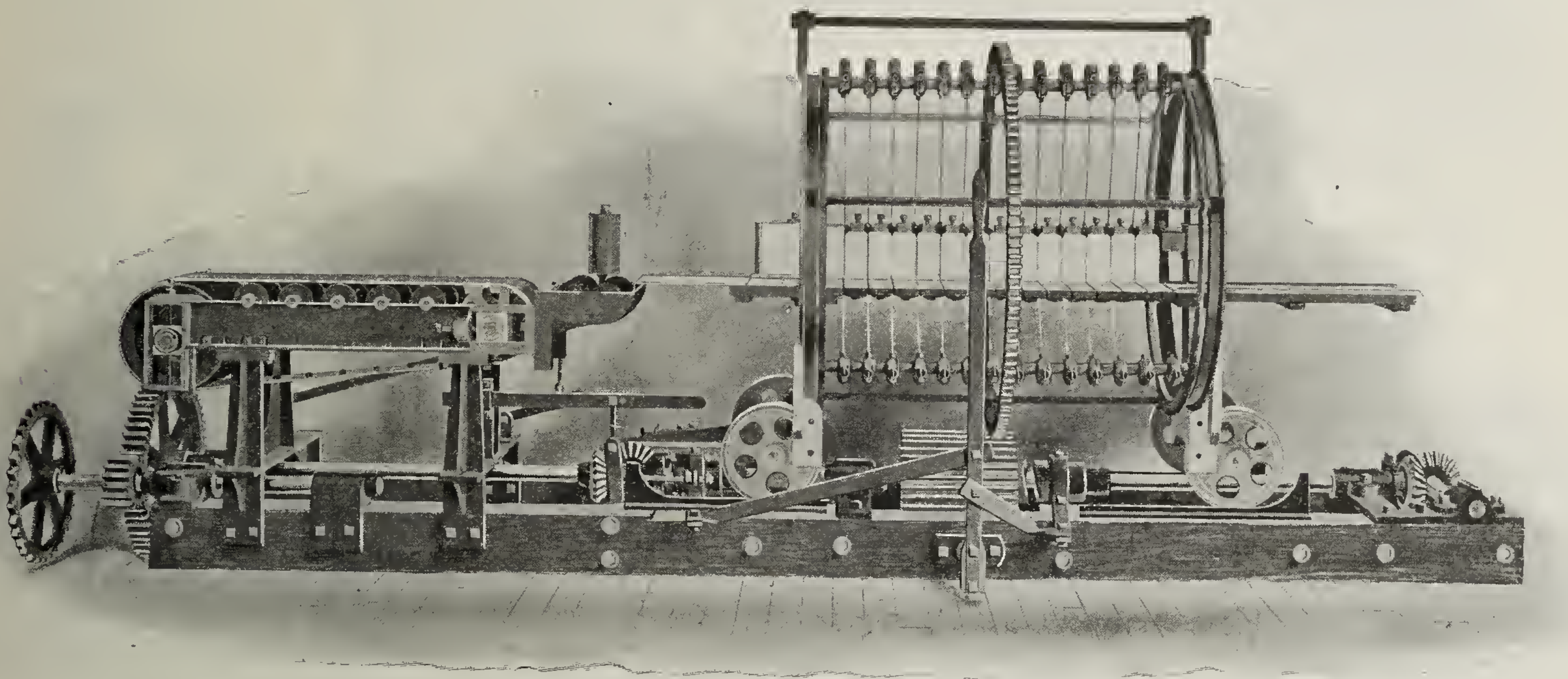
Get a catalog and references.

H. BREWER & COMPANY,

Tecumseh, Michigan.

THE CUTTER THAT EXCELS
IS THE
Wonder Semi-Automatic Side Cut Brick Cutter.

Works Clay Where Others Fail.
Makes Brick Equal to Dry Press Brick.



SEMI-AUTOMATIC SIDE CUT BRICK CUTTER.

This Cutter is simplicity itself, and is a success in every particular.
Is operated with one-half the expense of an Automatic.
No feathered edges—no cracked or crooked brick.
Absolute down cut. Nothing on the market like it.
Detailed information cheerfully given. Write us.

The Wallace Mfg. Co.,
FRANKFORT, IND., U. S. A.

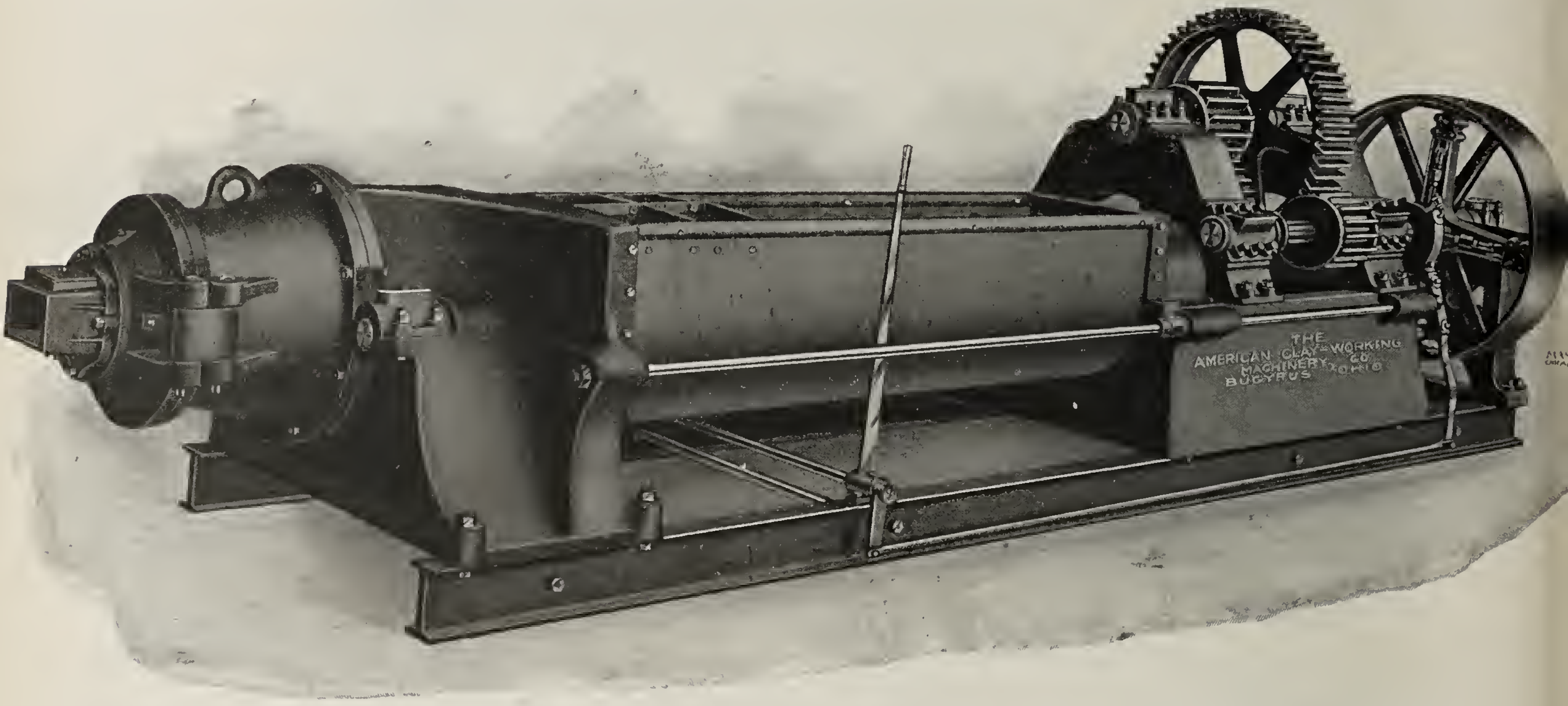
SOUTHERN AGENTS:
Atlanta Brick Machinery Co.,
403 Prudential Building, ATLANTA, GA.

WESTERN AGENTS:
Chicago Brick Machinery Co.,
225 Dearborn Street, CHICAGO, ILL.

Mention The Clay-Worker.

BIFURCATED MACHINE.

This new type of Combined Machine has many points of superiority. Its strength factors are away above the average. The placing of the pugging cylinder by the side of the expressing cylinder removes all objections to a combined machine. The clay is forced by pressure from the pugging cylinder into the expressing cylinder. On the old style combined machine the pugging was done above the expressing cylinder, and the clay fell by gravity through a throat to the brick machine. The clogging or barreling up of the clay caused no end of trouble. This new machine removes this serious objection. The side by side arrangement makes the machine much lower down, saving in height of the building, length of elevator, etc., and places the operator on the floor level instead of on a raised platform as formerly. This makes the machine more easy to operate and with a saving of labor. It makes better brick and insures steady operation. The machine is mounted on substantial steel I-beams, and as shown weighs 25,000 pounds. Built in three sizes. Capacity 35,000 to 100,000 brick in ten hours. It can be equipped with our automatic cutters and will work a greater variety of clays than any other combined machine on the market. The careful and honest construction of this machine insures its successful operation. Write for complete particulars.



The American Clay-Working Machinery Company,

Bucyrus, Ohio, U. S. A.

New York Office,
39-41 Cortlandt St.
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3 Gore St., Picadilly, Manchester, Eng.

A NEW COMBINATION.

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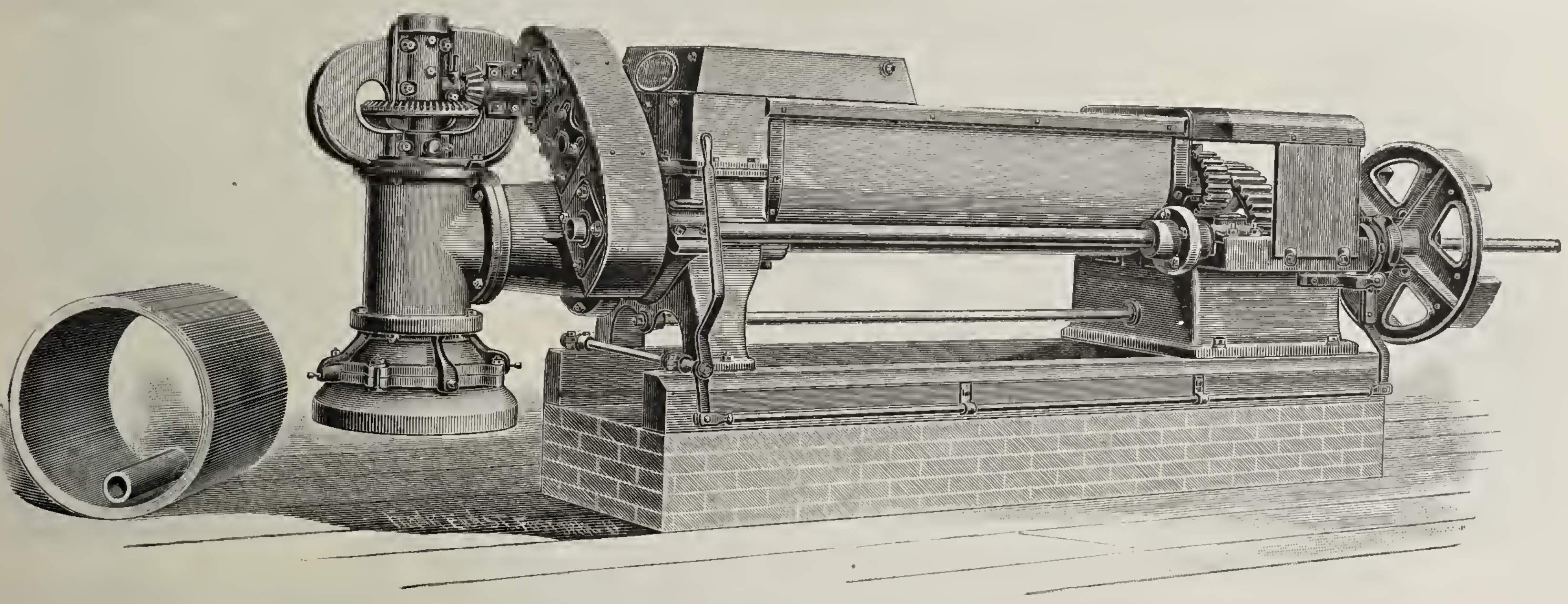
INVESTIGATE IT THOROUGHLY.



Recognizing the fact that the average tilemaker does not sufficiently pug the clay he uses we have arranged our famous "Hummer Combined" Brick Machine so as to make all sizes of drain tile from 2½ inches to 24 inches.

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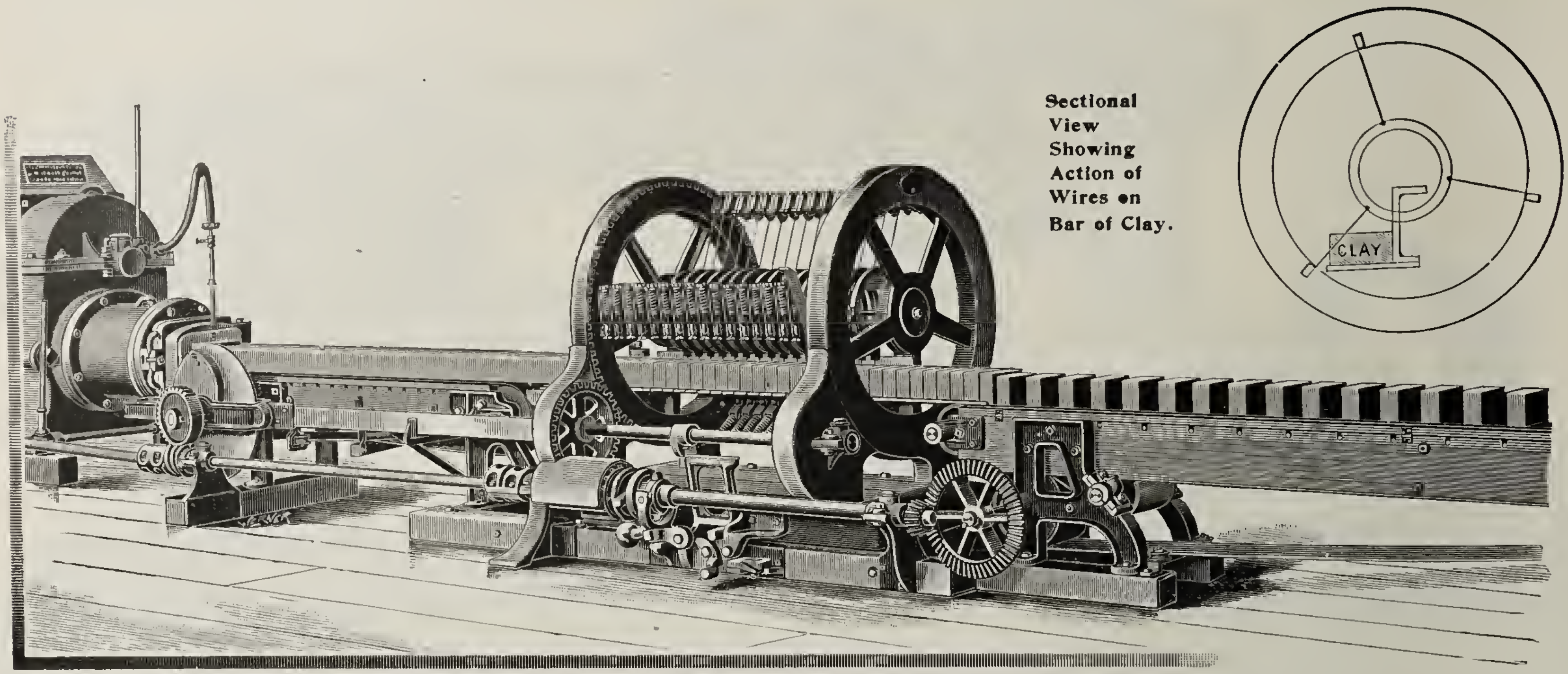
Is "Just as Good" as This.



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Why waste time and money using Cutters which are frequently out of order and cannot be depended upon to do good work?

Why not produce brick of **finest quality** when it can be done with less expense?

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Why should you not use it also?

You will be satisfied with it.

We will prove this statement if you will give us opportunity.

E. M. FREESE & CO.,
Galion, Ohio.

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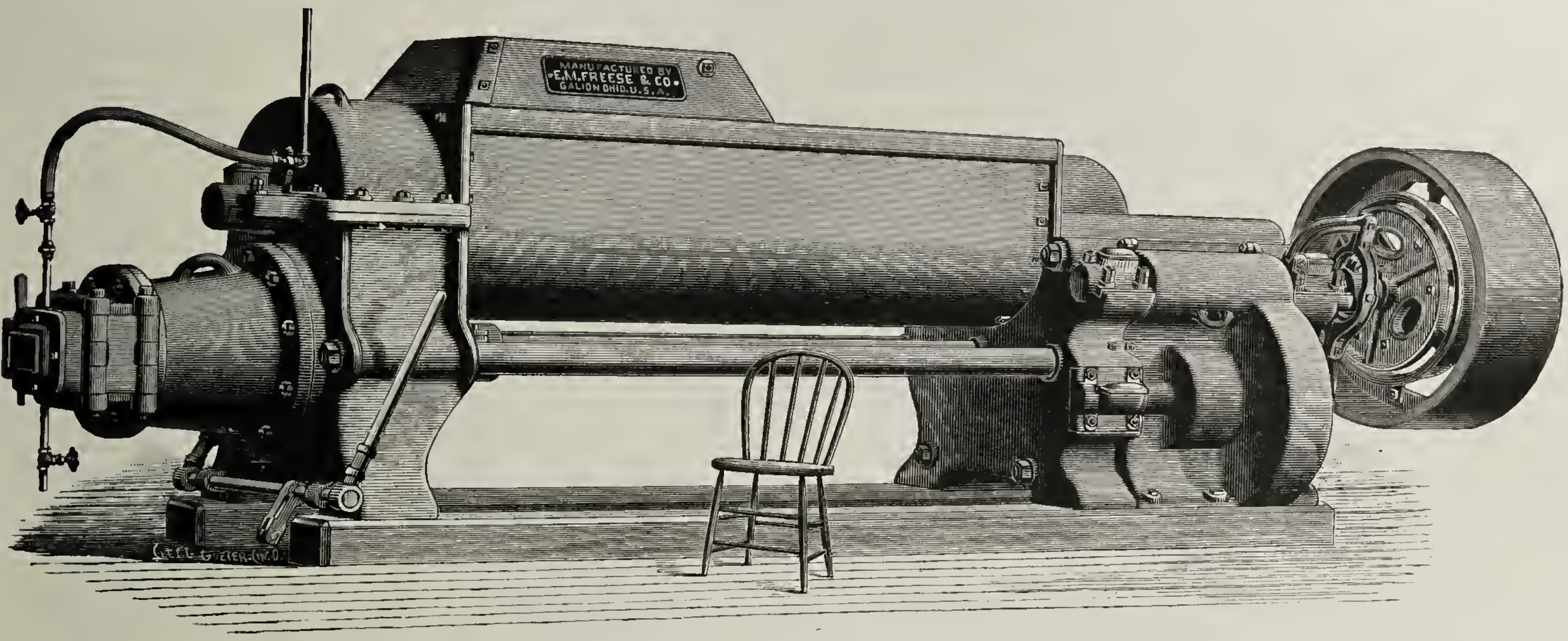
Union Brick Machines

With Pug Mill Combined.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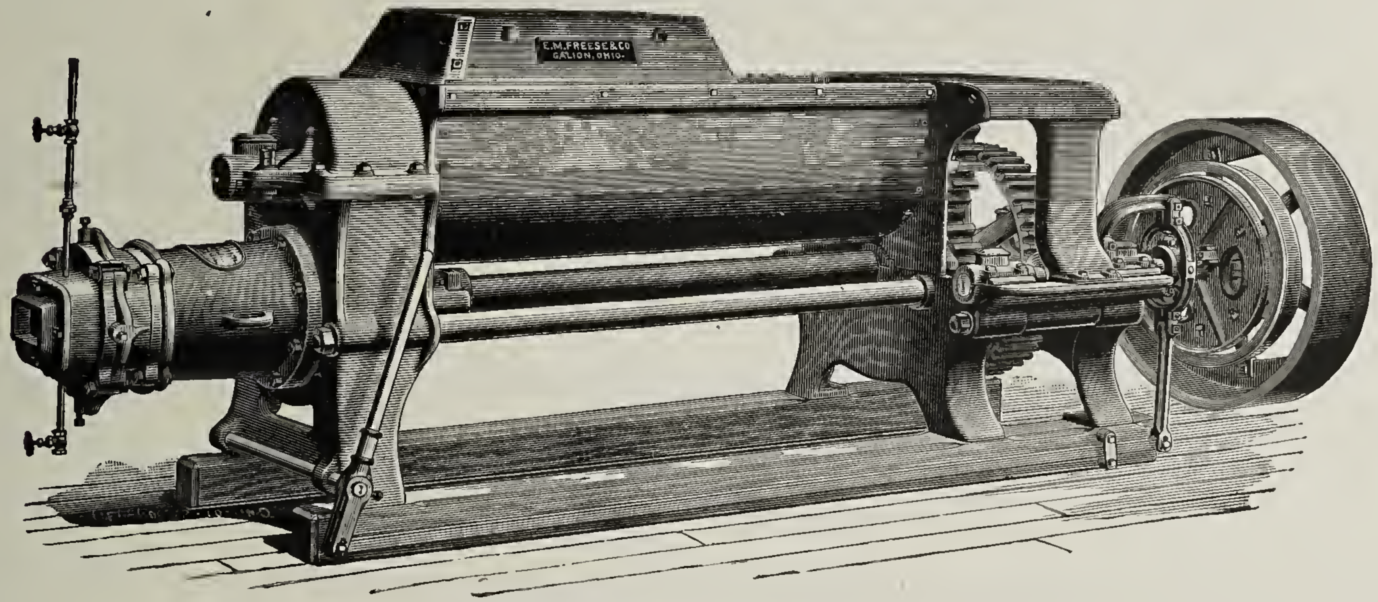

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We build these Machines in five (5) sizes.

Their reputation for convenience, enconomy and satisfactory service generally is established by their use in scores of the best Brick Plants.

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Clay Granulators,
Clay Elevators,
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Tempered Steel Brick Strikes,
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And other castings.

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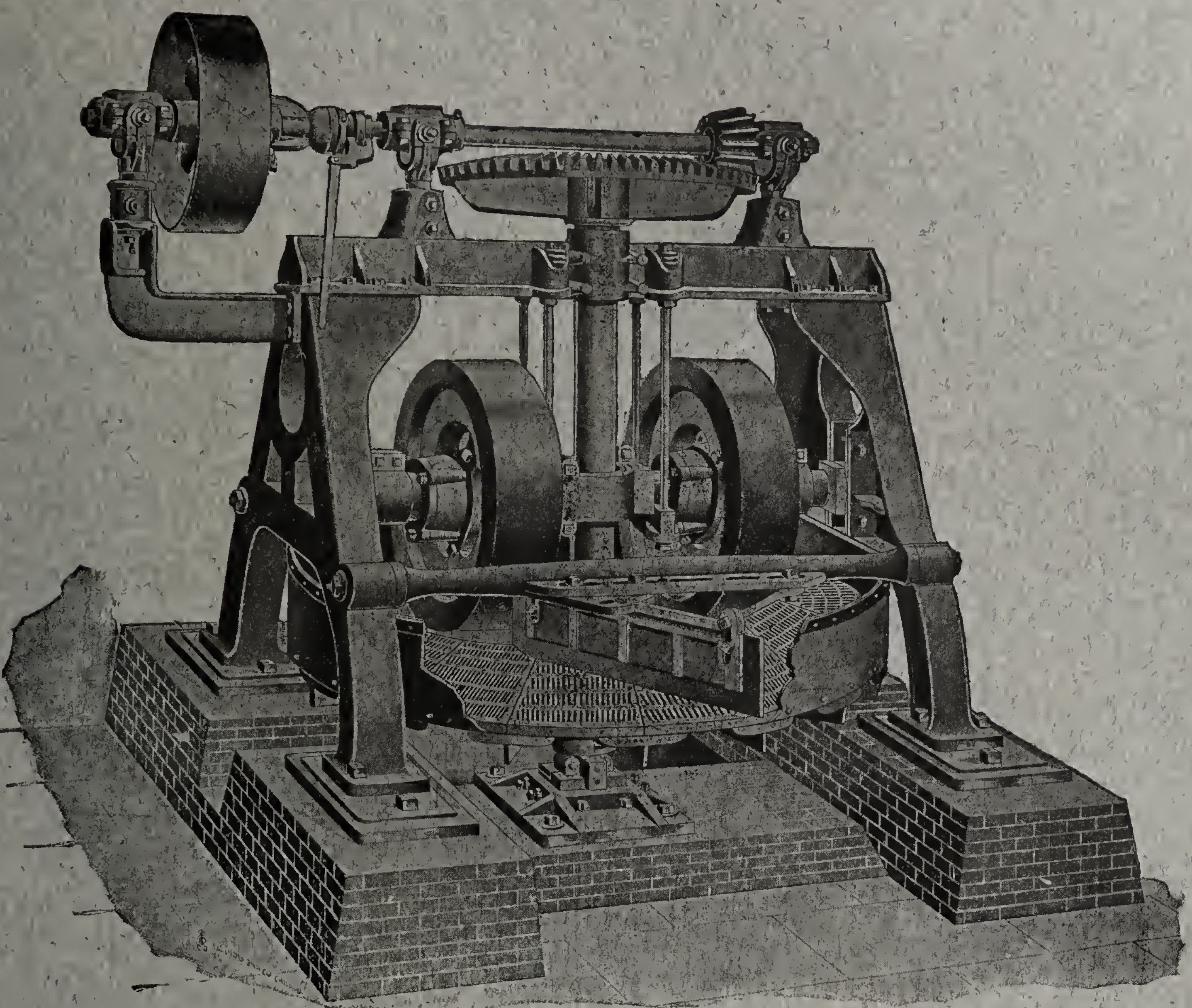

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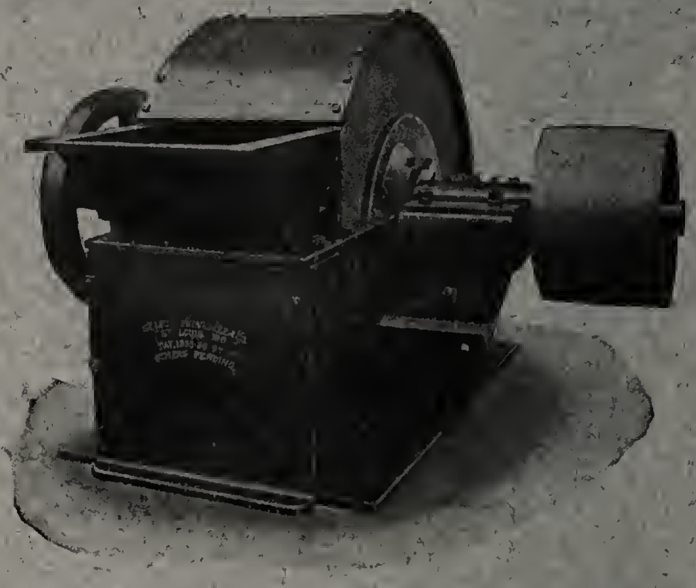

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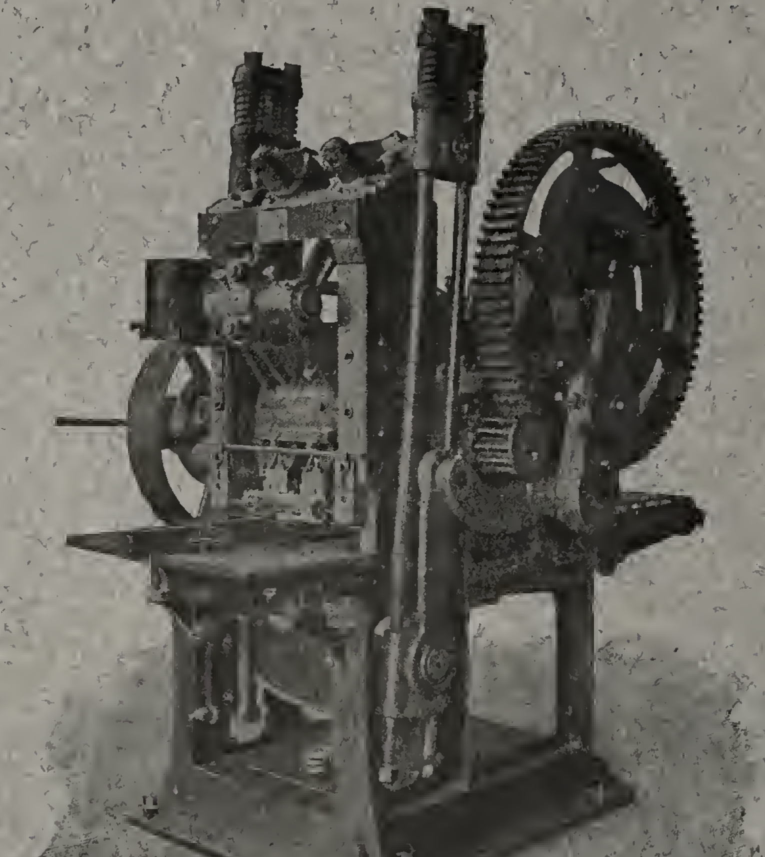

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Sword Brick Machines.

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Table of Contents, Page 362.

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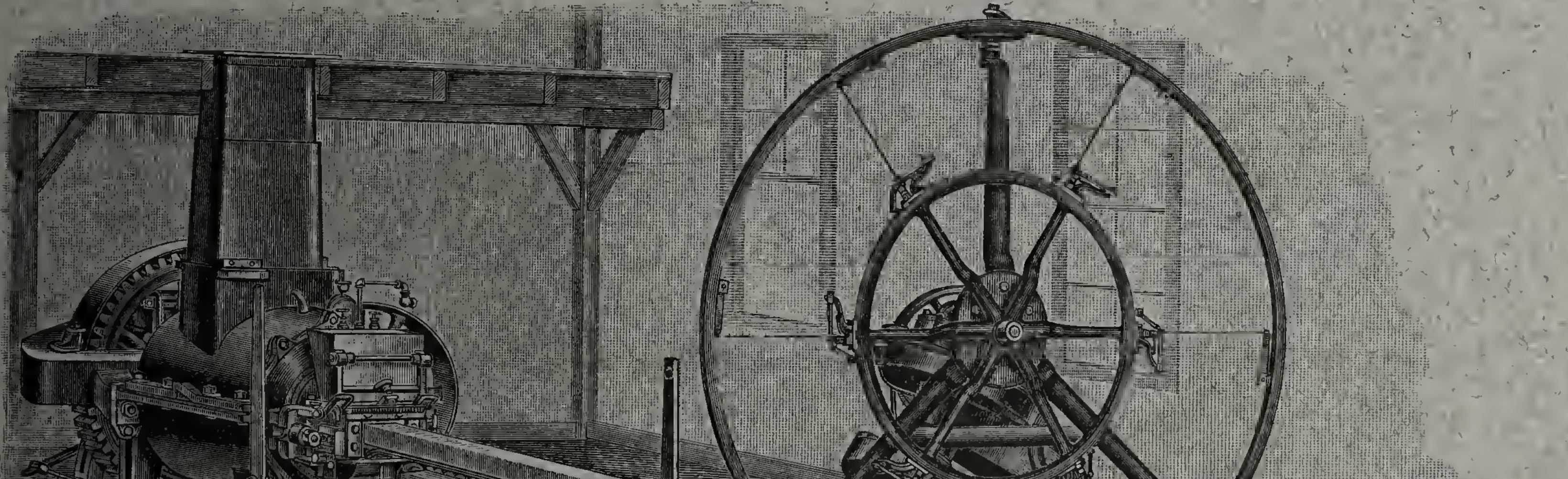
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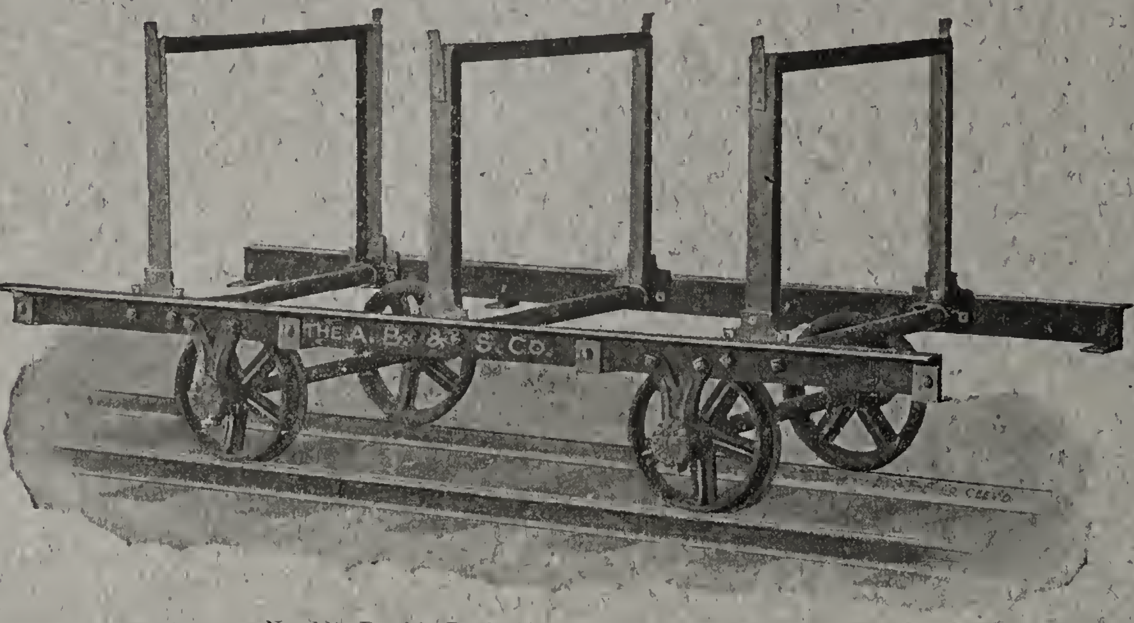

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INDEX TO ADVERTISERS.

Brick Machinery—Dry Press Process.

Name. Page.
Anderson Foundry and Mach. Works ... 310
Chicago Brick Machinery Co. ... 378
Chisholm, Boyd & White Co. ... 304, 305, 306, 307
Fernholtz Brick Machinery Co. The ... 309
Ill. Supply & Construction Co. 311
Ross-Keller Brick Machine Co 308

Brick and Tile Machinery.

American Clay-Working Mach Co., The ... 386, 394
Anderson Foundry and Mach. Works ... 310, 384
Brewer. H. & Co ... 392
Chambers Brothers Co ... 301
Chicago Brick Machinery Co... 378
Eastern Machinery Co, The ... 398
Fate & Co., The J. D ... 395
Freese, E. M. & Co ... 367, 396, 397
Henry Martin Brick Mach. Mfg Co., The ... 390
Hensley, I. W ... 303
Hook, F. E ... 368
Horton Mfg. Co., The ... 391
Ill. Supply & Construction Co. 311
Kells Foundry and Machine Co ... 375
Leader Mfg. Co, The ... 385
Madden & Co ... 373
Ohio Ceramic Engineering Co., The ... 400
Potts & Co., C. & A. ... 388, 389
Raymond Co., The C. W ... 363
Stedman Foundry and Machine Works ... 313
Steele & Sons, J. C ... 376
Wallace Mfg. Co, The ... 393
Wellington Machine Co, The... 365
Wiles Co., A. M. & W. H ... 376

Brick Kilns and Dryers.

American Blower Co, The ... 400
Boss, John C ... 366
Barron Dryer Co ... 376
Bushong, M. M ... 380
Crown Dryer Co., The ... 382
Economy Dryer and Oil Burning Co ... 381
Eudaly, W. A ... 379
Haigh, H ... 374
Illinois Supply and Construction Co, The ... 311
Justice, I. M ... 379
Morrison & Co., R. B ... 374
New York Blower Co., The ... 383
National Dry Kiln Co, The ... 382
Phillips, S. G ... 370
Pike, E. M ... 374
Platt Triple Draft Kiln Co ... 380
Reppell, L. H ... 379
Sharer, Geo. W ... 383
Standard Dry Kiln Co, The ... 316

Brick Yard Supplies.

Arnold-Creager Co., The ... 313
Atlas Car & Mfg. Co. ... 302
Bechtel, B. E ... 377
Cleveland Car Co ... 381
Caldwell & Son Co., H. W ... 373
Carnell, Geo ... 378
Central Iron Works ... 371
Cox, Geo. S ... 374
Dunlap Mfg. Co ... 372
Fernholtz Brick Machinery Co., The ... 309
Frost Manufacturing Co ... 399
Gandy Belting Co., The ... 371
Gray, S. B ... 374
Harrington & King Perforating Co, The ... 303
Henry Martin Brick Machine Mfg. Co., The ... 390
Horton Mfg. Co, The ... 391
Jeffrey Manufacturing Co, The. 370
Kendall & Flick ... 373
Marion Steam Shovel Co ... 384
Main Belting Co ... 372
Henry Martin Brick Machine Mfg. Co., The ... 390
Mershon, Schuette, Parker & Co 371
National Musical String Co ... 376
Phillips & McLaren ... 375
Rockwood Mfg. Co, The ... 375
Smidth & Co., F. L ... 378
Scotts Patent Brick Car Co ... 387
St. Louis Pulverizer Co ... 400
Thew Automatic Shovel Co, The 385
Williams & Co., M. F ... 377
Williams Patent Crusher and Pulverizer Co ... 312

Miscellaneous.

American Ceramic Society ... 314
American Road Machine Co... 373
Avery Stamping Co ... 368
Baird & Co., Henry Carey ... 372
Big Four Route ... 374
Bloomfield Clay Co ... 314
Boss, John C ... 366
Caldwell Co., W. E ... 372
Clinton Paving and Building Brick Co., The ... 315
Crown Fire Clay Co., The ... 369
Dean Bros. Steam Pump Works 372
Evens & Howard ... 369
Evert & Co., H. C ... 375
Gabriel & Schall ... 371
Hook, F. E ... 368
Indianapolis Engraving and Electro Co ... 373, 375
Indiana, Decatur & Western ... 374
Indiana Paving Brick Co ... 314
Johnsonburg Vitrified Brick Co 314
Lake Erie & Western ... 374
McAvoy Vitrified Brick Co ... 315
Miller Oil and Supply Co ... 372
New York Brick and Paving Co 314
Ohio State University ... 373
Pennsylvania Line ... 375
Purington Paving Brick Co, The 315
Perrine & Son, H. C ... 371
Reese-Hammond Fire Brick Co 369
Richardson, W. D ... 371
Roessler-Hasslacher Chemical Company, The ... 377
Sangamo Brick Co ... 315
Savage Fire Brick Co. ... 369
Terre Haute Brick and Pipe Co. 315
Vandalia Line ... 375
Wabash Clay Co., The ... 315
Ads., Small Wanted, For Sale, etc.

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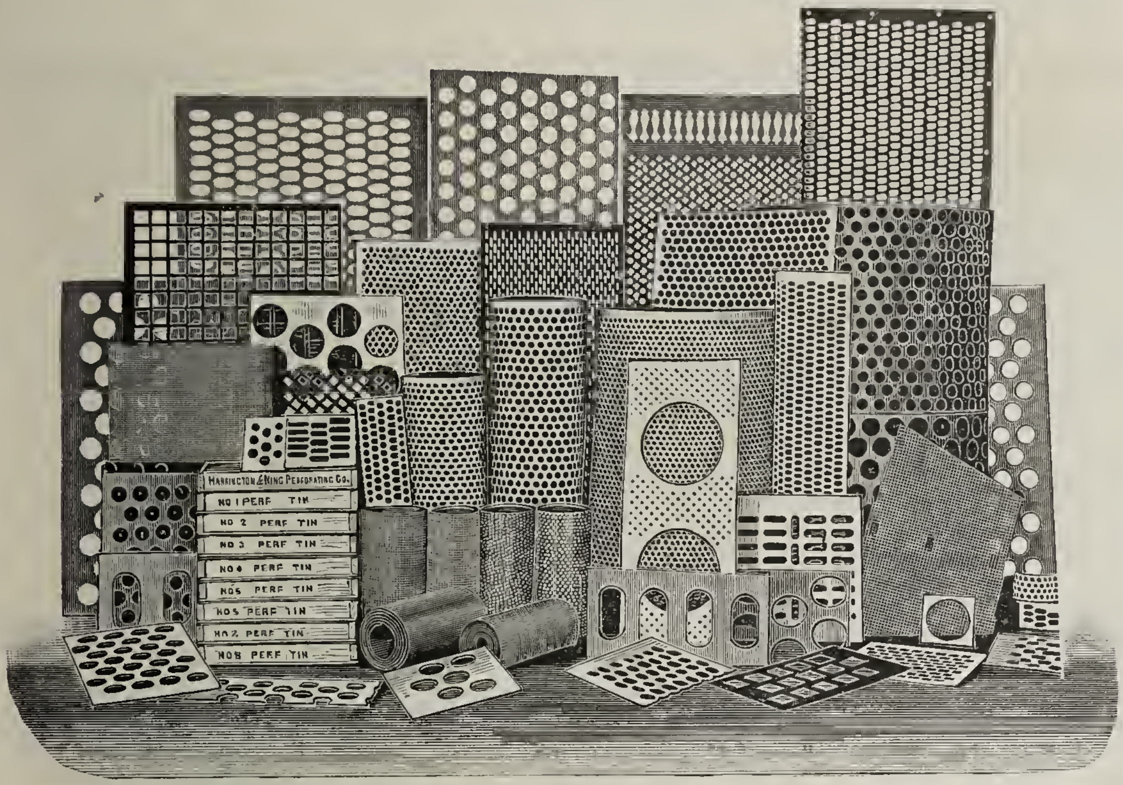

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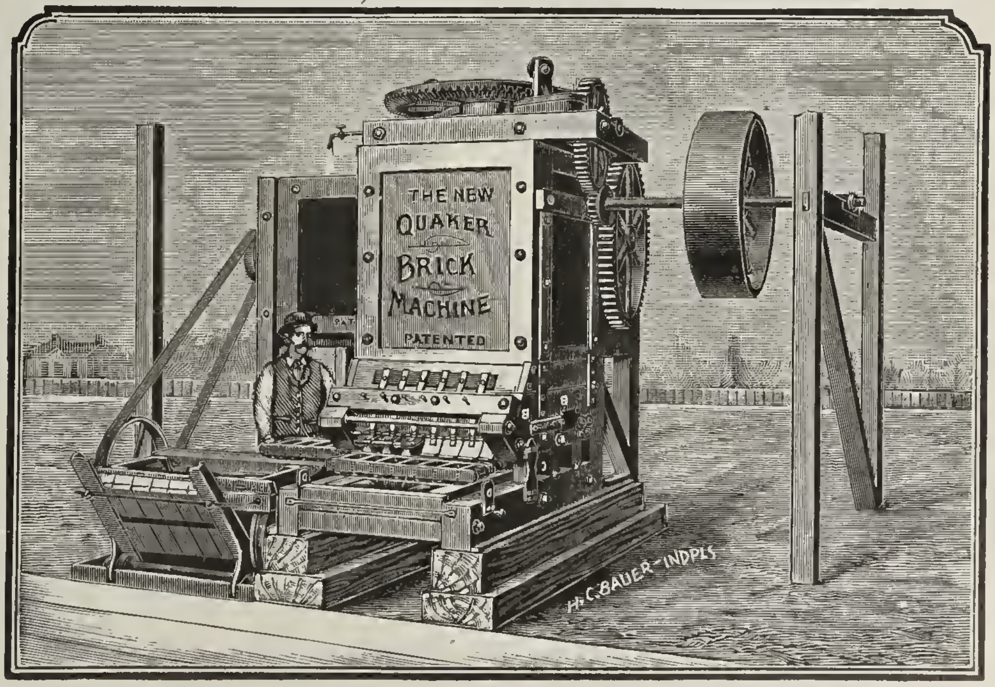
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The Improved Boyd Brick Press.

The '97 Model.

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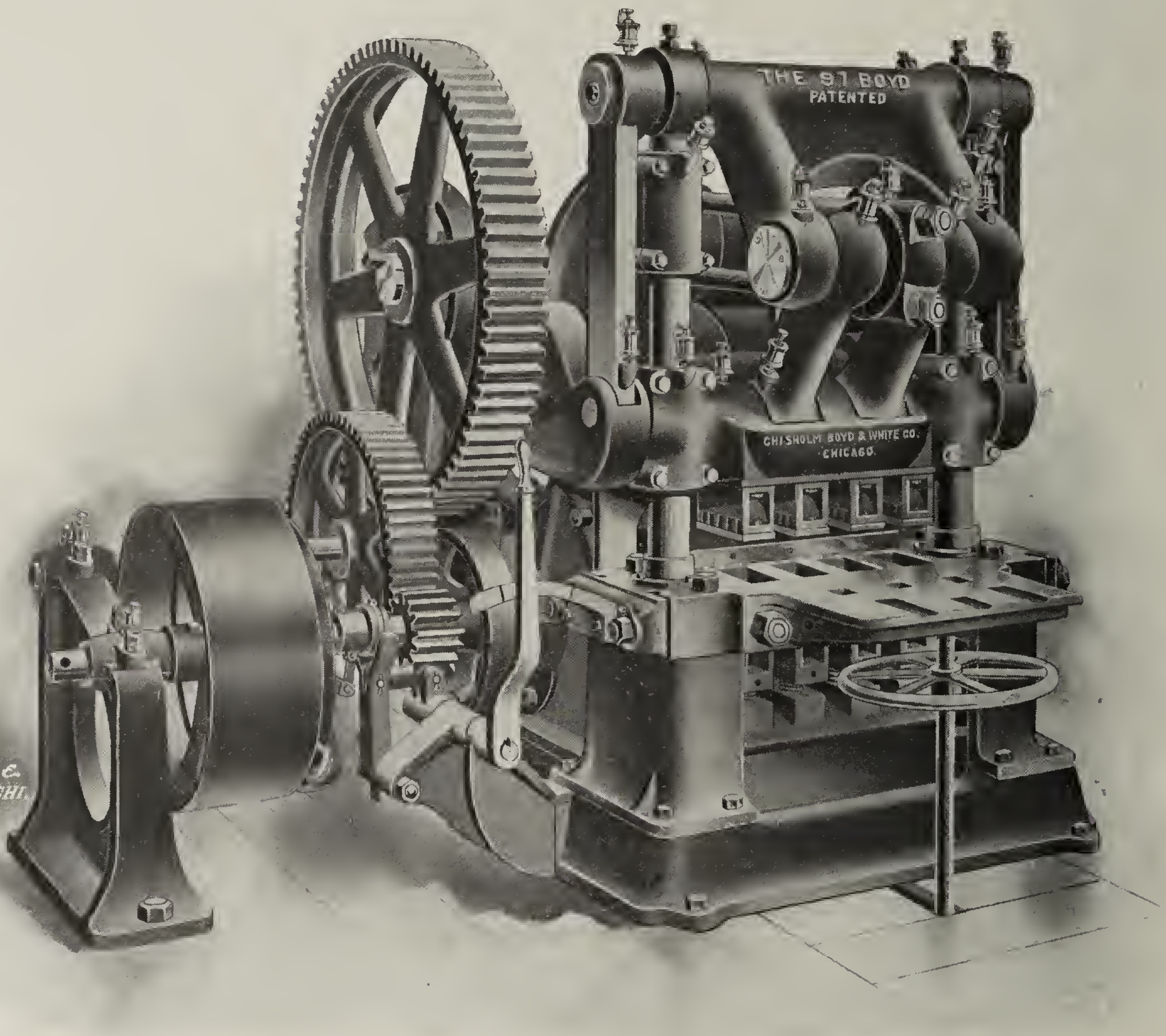

The '97 Boyd Brick Press has Enormous Strength and Great Durability: It is Compact; The Adjustments are Convenient; It Operates Quietly and Smoothly; The Workmanship and Material are of the best; The Design Ingenious, and shows the most Perfect Application of Scientific and Mechanical Principles to the Art of Brick-making.

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Sixty Presses of this Pattern Now in Use.

Can not be broken in pressing brick. Fully Guaranteed.

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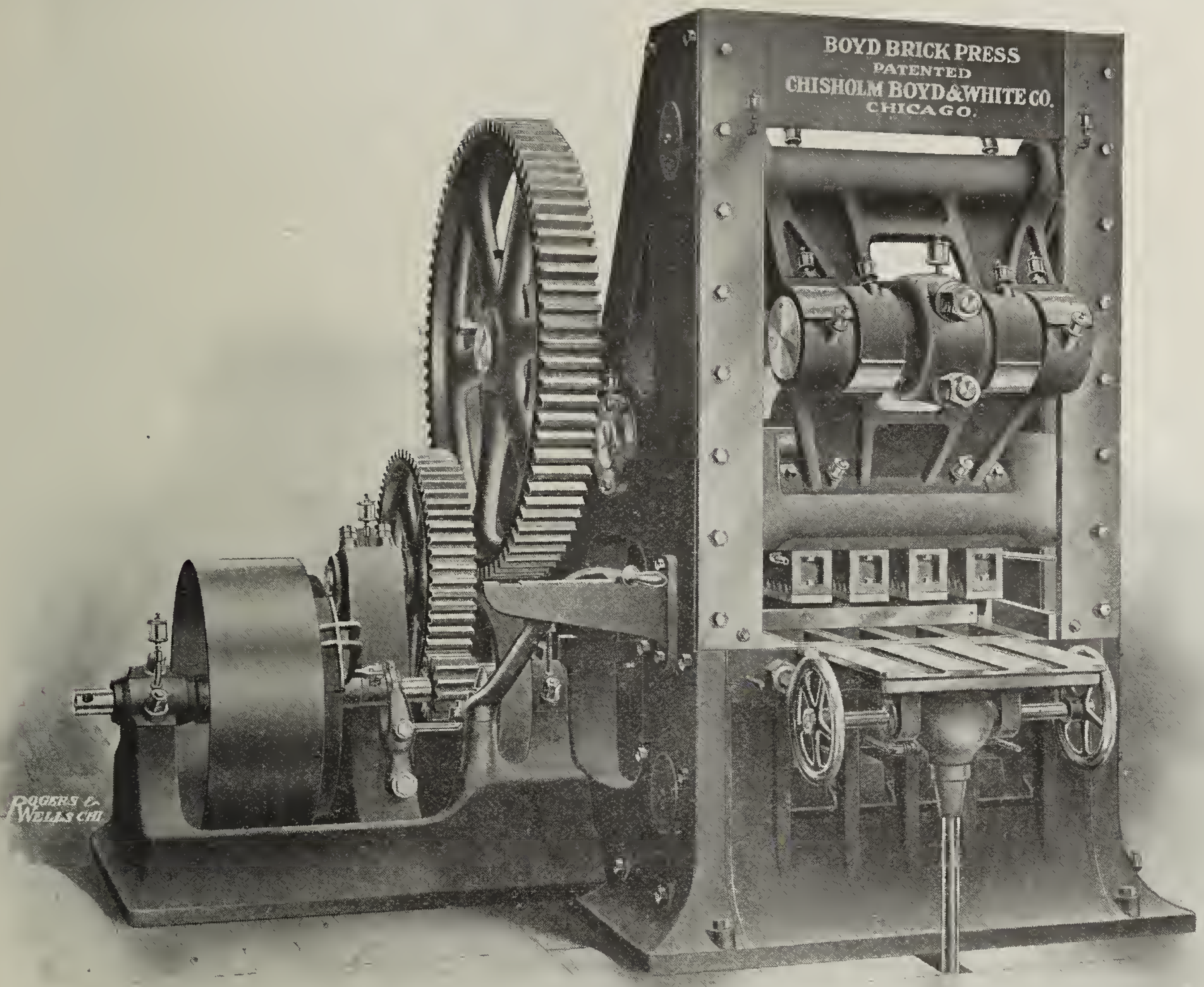

The Boyd Brick Press will make Better Brick from Clay or Shale than can be made from the same material by any other press.

Especially adapted for Working Shales; and is the only Successful Machine for Making Fire Brick.

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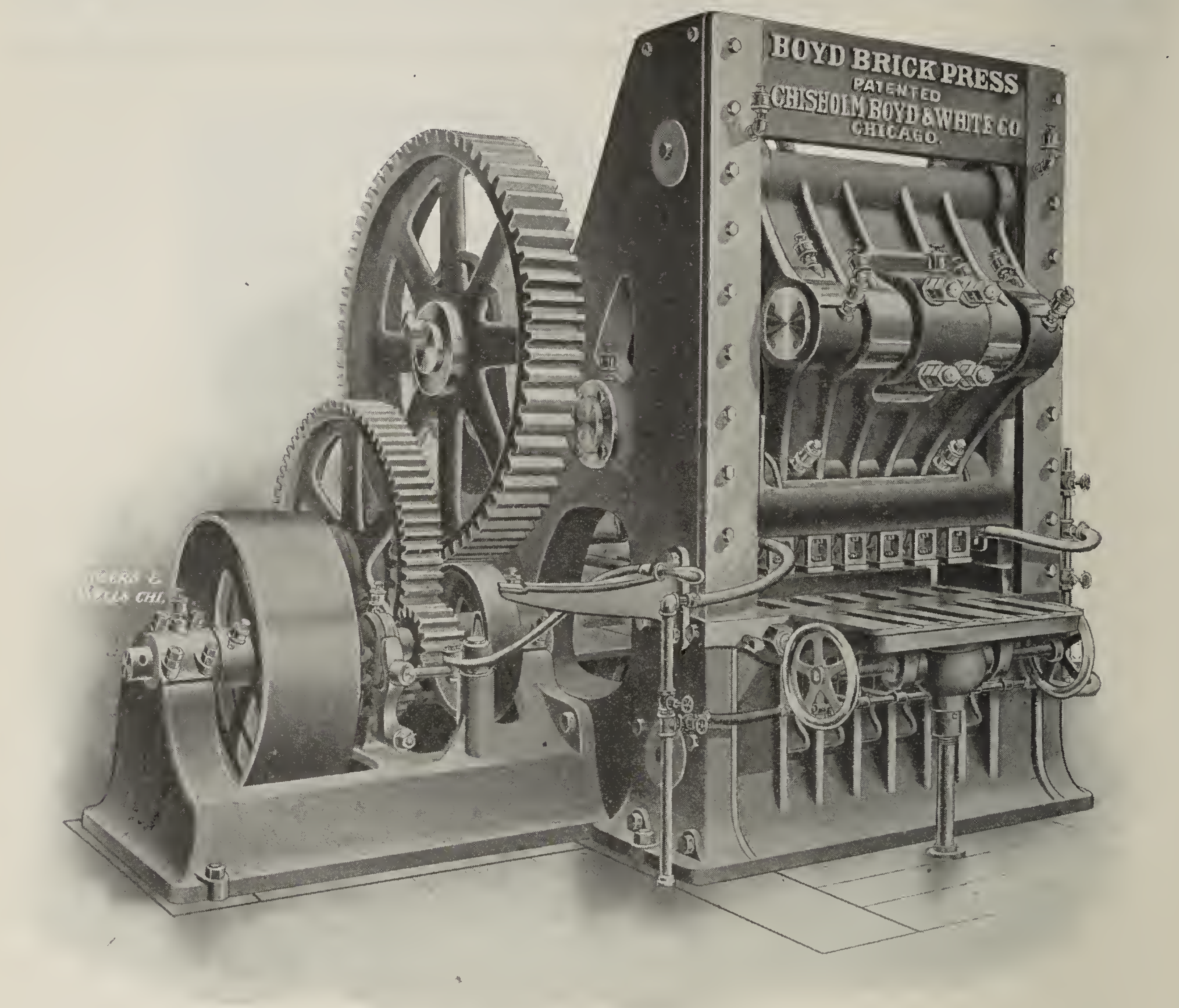

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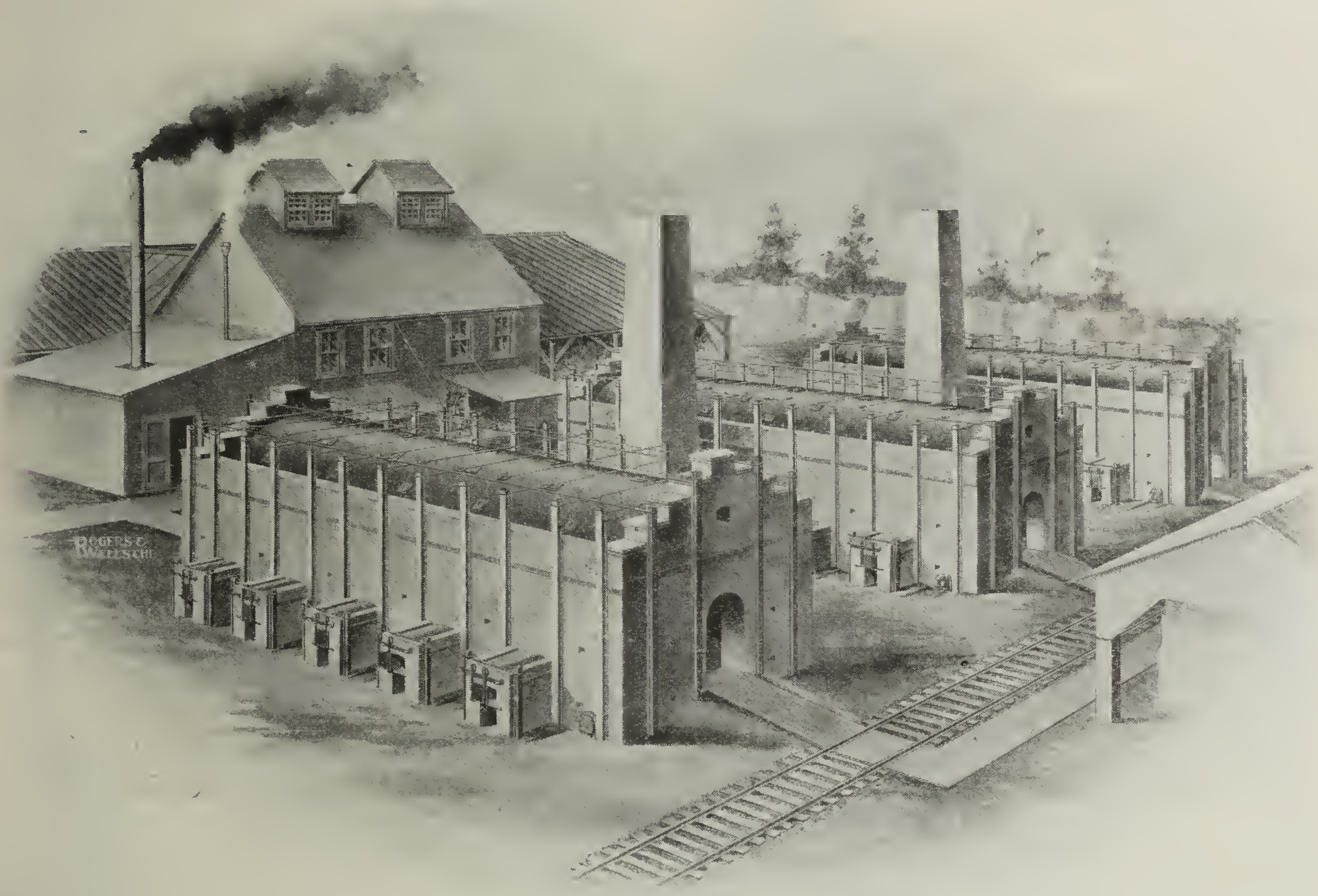

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Manufactured in four and six-mould sizes. Weight of four-mould machine 58,000 pounds; capacity 24,000 brick per day. Weight of six-mould machine 75,000 pounds, capacity 35,000 to 40,000 brick per day.

BRICK SET IN KILN DIRECT FROM MACHINE.

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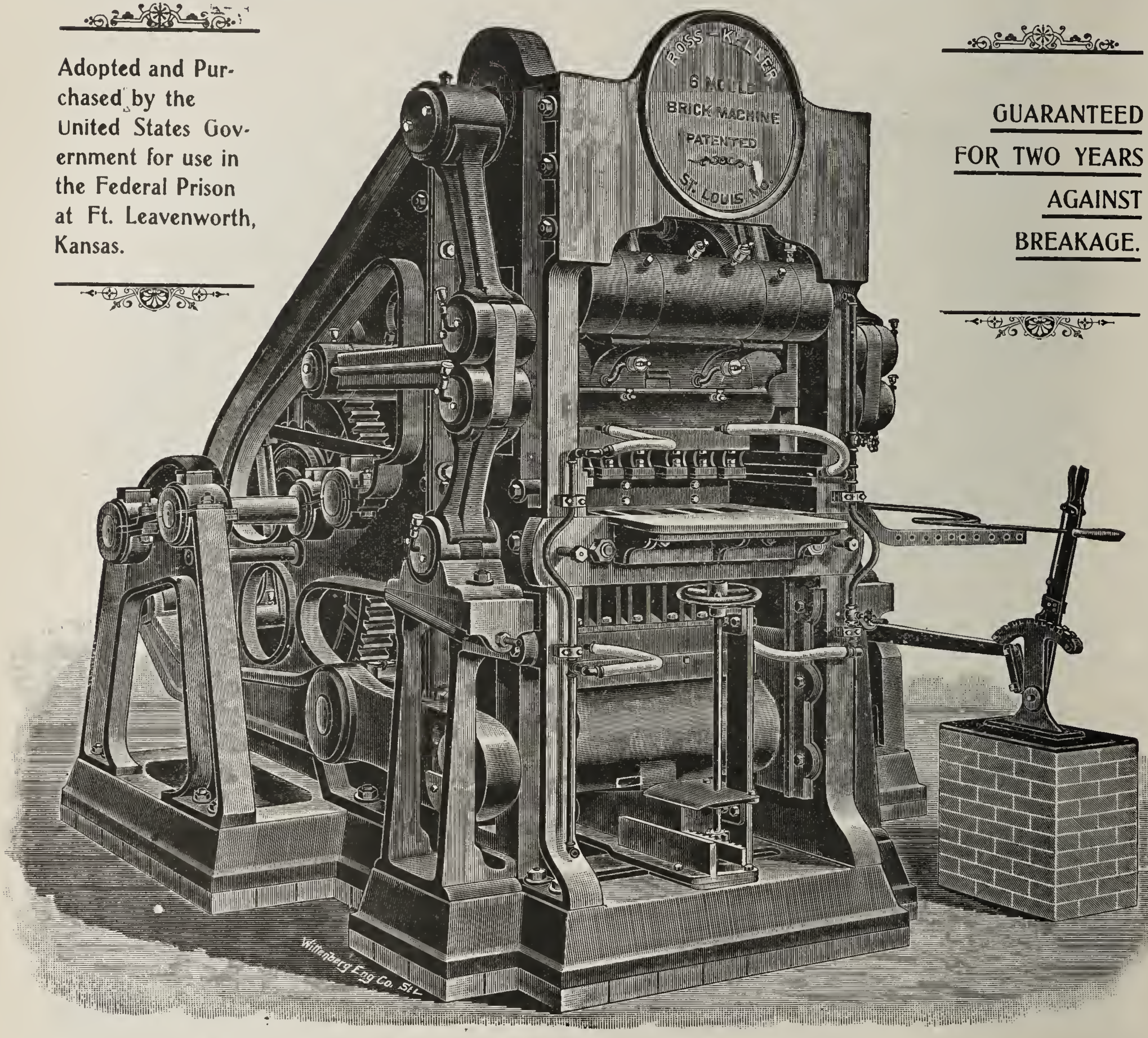

THIS machine has an unbroken record of success. It is used on a number of the best equipped brick plants in the United States. It has never failed to give entire satisfaction and we are perfectly safe in guaranteeing that it will work any clay of which pressed brick can be made, and make them better and cheaper than any other press. It makes better brick because the pressure is greater and is applied in a way most effective. It makes brick cheaper because it is unbreakable and hence there are no repair bills or expensive delays and stopping of work which brickmakers know are more costly than the repair bills themselves. If you want to make the best brick at the least expense the season through don't fail to investigate this machine. with it you can "put money in your purse." Let us tell you more about it and give the address of those now using it. Remember "the proof of the pudding is in the eating of it."

For Prices and Full Particulars, address **ROSS-KELLER BRICK MACHINE CO.,** Fullerton Bldg., ST. LOUIS, MO., U. S. A.

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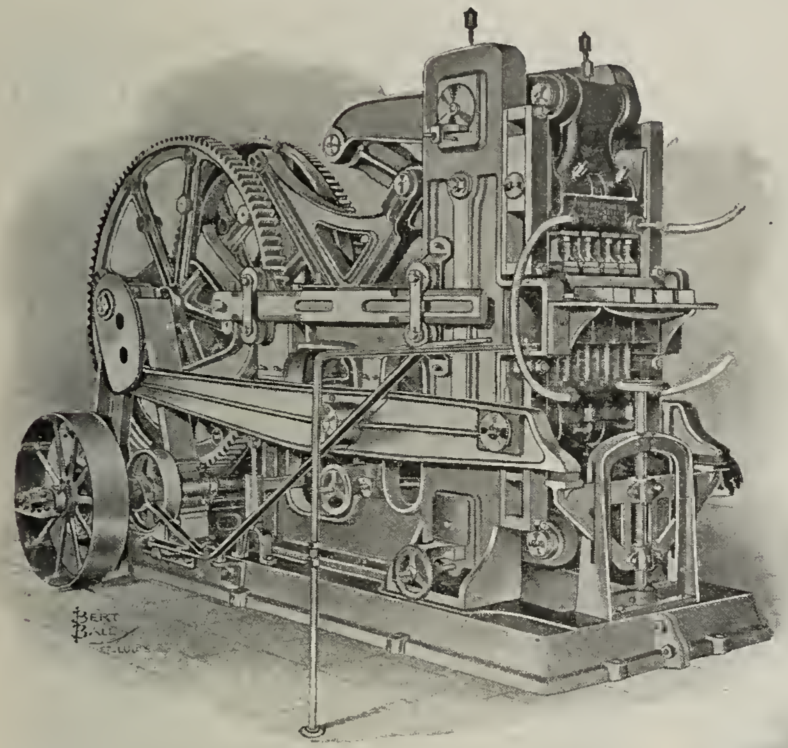

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FERNHOLTZ MOLD BOX

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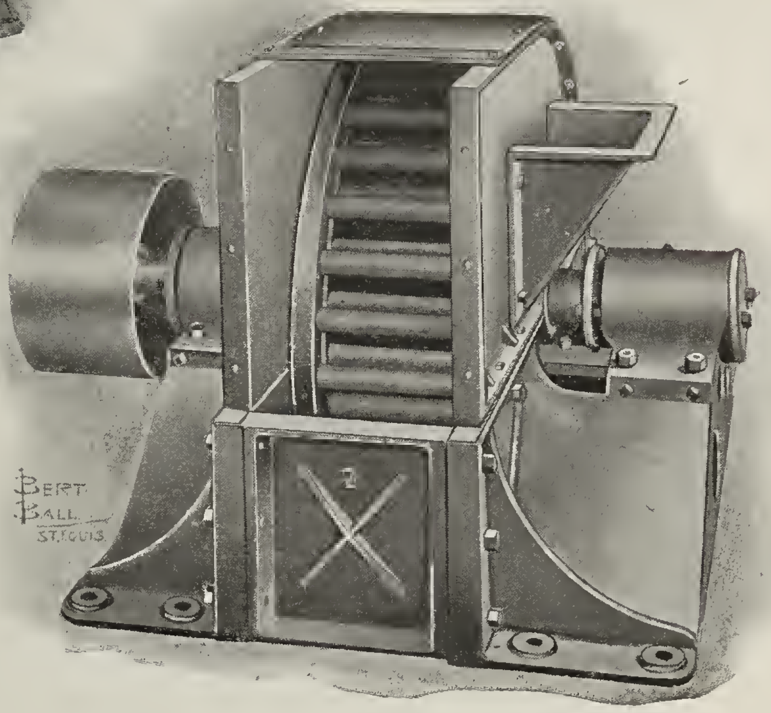

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No more rivetting Pins in Cage.
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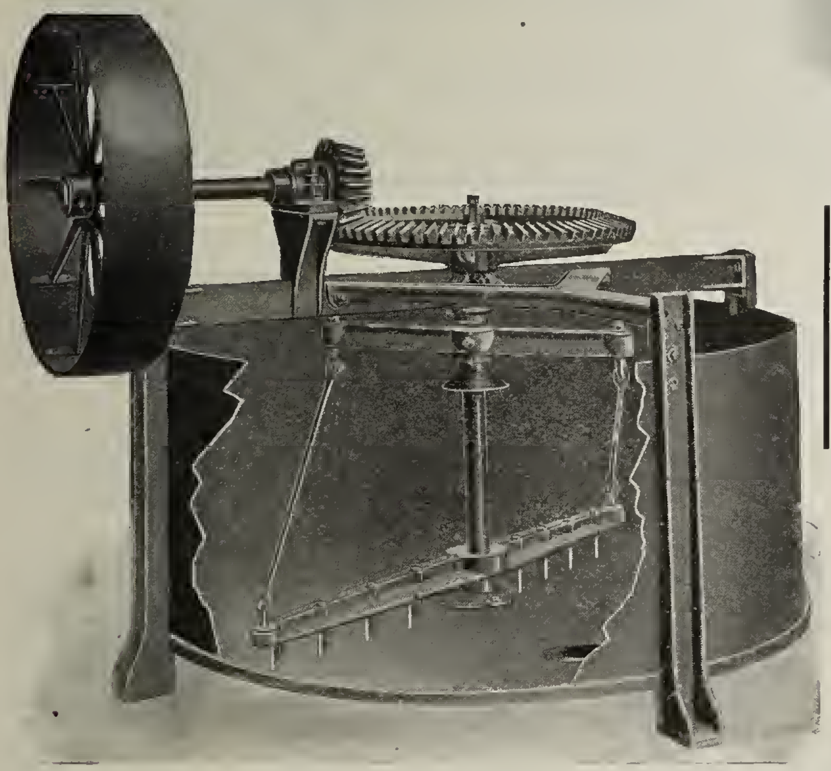

The Fernholtz Iron Frame Clay Mixer.

"The Mixer that Mixes."

WE HAVE a first class repair department and can repair all kinds of Brick Machines and Machinery. We make a specialty of Molds for Fancy Shape brick at reasonable prices.

Dealers in BRICKYARD SUPPLIES.

If you don't see what you want ask for it. No trouble to answer questions.

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CABLE ADDRESS "FERNBRICK."
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The BERG BRICK PRESS.

ESPECIALLY ADAPTED
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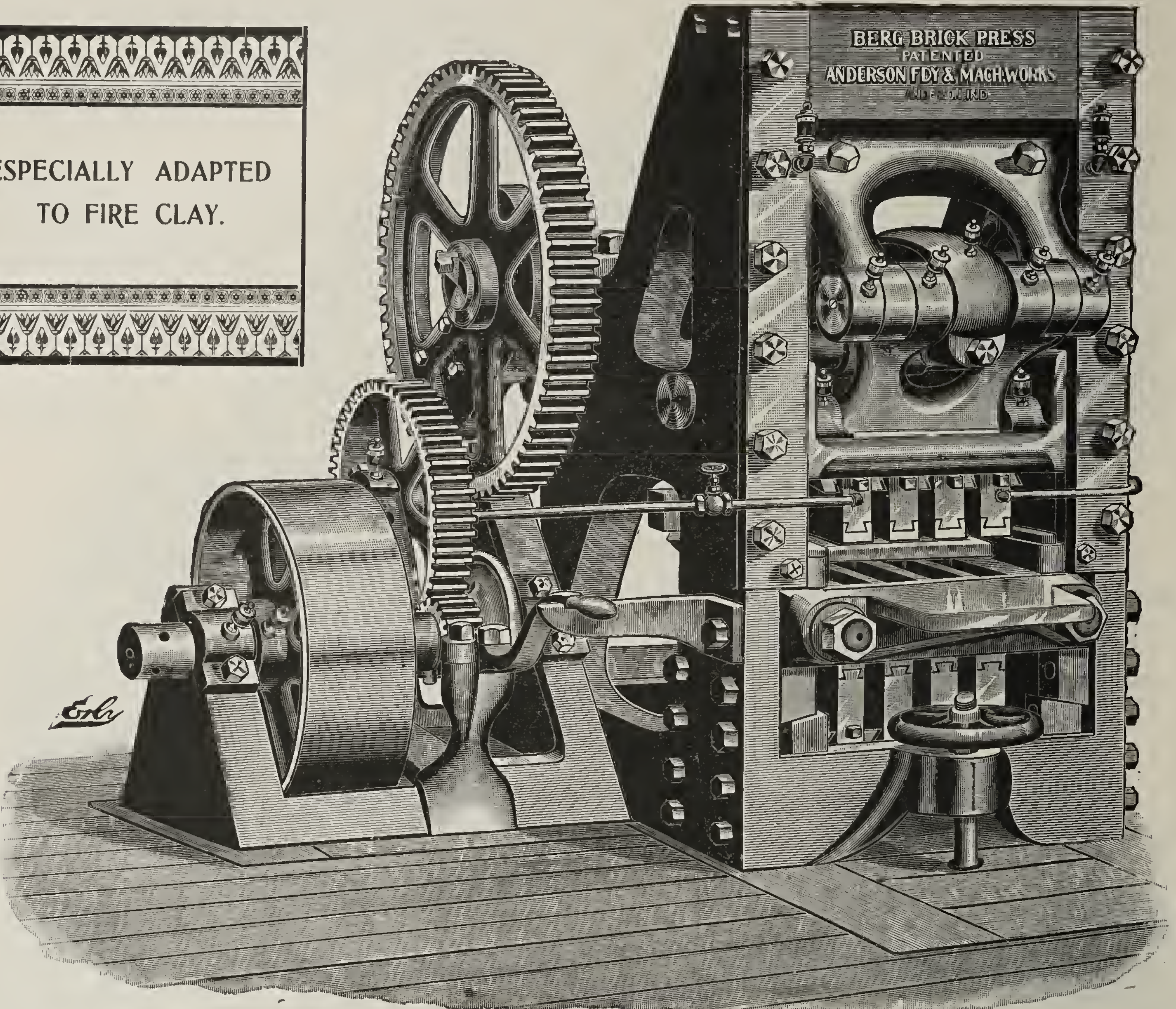

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Three distinct pressures.
Greater Pressure than any other machine.
Greater Strength than any other machine.
Will put more clay into given space than any other machine
Less working parts than any other machine.
No Plunger Stems, eye rods or Springs.

Mold Liners Made of Tempered Tool Steel.

Makes all size Brick and Tile from 2 to 24-inch.

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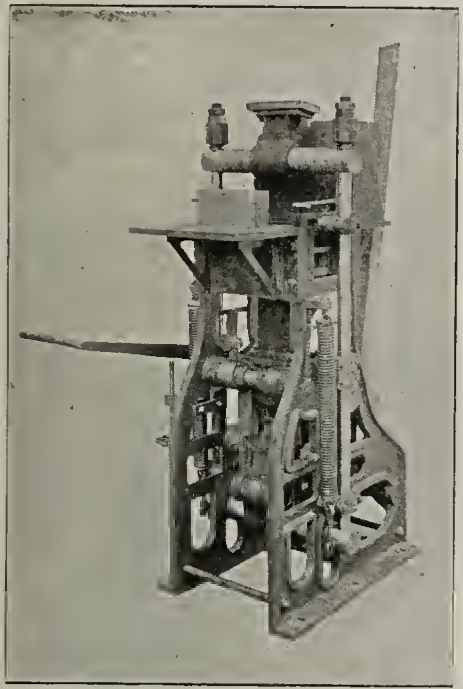


The New Grath Hand-Power Brick Press.

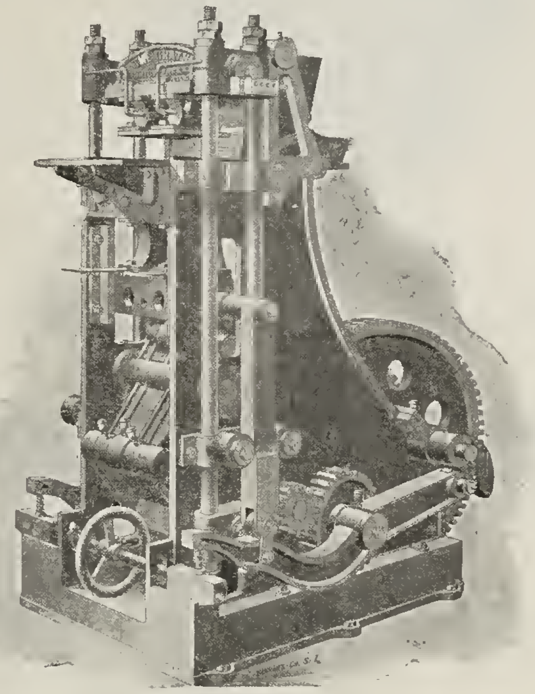
FOR MAKING PLAIN AND ORNAMENTAL PRESS BRICK FROM SEMI-DRY CLAY.

The accompanying cut shows the only successful **HAND POWER PRESS** for pressing brick direct from the clay. The brick made on same are equal to those made on any steam power or hydraulic press. They have a polished face and perfect edges and corners. As will be seen, the press is equipped with charger and feed box. Two men can easily make 2,000 best quality press brick per day. By simply changing the liners and die plates, brick of any size up to 12½ inches long, 8½ inches wide and from 1 to 4¼ inches in depth can be pressed. In making brick on edge the mould is 9 inches deep. No brickyard is complete without a press of this sort. It is also recognized as the only successful press for making plain press or front brick for small yards that are making brick by the plastic process.

The Coffeyville (Kansas) Vitrified Brick & Tile Co. were the first one to order one of these presses, and to show what they think of same, they have only recently placed an order for two more of them.

The Grath One and Two Mould Steam Power Press.

The accompanying cut shows the latest improvement in Brick Presses which are built in two sizes. The One Mould, which has a capacity of 5,000 best quality press brick per day; the Two Mould having a capacity of 10,000 best quality press brick per day. This press is so constructed that all shapes and sizes of ornamental brick on flat can be made on same by simply changing moulds and die plates, and is the cheapest as well as the simplest and most powerful Press of its kind in the market. The brick made are very dense with perfect edges and corners. The Press is guaranteed against breakage for one year. All parts subject to strain are of steel.



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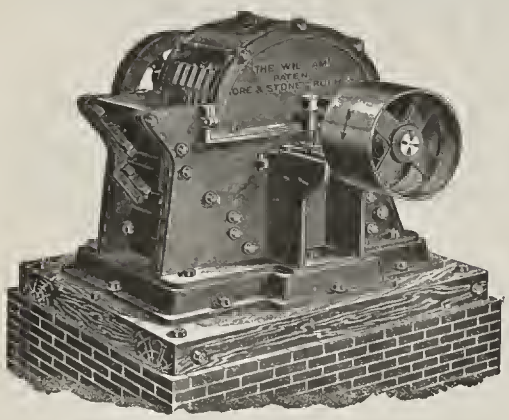

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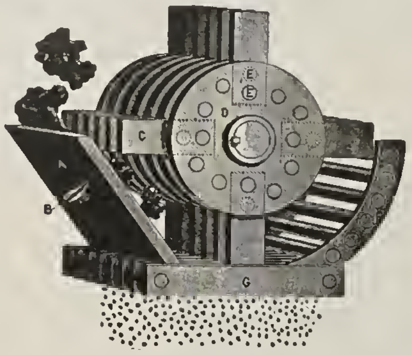

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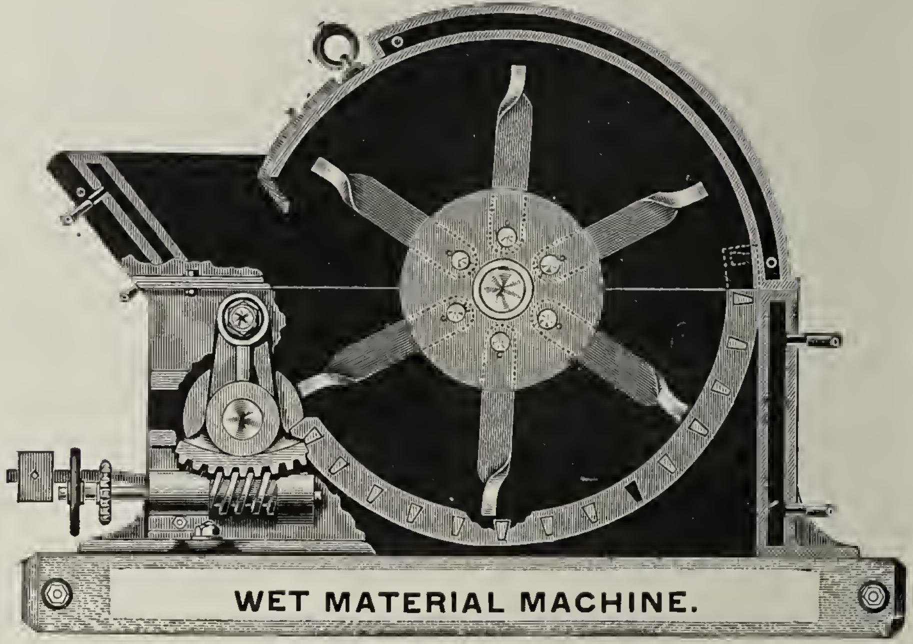

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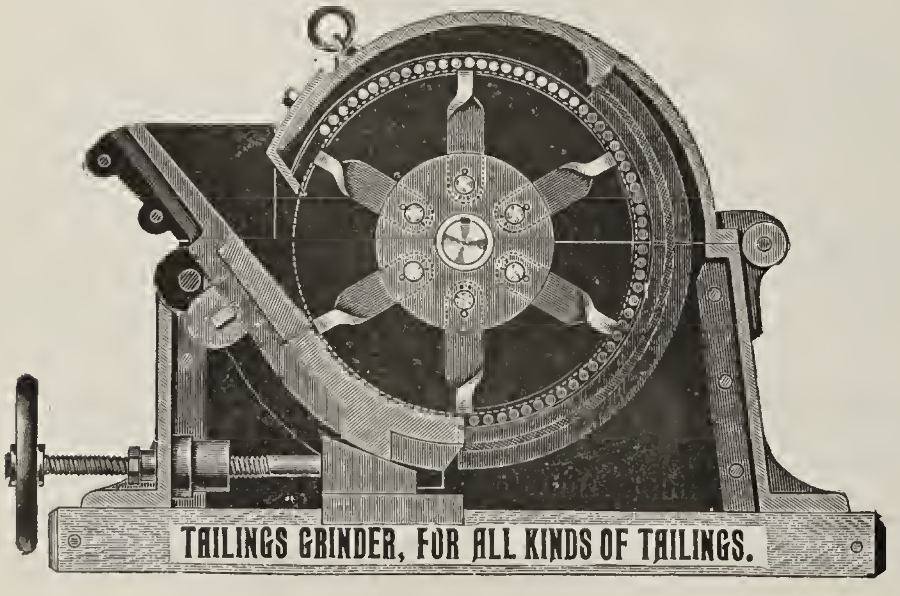

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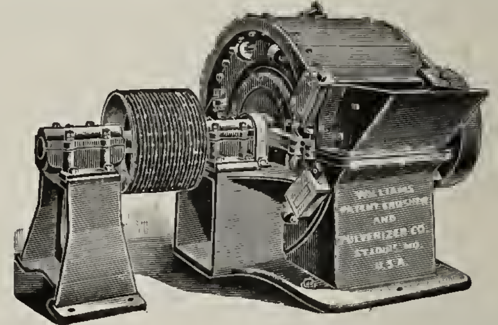
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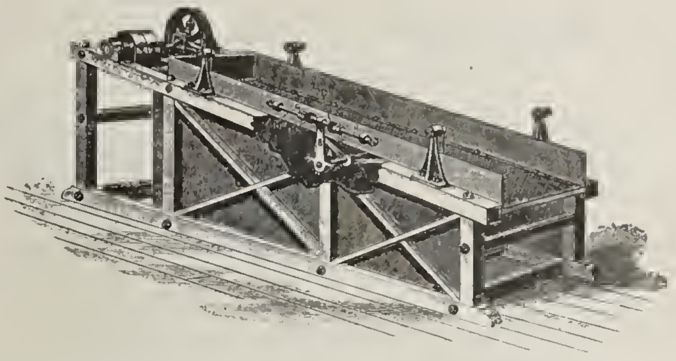

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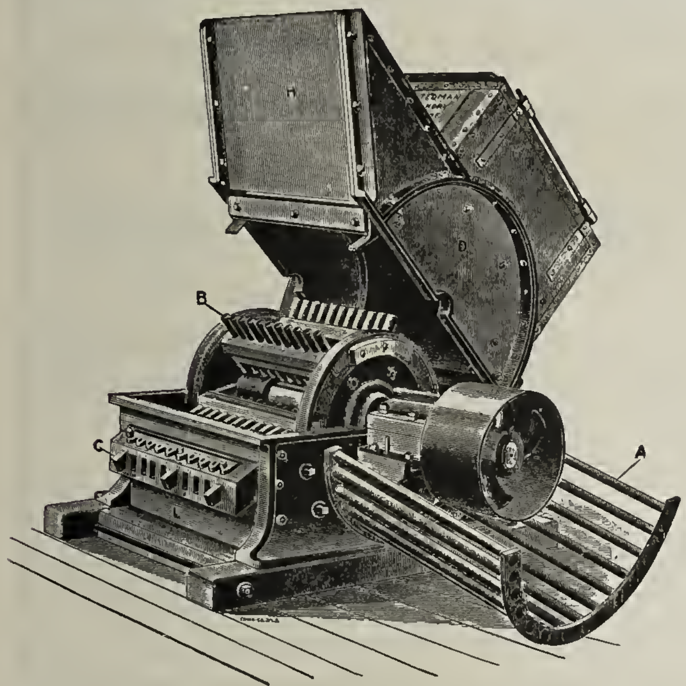

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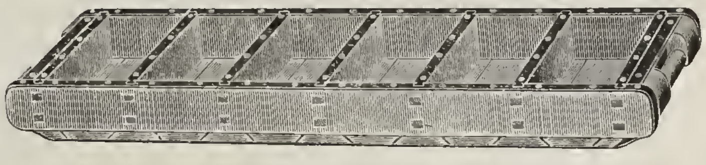

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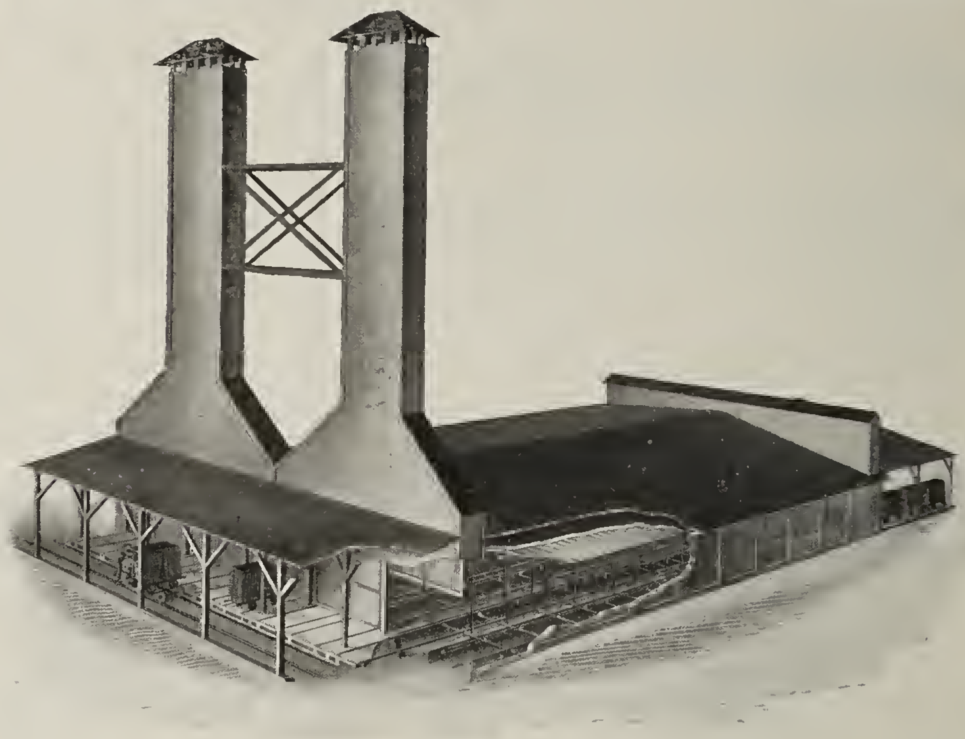

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THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America

Vol. XXXVIII. INDIANAPOLIS, IND., OCTOBER, 1902. No. 4

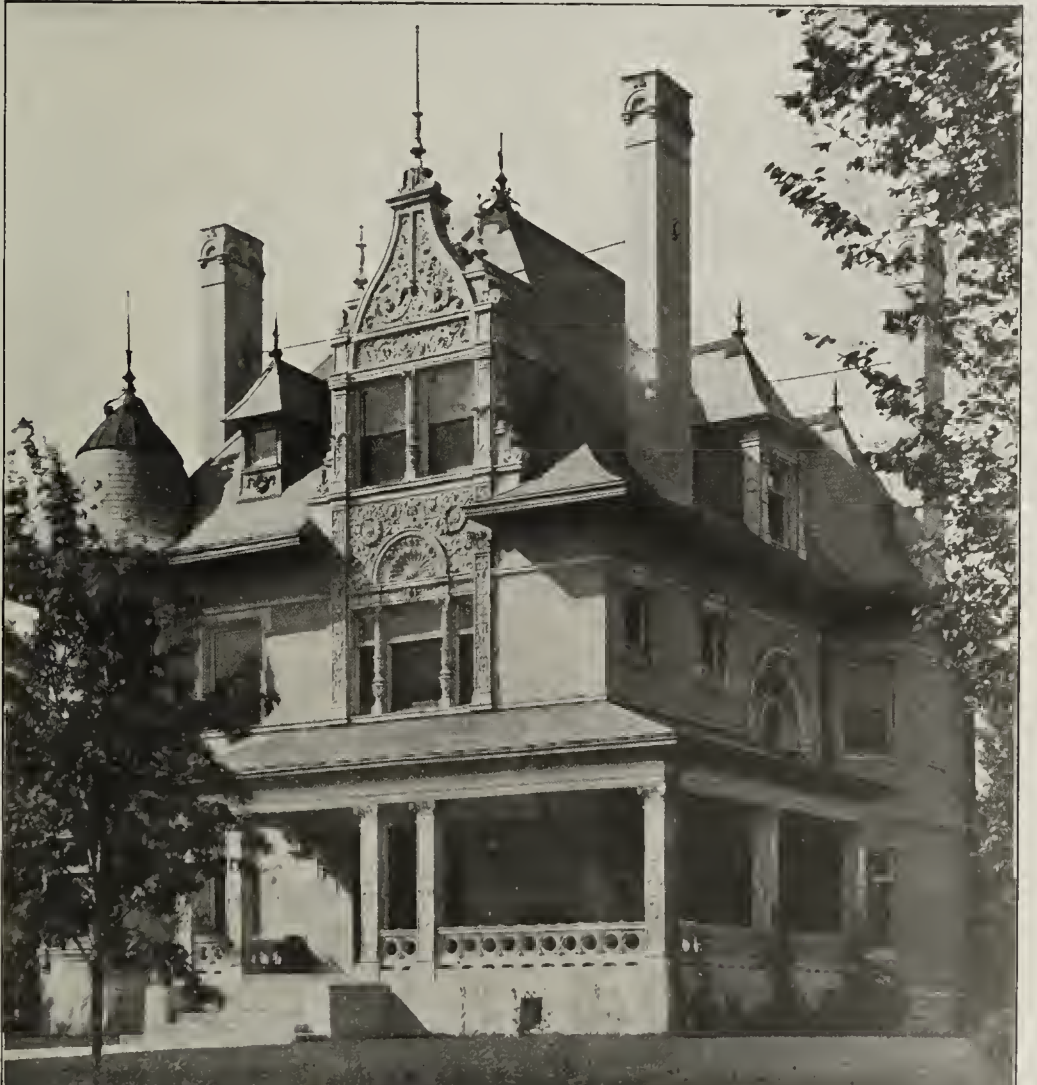
Written for The Clay-Worker.

NEW ST. LOUIS—WORLD'S FAIR CITY, 1904.

Some Splendid Specimens of Brick Architecture.

THERE are several cities of our great country, each claiming to be "the city of homes." It is indeed a noble pride, for the best foundation of a nation's greatness, its virtues and its happiness, is the home. St. Louis, though its claims are, perhaps, not so widely known, has probably the greatest right to the title of City of homes. In no big city of the earth that I have known is the small, individual, three or four-room brick cottage so valued or so numerous, proving that the mass of the people, the unwealthy workers, the backbone and the heart of the land, prefer the privacy of the little, independent home to any small saving in money, at the sacrifice of things worthier, that may be got in a subdivided house, but it is not of these little cottages that I propose to write, for they evidently date from earliest days and are not a distinctive feature of new St. Louis, but of the more costly dwellings that are of especial interest to our craft, because they are beautiful specimens of clay products, of buildings in brick and terra cotta.

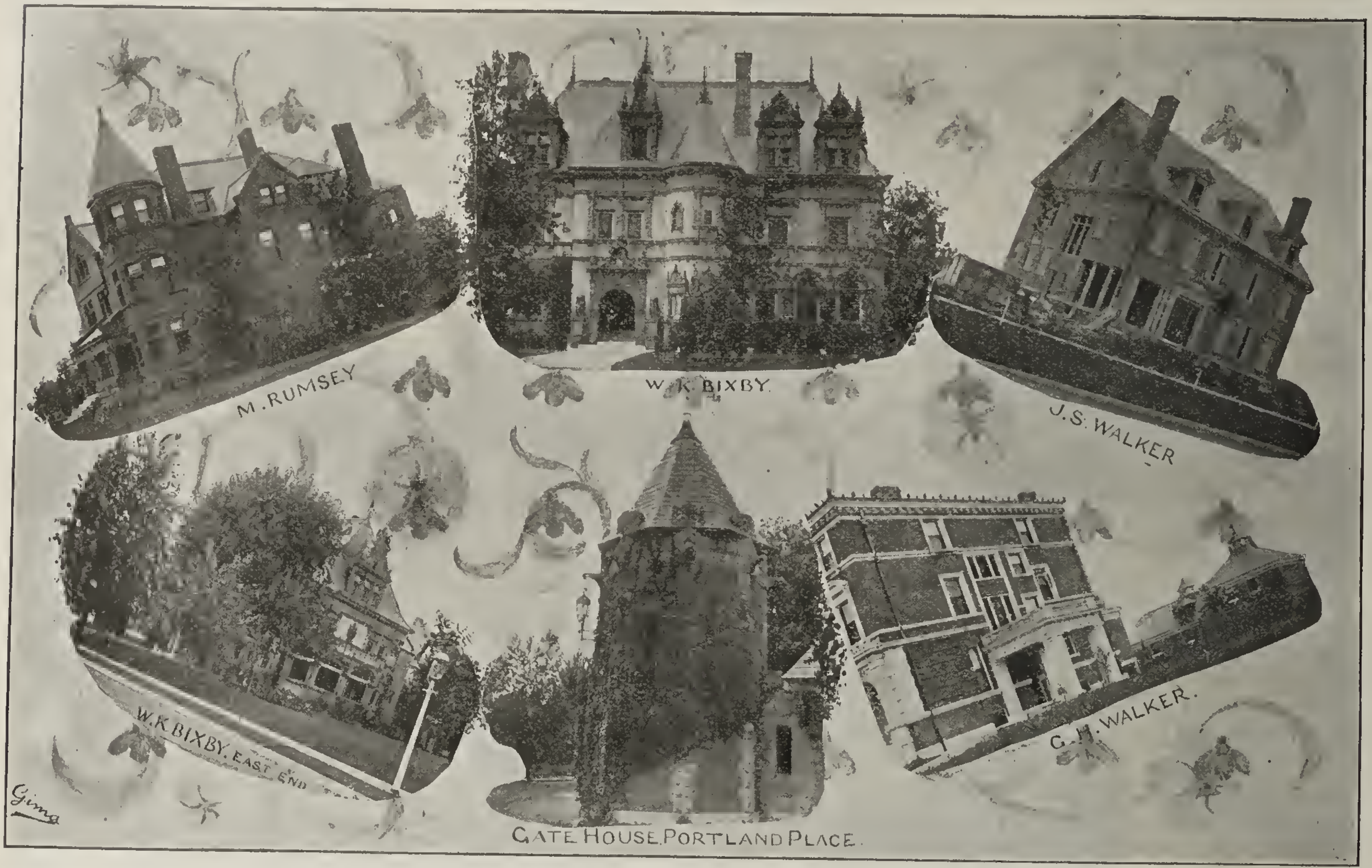
St. Louis may be considered from two points of view: as that of an old and conservative city, very wealthy, but much less enterprising than Chicago or New York, or as a city that is awakening to its possibilities and duties in preparing to receive the world in 1904. The remarkable beauty of all the surrounding country and the ease of access to it make public parks of less importance here than elsewhere, though these are not by any means wanting, and chief among them Forest Park, where the great World's Fair is to be held, may not easily be surpassed by any other city park in existence. A feature of the city, which adds much to its beauty, is the "Place," and we find a rapidly increasing number of these places being established. The Place is a private boulevard or park, with orna-



Palatial Brick Residence of Mr. J. C. Kupferle, St. Louis.

mental gates at each end. The gates appear to be always open, but they fulfill their purpose, nevertheless, of keeping out all heavy traffic, carts, wagons, drays, etc. These travel upon the streets on either side and deliver all goods to the houses on the Place at the rear of each. There are no less than 75 of these, some of them smaller and less pretentious than others, but all exclusive, besides miles of avenues and boulevards of residences that royalties of the olden time would have looked upon with dangerous envy.

Several of the examples of brick and terra cotta architecture of new St. Louis have been selected from some of these Places. It is not pretended that these are the only ones, or even the best. They have been taken rather at haphazard, strolling along with a camera. There are so many of these beautiful homes, hundreds of them, that they form a veritable "embarrassment of riches" to a clayworking scribe. St. Louis stands in the first rank as a city of clay products. Its stone is of poor quality, but its clays are abundant and excellent. As the dry press is almost universally used the common building bricks are as even and square as front bricks. The color of all common brick here is a good red.



GATE HOUSE, PORTLAND PLACE.

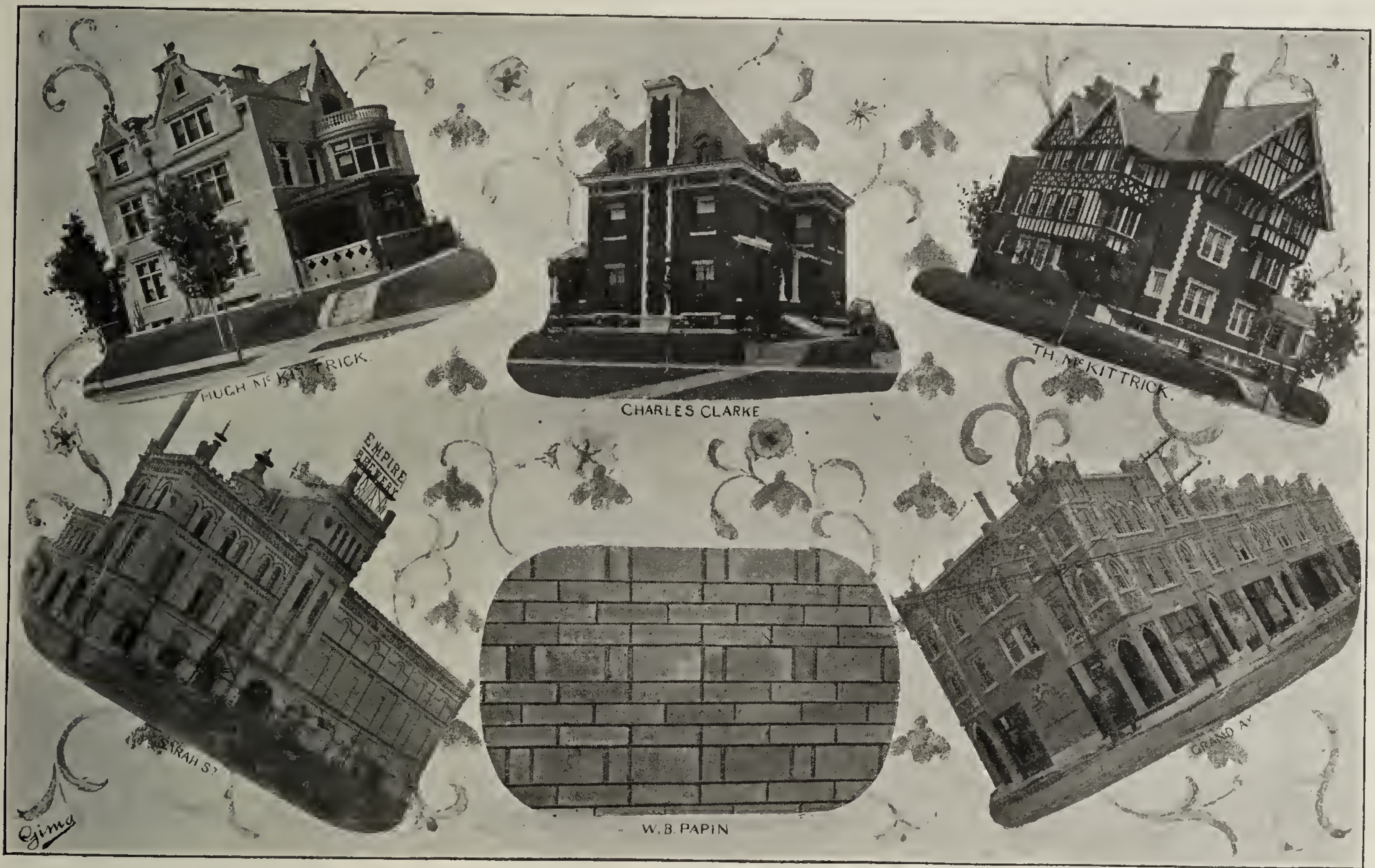
A glance at the modern buildings of St. Louis shows that there is no influence making for any particular style or design, instead we find the widest freedom and diversity. In the Places before referred to there are restrictions as to the minimum size of building lots and the cost of the houses. In Portland Place, for instance, of which the gatehouse at the east entrance is here illustrated, the minimum for building lots is 100 feet. This is also the minimum in Westmoreland Place. In other Places the minimum is 60 feet and the cost of a building must not be less than $10,000.

The first illustration, the residence of Mr. J. C. Kupferle, president of an iron and brass foundry company of this city, is at 5215 Lindell Avenue. This is just as exclusive and parklike as any of the Places, with lawns, flower beds, small lake and fountains opposite the residences. The architect was A. Blair Ridington. He was out of the city when I called, but his representative courteously gave me all the information he could. The bricks are from the Hydraulic Brick Company. A specimen I examined showed that it was a fire clay body coated on the face with a light gray slip. The terra cotta is white; this was made by the Winkle Terra Cotta Company, of St. Louis. The roof is of green slate. The time of day when the photograph was taken, casting deep shadows on the right, and also the thick foliage, made it impossible to show fully a beautiful feature with original treatment, that is, the large round-topped window seen on the right hand side of the house, the lower part of which is hidden in the shadow of the porch. With the 16 rooms of the interior, the oval dining room and the art glass window we have little concern, though the whole of the decorations and fittings are of suitable character for a residence costing $40,000.

From Lindell Avenue, or Boulevard, it is but a short distance to Portland Place, where we see the residence of Mr. M. Rumsey, who is president of the Rumsey Manufacturing Company. The building is of red brick with brown stone trims and a slate roof. As Mr. Rumsey was absent from the city I could not get much information, except that the house contains about 20 rooms, that the interior is magnificently fitted and decorated, the library, dining room and parlors with frescoes by eminent artists, and that the cost of the building and lot was $65,000.

The next illustration is of the Bixby residence. Mr. W. K. Bixby, president of the American Car and Foundry Company, was absent with his family, and I was not able to get any information that would interest our readers. I selected this example because it is a pronounced specimen of brick and terra cotta, and took two photographs before I knew that it would be difficult to get the details I wanted. The heavy foliage at this season made it necessary to take two views. The style is called French renaissance, which it is evidently intended to be, though the predominance of the circle, to which, I think, our architects are too much addicted, is not suitable. The circle is a strong figure. It found favor with two strong races, the Romans and the Normans, but it is the least graceful of all curved lines.

The fleur-de-lis, the lily flower of French heraldy, is noticeable upon the decorations of the Bixby residence, but whether because Mr. W. K. B. claims descent from Clovis, King of France, A. D. 486, or because the architect considered the fleur-de-lis peculiarly appropriate to French renaissance, deponent knoweth not. Regarding this emblem, which some authorities maintain is not a conventionalized lily, but a swamp reed, the iris, there is an amusing confusion of ideas just now in St. Louis. No doubt the fleur-de-lis was the particular trade-mark of those ancient big bugs, the kings of France, including St. Louis, in whose honor this tract of country was named, but when we see a brand new flag floating over the World's' Fair buildings, upon which the fleur-de-lis is the most prominent device, it suggests a strange want of historical knowledge on the part of the designers of these things. The World's Fair is for the purpose of celebrating the acquisition by purchase of the Louisiana Territory from the Emperor Napoleon in 1803. Now at that time, or at any time from the French revolution, the fleur-de-lis was a prohibited and treasonable emblem, the display of which would have been punished by severe penalties. Napoleon had adopted trade-marks of his own, the golden bee and the eagle, and would not have tolerated anything belonging to the old regime.



From Portland we go to Hortense Place, where a house is being built for Mr. J. S. Walker, of the Walker Dry Goods Company. This house will contain 16 rooms and will cost about $27,000. The bricks are the Hydraulic Company's No. 503; they are gray in color and Roman size. The architect is Mr. G. W. Helmuth.

On the opposite side of Hortense Place is a fine specimen of Italian architecture by the same architect, Mr. G. W. Helmuth. I wanted to take in the stabling and outbuildings, so sacrificed a part of the front, and the finest part at that. The material is dark brown brick, the Hydraulic Company's dark brown stock brick, but the color is entirely modified by the use of white mortar and affords a striking contrast to a building near by, in which the dark red bricks are pointed with black mortar. In this house, designed by Mr. Helmuth, the trims are of white terra cotta, made by the Winkle Terra Cotta Company. The building was erected for Mr. G. H. Walker, a stock and share broker on Fourth Street, and cost $30,000.

The row of stores on Grand avenue at the corner of Arsenal Street was completed a few weeks ago. It is an attractive arrangement of brick work, though the sixteenth century style of fortified building, with machicolations on top from which to shoot at unwelcome people, is slightly incongruous for retail stores of to-day.

The houses of Mr. Thomas McKittrick and Mr. Hugh McKittrick are on Berlin avenue. The Messrs. McKittrick are brothers, both interested in the great wholesale dry goods firm on Washington avenue of Hargadine, McKittrick & Co. Both these residences, which are on adjacent lots, were designed by the firm of architects, Mauran, Russell & Garden. Mr. Thomas McKittrick's, a red brick and half timber building with terra cotta trims, of 14 rooms, cost about $23,000. Notwithstanding the half timber work the dwelling is fireproof, the plastering is done on metal lathing and the space between is filled with asbestos. The Elizabethan dwelling built for Mr. Hugh McKittrick is of gray brick, with stone trims. The roof is covered with red shingle tile, but I could not learn of what make. The cost was about $20,000.

One of the most interesting things to me was a piece of brick wall, of which I present a photograph. This is in a house that is being built on Berlin avenue for Mr. Papin, an estate agent of this city, to cost about $17,000. The illustration shows a bond which is a decided novelty, and is the design of the architect, Mr. M. P. McArdles.

We ought all to welcome and encourage a departure of this kind. Anything that makes for variety in the face of a brick wall and gets away from the bald, vulgar, commonplace, monotone of accurately matched bricks in the extensive surface of a wall, must increase the popularity of brick work. Architect McArdle, the designer of this bond, has just learned that a new building in Paris, France, the Natural History Museum, which is of brick, has a bond, something, but not quite, like this.

The house of Mr. Charles Clarke on Hortense Place is of red brick, with black mortar. Mr. Clarke is said to have designed the house himself, for though he is now a stock and share broker he was at one time an architect. As that gentleman had not returned from his summer vacation I could not get any details.

My next article I propose to devote to recent erections for business purposes, offices, etc., that are built of brick and terra cotta. GEO. J. M. ASHBY.

Written for The Clay-Worker.

WHAT IS AN ECONOMICAL BURN?

L. C. Moore.

HOW FEW ARE the brickmakers that can give even an approximate estimate of the cost per thousand of burning bricks. Their calculations of the results of one kiln do not coincide with their calculations on the next. There seems to be such a lack of uniformity, both as regards products and amount of fuel consumed, that any estimate as to costs and results is sure to fall wide of the mark.

If the question, "What is an economical burn?" were put to one dozen brickmakers, the answers would show a wide range of results. This, of course, would not argue that these men were not careful students of the problems of their craft, nor that they were mistaken in their estimates. But each has to deal with his own particular kind of clay, kilns and fuel, and either may cause a great difference in answering this question. Difference in methods of manufacture also makes a difference in the cost of burning. Generally speaking, dry press bricks cost more to burn than stiff mud bricks, and they in turn cost more than soft mud bricks. The more dense the body of bricks the more heat it will require to burn them sufficiently to make a serviceable product.

This subject of economy or cost of burning may be reduced to four general divisions: 1. Difference in clays. 2. Difference in manufacture. 3. Difference in kilns. 4. Difference in fuels.

Difference in Clays.

I shall not attempt to give a scientific classification of clays. That has been done so often in The Clay-Worker that for our purpose it is necessary only to call attention to the well-known fact that many clays require a great degree of heat in order that they may become sufficiently hardened to change their nature, so that they may not disintegrate from the action of water and frost.

Other clays fuse at a low temperature, and consequently reach that state without so much expenditure of heat upon them. Then there are all grades of clays between these two classes, according as there may be more or less fluxing materials within their constitution.

Now, as a general law, the more refractory the clay, the greater the expenditure of fuel to burn it. This, however, is true only in a general way, for we have handled clays that acted contrary to the general law. We have found two classes of clays that constituted these exceptions. There may be others, but we shall discuss only those that have come under our personal supervision. Economy of burning has three items to be considered—time of burning, fuel consumed and average results. A clay that can be fired rapidly from start to finish, though it may be quite refractory, may be burned more economically than a less refractory clay that must be burned slowly. The labor and the increased kiln capacity required for the clay that must be burned slowly make it more expensive to burn, and there may be even more fuel consumed because of the long delay necessary to prevent damage from too rapid firing. I shall describe the two clays that have come under my own notice and they will illustrate well the idea I am trying to convey.

Both were red burning clays and came from banks that lay near together. The first was so easily fused that in burning in up-draft kilns it was almost impossible to keep from melting the arch bricks. They became so waxy from the heat that the weight of the bricks above usually crushed them out of shape, while one was trying to get the heat to the top. We seldom got a uniform burn with this clay in up-draft kilns, and then it was done at considerable expense of time and fuel. We changed to down-draft kilns, which was a great advantage, but still we had the same troubles, only in a less marked degree. This clay was actually more expensive to burn than many far more refractory clays. The second clay was not so easily fused, but the trouble with that came from the bricks bloating, or swelling, and bursting whenever we attempted too rapid firing in the early stages of burning. We were forced to go slowly until the whole kiln was raised to a dull red heat, and then we could proceed at a good rate to a finish. We have found well to avoid these two grades of clays where possible, but with careful handling and the expenditure of little time and fuel we succeeded in making good bricks of them. Still we could not say that we made economical burns when we compared results and costs with the results and costs of other clays.

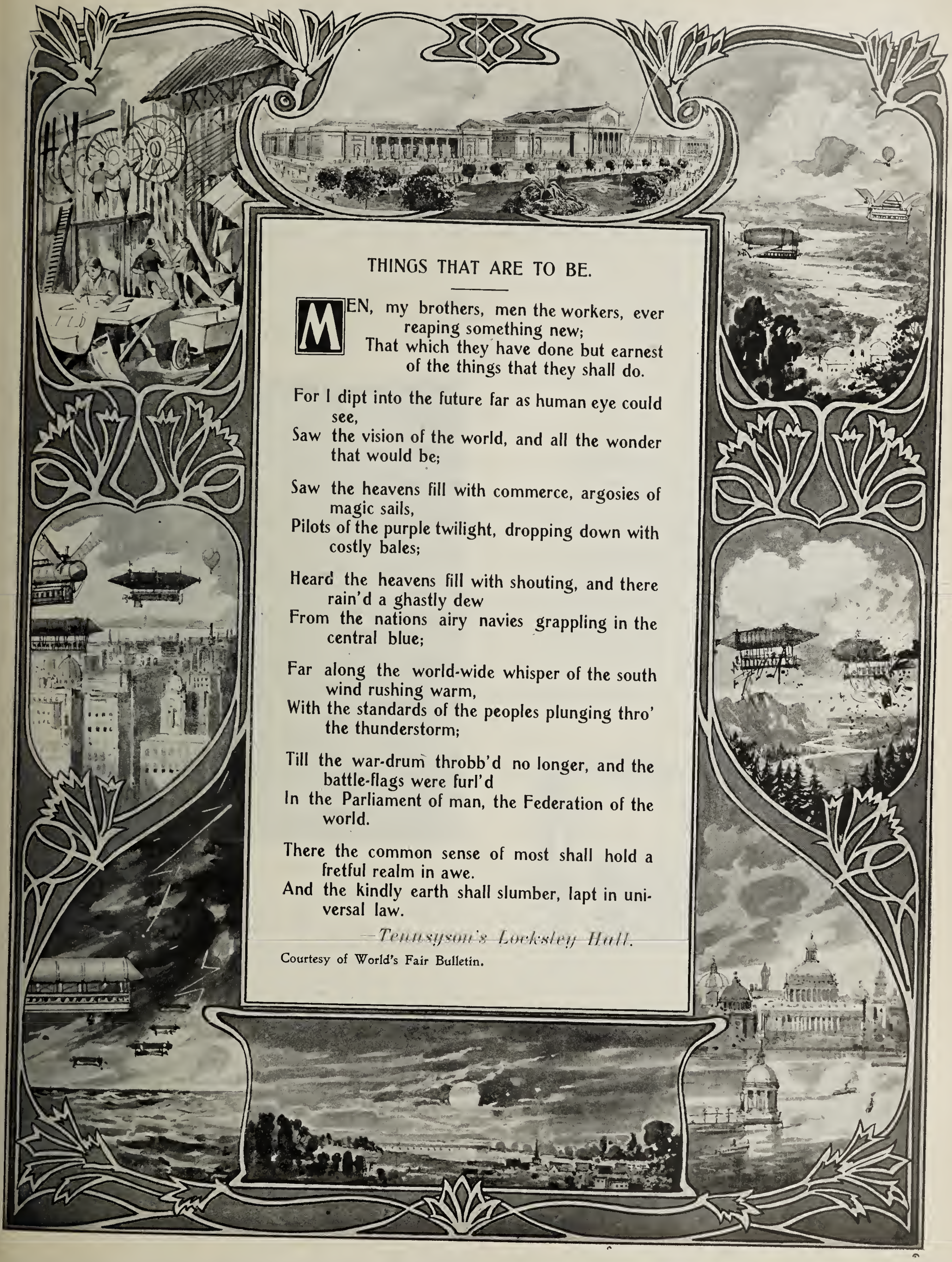
Difference in Methods of Manufacture.

Under this head we will include also the class of brick, whether face bricks, pavers or common builders. Face bricks are usually manufactured by the dry press process, and for two reasons are expensive in both time and fuel required to burn them. They require great care in watersmoking to prevent checks, and still greater care in the later stages of burning in order to insure uniformity of color, for that is an indispensable condition in the manufacture of face bricks. No matter how saving one may be in regard to fuel, if he fails to get uniformity of results, he cannot claim that he made an economical burn.

Paving bricks are made by the stiff-mud process, using powerful machinery that presses the clay into a very dense body, rendering the bricks as solid as possible before burning. Then they must be burned almost to vitrification before they can be called pavers. Of course, they are expensive to burn, even with the most suitable of clays, for great uniformity is required, and each brick must pass a rigid inspection. The dense body of the paving brick renders them more liable to check than the more porous soft-mud bricks, thereby requiring greater care, more time and more fuel to burn them.

Common builders are made both by the stiff-mud and the soft-mud processes. Where they are made by the stiff-mud process it is not necessary to use such stiff clay as for pavers. More sand may be used, and bricks less dense and heavy will answer the purpose of builders. There is not required such perfect uniformity as for either face bricks or pavers. For these reasons they are far less expensive to burn than either, whether made by the stiff-mud or the soft-mud process.

For cheap machinery the reader is referred to our "For Sale" columns. We do not advise the purchase of cheap machinery. As a rule, cheap machinery is dear in the end, but for some places second-hand machinery answers a very good purpose. Those wanting experienced help will also find the "Wanted," "For Sale," etc., columns a means of satisfying their needs.



THINGS THAT ARE TO BE.

MEN, my brothers, men the workers, ever reaping something new;
That which they have done but earnest of the things that they shall do.

For I dipt into the future far as human eye could see,
Saw the vision of the world, and all the wonder that would be;

Saw the heavens fill with commerce, argosies of magic sails,
Pilots of the purple twilight, dropping down with costly bales;

Heard the heavens fill with shouting, and there rain'd a ghastly dew
From the nations airy navies grappling in the central blue;

Far along the world-wide whisper of the south wind rushing warm,
With the standards of the peoples plunging thro' the thunderstorm;

Till the war-drum throbb'd no longer, and the battle-flags were furl'd
In the Parliament of man, the Federation of the world.

There the common sense of most shall hold a fretful realm in awe.
And the kindly earth shall slumber, lapt in universal law.

—*Tennysyson's Locksley Hall.*

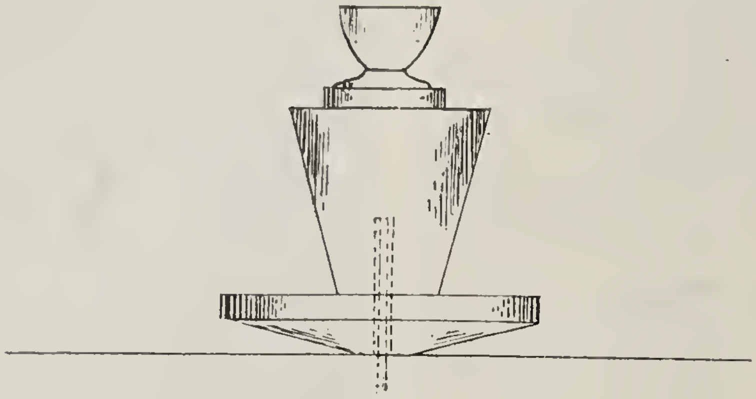
Courtesy of World's Fair Bulletin.

Written for The Clay-Worker.

THE EVOLUTION OF THE POTTER'S WHEEL.

THE EVOLUTION of the potter's wheel, or the improvements along this line may be regarded as the changing of the manufacture of pottery from a livelihood to an industry. At one time the "thrower" or operator of the throwing or potter's wheel was regarded as the foremost of the workmen, and at the time all hollow ware was made by hand and fashioned entirely by the same, trusting to the potter's eye for the sameness in design.

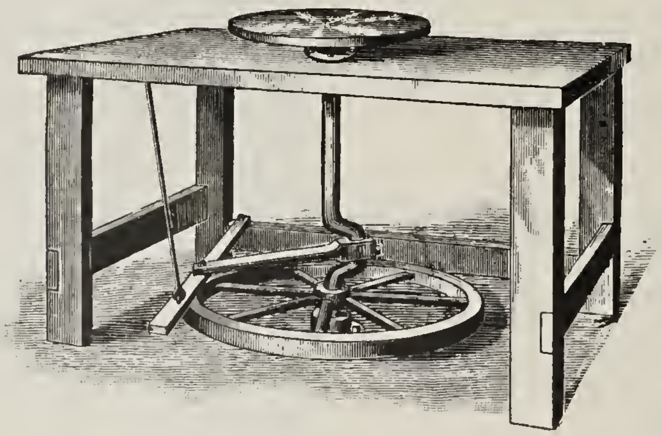
The throwing or potter's wheel was first used by the Egyptians, as is shown by existing scraps or fragments of ancient ware. The wheel was first used for the production of pottery as early as 4000 B. C., and the same pattern, or practically the same, is being used by many tribes for the production of crude vessels in far-off India at the present time.



Kick Wheel Used by the Ancients.

The wheel was first spun by hand, one hand being employed to turn the wheel or whirler, while the other was used in fashioning the piece being made. This was later changed to a wheel which was kicked or set in motion by the foot. This class of wheel was first introduced in Egypt under the Ptolemes.

From the old-fashioned throwing wheel or whirler which was used by all nations producing pottery from the time of the Egyptian potters to the time when the same was in general use in England and other pottery manufacturing nations, we advanced to the use of the "kick-wheel," which was a contrivance very similar in construction to the whirler, with the exception that it had a balance wheel which was no more or less than a cart wheel ofttimes; to this wheel was attached an eccentric, which was in turn attached to a cross-bar, which was kicked by the foot, thus putting the wheel in motion. Of the wheels that were operated by the potter himself, this is probably the most scientifically built of them all.



Old-Fashioned Kick Wheel Used Twenty-five Years Ago.

Next in turn came the hand jolly, which was operated by a belt which was attached to a large driving wheel, which, however, was sometimes supplanted by a rope drive. This was turned by another man, thus giving the potter or "thrower" the full use of both hands to manipulate the clay. This form of wheel was used for many years—in fact, it was used up to fifteen or twenty years ago. This is the machine that at the time was depended upon to make all of the hollow ware that was made. For at the time all hollow ware that was made was "throwed" by hand, as jiggers were an unknown quantity at the time.

The evolution of the potter's wheel has been slow but sure. Father Time has shot with unerring aim the arrow of invention, until we have progressed in a short period of fifteen years from the hand-wheel to the up-to-date and peerless machine shown in the last illustration of this article, and the design that is in universal use throughout this country. The potter of to-day is blessed with up-to-date machines to work with and is surrounded with every convenience, while the old-time potter had only his patience and his eye to guide him in his efforts.

The work of the old-time potter or "thrower" has ofttimes been referred to as the "poetic art," and a great deal has been said of it in such words as "The evolution of the potter's wheel has taken from it all the poetry and romance," and again we have referred to the writer of such phrases saying that had he been the one that furnished the motive power for the poetic romantic little wheel, he would have no doubt found in it "more truth than poetry; more work than romance." In the busy whir of the modern potter's wheel of to-day we scarcely take time to think back to the time when our forefathers worked with the old-time potter's wheel, but when we do it is sometimes a pleasure to think of those who founded this vast industry of kilns and wheels, and to those of a poetic nature, to think back to the time of primitive methods, when the workmen no doubt found life very full of hardships and disappointments, but in which some of us find much that is vastly interesting and sometimes beneficial, for who will not benefit by others' experience? So when all of these many points are considered, it is no wonder that it is so often referred to in words of song and verse, and is taken up by so many writers in this line. Even the foremost poets of both our day and of the days so long since gone by have taken up the trail. Homer com-

"Thrower" as Longfellow Probably Saw Him.

pares the rythm of a dance to the measured spin of the potter's wheel. Again, the rapid way in which the crude clay takes form is described by Jeremiah in one of his most forcible similes. But probably the most forcible simile of all is Longfellow's "Keramos," a part of which we give below:

"Turn, turn, my wheel, turn 'round and 'round,
Without a pause, without a sound:
So spins the flying world around!
This clay, well mixed with marl and sand,
Follows the motion of my hand;
For some must follow, and some command,
Though all are made of clay.

Thus sang the potter at his task
Beneath the blossoming hawthorn tree,
While o'er his features, like a mask,
The quilted sunshine and leaf shade,
Moved, as the boughs above him swayed.
And clothed him, till he seemed to be
A figure woven in tapestry,
So sumptuously was he arrayed,
In that magnificent attire
Of sable tissue flaked with fire.

The Thrower of Today.

Like a magician he appeared,
A conjurer without book or beard;
And while he plied his magic art—
For it was magic to me—
I stood in silence and apart,
And wondered more and more to see
That shapeless, lifeless, mass of clay
Rise up to meet the master's hand,

And now contract and now expand,
And even his slightest touch obey;
While ever in a thoughtful mood
He sang his ditty, and at times
Whistled a tune between the rhymes
As a melodious interlude.
Turn, turn, my wheel, all things must change
To something new, to something strange!
Nothing that is can pause or stay!

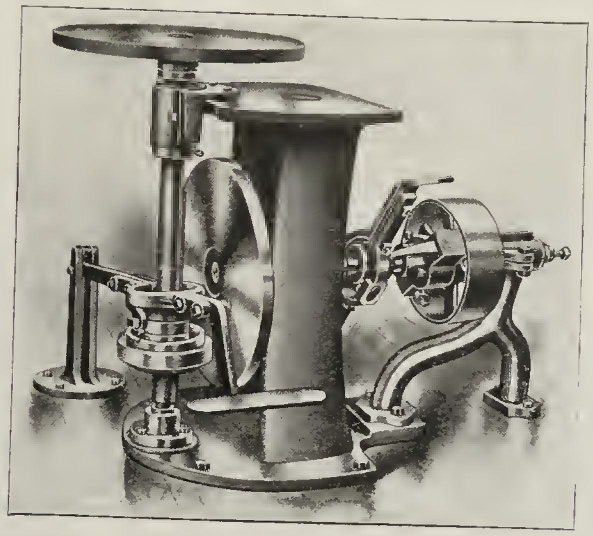
The moon will wax, the moon will wane,
The mist and cloud will turn to rain,
To rain and mist, and cloud again,
To-morrow be to-day.

Thus still the potter sang, and still,
By some unconscious act of will,
The melody and even the words
Were intermingled with my thought,
As bits of colored thread are caught

And woven into nests of birds.
And thus to regions far remote,
Beyond the ocean's vast expanse,
This wizard in the motely coat—
Transported me on wings of song.
Turn, turn, my wheel, all life is brief;
What now is bud will soon be leaf,
What now is leaf will soon decay.

The wind blows east, the wind blows west;
The blue eggs in the robin's nest
Will soon have wings and beak and breast,
And flutter and fly away.
Turn, turn, my wheel! This earthen jar
A touch can make, a touch can mar;
And shall it to the potter say,
What makest thou? Thou hast no hand?

As men who think to understand
A world by their Creator planned,
Who wiser is than they.
Turn, turn, my wheel! 'Tis nature's plan
The child should grow into the man.
The man grow wrinkled, old and gray;



A Modern Potter's Wheel.

In youth the heart exults and sings,
The pulses leap, the feet have wings;
In age the cricket chirps, and brings
The harvest home of day.
Turn, turn, my wheel! The human race
Of every tongue of every place.
Caucasian, Copic or Malay,
All that inhabit this great earth,
Whatever be their rank or worth,
Are kindred and allied by birth
And made of the clay.

Turn, turn, my wheel! What is begun
At daybreak must at dark be done,
To-morrow will be another day:
To-morrow the hot furnace flame
Will search the heart and try the frame
And stamp with honor or with shame
These vessels made of clay.
* * * Suddenly, sounding peal on peal,
The church bell from the neighboring town
Proclaiming the welcome hour of noon.

The potter heard and stopped his wheel,
His apron on the grass threw down,
Whistled his quiet little tune,
Not overloud, not overlong, and ended thus his simple song:
Stop, stop, my wheel! Too soon, too soon
The noon will be the afternoon,
Too soon be yesterday:
Behind us in our path we cast
The broken potsherds of the past,
And all are ground to dust at last,
And trodden into clay.

Written for The Clay-Worker.

CAPITAL BRICK AND BUILDING NEWS.

Burning By Sun Heat, a Theory—Effect of the Coal Strike. —John Miller's New Plants.

SOME TIME AGO I interviewed a scientific old gentleman who had invented an apparatus for compelling the sun to do what nature intended the coal mine to perform—furnish heat. Now, this invention—consisting principally of a series of size-graded mirrors for concentrating the rays of old Sol upon any desired point—never caused any brick to be burned; but the inventor said that it could be employed for such purpose, and that by it brick could be burned extremely hard. In fact, in thinking of the power in this mirror apparatus, it seemed that it was only necessary to turn it toward a clay bank for a few minutes and get a great variety of adamantine brick and all kinds of terra cotta—all this was in the clay-bank, and I supposed would remain there.

Well, if this sun burner will burn brick, as claimed, now is the time for it to come forth and burn. The burning question in Washington, and elsewhere, is the "burning" question—we want something to burn. And unless we get fuel quite soon there will be a slack up all around in business. About a week ago the New Washington Brick Company shut down for want of coal to keep the big factory going. And other factories are getting awfully short on fuel. But it is probable that business will soon be on the usual move, as the brick factories here get much of their coal from the Cumberland mines, by canal—which method has been retarded of late on account of lack of sufficient depth of water—and supplies should come from this source. This great coal miners' strike should give the brickmaker a pointer on the value of coal oil as fuel. Some weeks ago a visitor here from the Southern oil regions said he could put a million barrels of oil in Washington at $1 per barrel. As about three barrels of oil equals a ton of coal as fuel, the economical side of this question is apparent.

Stripping a Clay Bank.

A Hackensack Brick Plant.

A Jersey Clay Pit.

Of course, the coal strike trouble has its bad influence upon building matters. However, the brick output here has been very abundant, and work in building is going on. Never in the history of Washington has there been such a wonderful amount of work done here in that line as during the present year; and building will continue as long as weather permits.

The large number of dwelling houses, apartment houses and office buildings put up last year and this year would suggest a lack of work next season, unless some unlooked for boom occurs. But there is seeming confidence in the future business of this kind among our brickmakers, for not a few of the progressive ones are making improvements in their plants where such are needed. Mr. John Miller, head (and shoulders also) of the Washington Brick and Terra Cotta Company, evidently has considerable faith in the building future of the Capital City, for he is now adding two brick factories to that company's plant already in successful operation.

This is situated in the city here, on the James Creek canal, and quite close to the United States Arsenal grounds, one of the most charming spots in the District of Columbia. Here Mr. Miller is turning out brick, with a wheel machine, at the rate of 50,000 per day. The plant is a good one; the product red pressed brick. The company is capitalized at $50,000.

—John Miller's New Brick Plant.—

Mr. Miller's other (new) plants are located some miles from Washington down the Potomac river. One is at Riverside Park, the other near Fort Hunt; both in Virginia. Each of these plants has capacity for 75,000 brick per day. The Riverside Park plant is nearly completed; the other well under way. The former place is the next station on the Washington & Mt. Vernon Railway to the home of General Washington. In fact, the old Washington farm lands extended to Riverside Park. And so John Miller may make bricks from the soil once owned by the father of his country. These "patriotic bricks" will not be any better for this circumstance, but people using such soil should be strictly truthful, in view of the "I did it with my little hatchet" incident.

In speaking of his property, Washington said the greater part of it was grayish loam running to clay. And now, perhaps, the clay will be running to brick.

I never heard of George as a brickmaker (though he would have succeeded had he tried his hand at the business), but as a farmer he was immense. Let me quote from Historic Landmarks, and then I will say some more about the big brickmaking industry:

"In 1787 he (Washington) had 580 acres in grass, 400 acres in oats, 700 in wheat, the same number in corn, with several hundred acres in barley, buckwheat, potatoes, peas, beans and turnips. His livestock consisted of 140 horses, 112 cows, 226 working oxen, heifers and steers, 500 sheep, and of hogs many, almost numberless. He constantly employed 250 hands (negroes) and kept a score of plows going during the entire year when the weather permitted." The property consisted of 8,000 acres.

On the river, on which fronts this once magnificent estate—a type of the great Southern farms of old—Mr. Miller will float his brick for the Washington and other markets. In this work he will use his own barges and tugboats. He owns two of the latter, and when shipping to distant markets will use the railroads. He is also owner of a steam dredge boat, and with this he is deepening the water at the factory landing place.

The clay used in the Washington Brick and Terra Cotta Company's factory in this city is brought by barges from some distance down the Potomac—from Broad creek.

In the event of an invasion of the Capital City Mr. Miller's factories, two of them, at least, will not easily be looted, for they are "under government protection." The guns of Fort Hunt frown over the land where is located one of the new ventures in clayworking; and the arsenal can take care of its factory neighbor. See the wisdom of Mr. Miller! No warship can sail up the Potomac and carry off a load of his brick without paying for same. Well, he is in the business for what there is in it—and who isn't? Mr. Miller is one of Washington's most progressive brickmakers. NICODEMUS.

Written for THE CLAY-WORKER.

A FAMOUS BRICK CENTER.

WITH POSSIBLY one exception, probably no brick town in the East is better known among builders and architects than Hackensack, N. J. It is a town of about 10,000 people, situated about thirteen miles from New York, on the Hackensack river, which is navigable about six miles above for small coasting craft. It has two lines of railroad and three trolleys, and is in the center of one of the best systems of country roads in America.

For years it stagnated, but the lively commuter captured it some fifteen years ago, and since then it has grown very rapidly. It is still growing, and there are plenty of opportunities for it to grow. Being situated on tide-water, it is possible to secure coal and similar heavy freight cheap, while its own manufactures can be taken to the New York market on wharves cheaper than would be possible without water transportation. All these things are in favor of the brick manufacturer, who requires cheap transportation for the material with which he burns his brick and cheap transportation for the brick after they have been finished.

A Hudson River Brick Plant.

The brick clays lie along the west side of the river, extending from the southern extremity of Hackensack, through a corner of Lodi township and into Little Ferry borough. It is possibly a distance of three or four miles, and according to the statement of an expert good brick clay could be found by excavating a few feet anywhere along this distance. The surface indications certainly bear out this assertion, and all the places which have been excavated so far yield remarkably good clay.

In some respects the clay is peculiar. It is very smooth to the touch, and feels not unlike the gumbo soil of the middle West. It is free from grit and pebbles and grinds very fine indeed. It is delicately laminated, with dark and light streaks or layers, the white being unusually fine and showing traces of almost invisible shells under the microscope. The darker-colored layers appear to be more impregnated with purely vegetable mould, but comprise a liberal proportion of clay and silica.

Where excavation was in progress, or is now in progress, it appears that from four to ten feet of loam covers this clay bed. It may vary, but in those portions which are now uncovered the thickness runs about like that. The upper layer of the clay is not so good as that found a little deeper. It makes good brick, however, and is used along with the finer grades which are lying below. Digging seems to be rather difficult because of the extremely solid character of the clay in the lower beds. And there is trouble from water, since the pits are below the level of the river after they have been dug ten feet or so. The river is close by—so close that schooners are loaded from the docks in the rear of the kilns.

An Inexhaustible Clay Deposit.

How much farther back from the river these clay beds extend it is impossible to say, but the writer has seen traces of the same material cropping out of hillsides where roads had been cut through fully three miles away, and there are those who think that what is known as the Hackensack meadows, a vast tract of marshy land lying between the estuaries of the Hackensack and Passaic rivers, is entirely underlaid with this variety of clay. Investigations have never been made which affirm this; neither is it safe to deny it. At any rate, the supply is inexhaustible and as many manufacturers as choose can make and burn brick in this section for the next century and leave very little impression. The quantity taken out would never be missed.

Clay Pit, Works in Background.

Including the entire industry, which would mean that the yards as far south as Little Ferry should be considered, the brick industry is one of Hackensack's great business enterprises. There is no means at hand of estimating the valuation of the property, nor the value of the yearly output, but comparatively recent statistics show how many brick are made. The following figures, with the names of the firms, are indicative of the importance of the industry in this section. And it appears to be increasing, even though this year has been a rather poor one: The business was first established more than fifty years ago by Moses and Andrew Sears. The brick made by them speedily became popular because of their quality. So successful was this firm that it was followed soon after by Philip Shafer and Isaac Hamilton, and later by John Schmultz and a Mr. Brunsey. This firm, known as Schmultz & Brunsey, operated the yards now owned by the two Gardner firms and J. W. Gillies. The very best grades of ordinary building brick have been and are still made. No vitrified brick are made, nor are there any fancy grades manufactured. The product runs about as follows:

Edwin Schmultz, 5,000,000; Philip Merhof, 5,000,000; Charles E. Walsh, two yards, 8,000,000; James W. Gillies, 5,000,000; M. & I. E. Gardner, 2,500,000; M. B. & S. B. Gardner, 2,500,000. At Little Ferry, just beyond the limits of New Barbadoes township, in which Hackensack is located, are the following: Merhof & Co., 8,000,000; N. Merhof, 20,000,000; Felter Bros., 5,000,000, making a total of 60,000,000 annually taken from these clay beds. The operators of the Little Ferry yards are all Hackensack men, hence they may be termed local industries in a sense.

The illustrations accompanying this article give a general idea of the two yards nearest Hackensack, situated upon what is known as Sand Hill. The views show the buildings and the pits, with two views of pits which have been but recently opened, one of these being where uncovering is now in progress. The water which shows in the foreground of the views with the buildings is in the old pits, from which clay has been taken for many years.

These views were taken on a holiday, when no one was at work, except a few stray hands, hence the appearance of idleness. As a rule the yards present a very lively appearance, and the shipments during the open season of navigation are heavy, comprising many schooner-loads a week. There is complaint of dullness this year, and some manufacturers say that business has been anything but good. This has apparently applied more particularly to prices than to actual shipments, for schooners have been and are numerous after cargoes of brick for the New York and other markets.

Possibly there has been some sharp competition with the Haverstraw yards, which are situated on the Hudson river, about twenty miles further north, but aside from that the Hackensack brick enjoy peculiar advantages for trading in the New York market, because the expense of transporting a cargo in New York is much less than it is from any other series of yards. There seems to be ample opportunity for constantly increasing business, but what prices are the writer doesn't profess to know in detail. A. N. Oldtimer can tell that story better. BURTON.

Written for The Clay-Worker.

LIGHT AND HEAT.—NINTH PAPER.

By Master Mechanic.

In THE FOREGOING PAPER it was stated that losses occurred in firing in various ways and especially by an under and over amount of air admitted to the fuel. Where not enough air is brought to it, we have smoke, which means unconsumed carbon and carbonic oxide, which is gaseous carbon going to waste. Now, the question is, just how much air should be drawn into the fire in order to have perfect consumption of fuel. Experiments have shown that it requires from nine to eleven pounds of air for obtaining perfect union of the oxygen in the air and the carbon in one pound of coal.

The difference between the amounts mentioned, viz., nine and eleven pounds for that purpose is according to the quality and condition of the coal used. This means a large amount of air in cubic feet at the average temperature—about 120 cubic feet. However, in practice this cannot be maintained by any means, so far, and the amount of air required or used can easily be taken to be double that amount. This refers to hand firing. Where automatic stokers are used and artificial draft is applied much less air is required, for the following reasons:

First. A good automatic stoker distributes the coal uniformly over the grates, so that the air can come readily in contact therewith.

Second. The raw coal is brought into the furnace directly from the front, so that the smoke or liberated carbon has to draw over the full length of the fire beyond, and is thereby consumed. Besides, as there is no opening of fire doors, the cold air so admitted is excluded.

Third. Where artificial draft is used, the air is more uniformly distributed, and being at a greater pressure than the atmosphere it forces itself into the fuel.

We all know the effects of blowers to intensify the heat, hence we need not dwell upon this subject further. We also must bear in mind that an automatic stoker relieves the grates of the ashes, so that clean grates are maintained, and that no foreign substance intervenes between the fuel and them to block the way of the air.

Where firing is done by hand it is a well established fact that frequent firing with small amounts of coal is the most economical. The frequent opening of the fire doors and the inrush of cold air, which has a tendency to cool down the fires, not counterbalancing the gain of the more perfect combustion. Very accurate experiments were made by Monsieur Burnat, of Muhlhouse Elsass, where the different modes of firing were used. The result showed through the experiments, of thirteen pounds of coal for minimum and fifty-five pounds for maximum charges, that a gain of 9.25 per cent. was obtained by the smaller charges. A further test on a boiler, where the chimney damper was so arranged as to close when the fire doors were opened and small charges used, that the gain was from 14 to 15 per cent.

Admission of air above the fires has been discussed pro and con for many years by engineering societies. It was claimed that the additional quantity of oxygen so brought in, to mix with the gases, would help to burn the smoke. While this is true in some measure, it is very often overdone. Many times I have seen openings above kiln fires in the bag walls 3x4 inches, and the users always claim to derive a benefit therefrom. The fallacy is in the openings being too far up and altogether too large. Some benefits may accrue if a few very small openings are just behind the furnace, where the bag wall begins. However, where the firing is properly done, with well-arranged grates, an air-tight chimney is the most economical.

The above-mentioned expert, Mr. Burnat, gives the following results in the air supply to a boiler furnace:

Effect of increased air supply upon temperature of escaping gases in the chimney:

Days—	C. ft. of air at 62 degrees F. per pound of coal.	Av. temp. of the gases leaving the boiler.
First	272	624 degrees.
Second	196	601 degrees.
Third	168	550 degrees.
Fourth	124	487 degrees.

We see by the above that when the air was in excess there was a loss of about one-fourth over that when the proper amount is used in heat going out of the stack. In this table all of the air is of higher temperature, as given, than is found in the best arranged furnaces. Some of the modern steamboats not discharging over 425 degrees F., another fact can be noted: The more cold air that was forced in the fires the hotter the gases in the stack. This looks like an anomaly, but such is the fact. It seems that where there is too much air the boiler or surroundings do not take up the heat so readily. The passage of the gases are naturally also accelerated by the greater force of air, hence there is less time for giving out the heat.

Experiments With Cheap Coal.

With the present high prices on coal prevailing it behooves us to seek the most economical way of burning it. Also to make use of such fuel materials that were formerly considered waste. Coal slack can be utilized if the proper appliances are adopted. The writer experimented last year and also during the cool days at the present writing, by using hard coal slack in the house furnace. This, of course, cannot be used by itself—only as an auxiliary with other fuel—with the present arrangement of the grates, which are of the usual form as used in modern furnaces.

The anthracite coal slack costs, delivered in coal bins, $1.75 per ton. In using this slack, the furnace was first filled with coke, which was allowed to become thoroughly heated, then the surface was covered by one or two shovels full of slack. By this means the slack would be consumed without the loss of it dropping through the grates. Another use was that of covering the fire with it at night and shutting off the draft. In the morning a slight shaking of the grates or only the opening of the dampers would start up the fire at once.

At the present time, while the weather is so variable, the slack is a great factor in keeping fire in the furnace, by covering the coke with it, which retains the fire for several days without throwing out any perceptible heat when not wanted, with the exception of once or twice a day, when the draft is opened for about fifteen minutes to keep the fire alive. The gases thrown off with this treatment, I dare say, are all carbonic oxides, which is a loss in fuel. However, there is no smoke, and the loss is so slight in comparison to the fuel saved, and rekindling is made unnecessary, which far outweighs the slight loss in the gases. If the writer were running a brick factory at the present time he would burn slack, put up a pulverizer, and by the use of air blast force it into the kiln and under the boilers.

INCOMPETENT WORKMEN.

The manufacturing clayworker does not, in all probability, suffer anything like an equal percentage of loss from careless and incompetent workmen as the machine man does, though a negligent or ignorant kiln burner can do a large amount of mischief in a very short time. The machinist's union is very keen about keeping up the standard of wages. In common fairness it ought to make some effort to maintain the standard of the workman's ability.

When a machinist, seeking a job, offers his services his usual reply to the foreman's questions is that he is "an all round man." To take him on is always more or less of an experiment, and before it is proved that he is an all round incompetent deadbeat several dollars' worth of castings or tools may be spoiled.

Why cannot some plan be arranged for the unions to certify to the capability of the members who are given cards, and so safeguard the interests of all concerned? Some such plan would make the union of value to the employers as well as employes, which would be a commendable feature and would tend to unite employes and employer.

OBITUARY.

J. D. Fate, Plymouth, O.

ON MONDAY, Sept. 29, at about noon, there passed away from this life Mr. J. D. Fate, president of The J. D. Fate Company, manufacturers of the Plymouth line of clayworking machinery. Mr. Fate's malady was of so painful a nature, that, in spite of his tender attachment to his family, he welcomed death as the only relief from his sufferings.

Mr. Fate was comparatively a young man, having not yet reached his fifty-fourth year. His early home was on a farm near Crestline, O., and in his early manhood he taught school. He also operated a tile yard, with his brother Henry. At last, his taste for machinery and his knowledge of clayworking led him to remove to Crestline and embark in a small way in the manufacture of a machine for making brick and tile. There were associated with him in this enterprise, Mr. E. M. Freese and Mr. Wilson. They soon established a shop at Plymouth, O., and organized under the firm name of Fate, Freese & Wilson. This proved a strong combination, as there were brought together three of the essential elements to success in this line—a thorough conception of what was needed for the working of clay; a keen inventive genius, and finished mechanical skill. Year after year saw the product improve and grow in popular favor, and the little plant was a busy place. At the end of a year Mr. Wilson went out of the firm.

In 1890 Mr. Fate also retired and the business was continued under the name of E. M. Freese & Co. When, in 1891, Mr. Freese removed to Galion, O., Mr. Fate organized the Fate-Gunsaullus Co., and continued the manufacture of the same line of machinery. In 1898 the firm was changed to J. D. Fate & Co., and in April, 1902, was reorganized under the name of The J. D. Fate Co.

Mr. Fate's character was the same, from whatever standpoint you viewed it. He was not gentle at home and savage at the office and shop—he was gentle always. He did not deem it business sagacity to rob his patrons and employes in order to banquet his friends. His sympathy was as wide as the world, and although he did not seem to realize it, he shaped his business affairs as well as all others by the Golden Rule. His career was a striking contradiction of the theory sometimes advanced, that if one man succeeds, it is at the cost and hopes of someone else.

It was a rule of his to unduly press no one who was in sore straits for the payment of a debt; and to foreclose no mortgage, so long as the parties did the best they could and seemed to appreciate Mr. Fate's rights. Never was head and heart more equally distributed in a man. His judgment was correct and his sympathy always sure. He was the "Humane Man" of the town, and no amount of business anxiety ever shut out from his ears the cry of suffering, whether of human beings or of animals, nor stayed his hand from bringing relief.

Mr. Fate was a successful man. He saw his two sons well established in the business he had begun, and carried on to prosperity, which was as he wished. He saw his only daughter—the idol of his heart—happily married and settled in a beautiful home almost at his threshold. He was able to arrange a comfortable income for his wife, whom he always accredited with much of his success, and considered an equal partner in all his affairs. He had the satisfaction of seeing the men who worked for him prosperous and self-respecting, and when extra nurses were needed, in his last hours, it must have been a comfort to him to have the shop men beg the privilege of taking their turn at his bedside, to assist through the long nights of pain.

J. D. Fate, Plymouth, Ohio.

On the day of the funeral, which occurred Wednesday, Oct. 1, all business was suspended from 1 p. m. until 4 p. m., and the business men attended the funeral. At the request of the employes, the works closed when Mr. Fate's death was announced, and did not reopen until Thursday, Oct. 2. The workmen sent flowers, and attended the funeral in a body. Pall-bearers were chosen from those who had been longest in his employ.

Rev. Dr. Miller, of the Lutheran Church, who had known Mr. Fate long and well, and who had been his nearest neighbor, conducted the funeral services, and paid a glowing tribute to Mr. Fate's character and life.

If flowers bring comfort, or if words and acts assuage grief, then the family so sorely bereft, found their hearts bound up, and still more, as the years go on, will they be comforted with the memory of his unfailing sweetness.

"If you would increase your happiness and prolong your life, forget your neighbor's faults. Obliterate everything disagreeable from yesterday; start out with a clean sheet for to-day."

Written for The Clay-Worker.

SOUTH BEND BRICK STREETS.

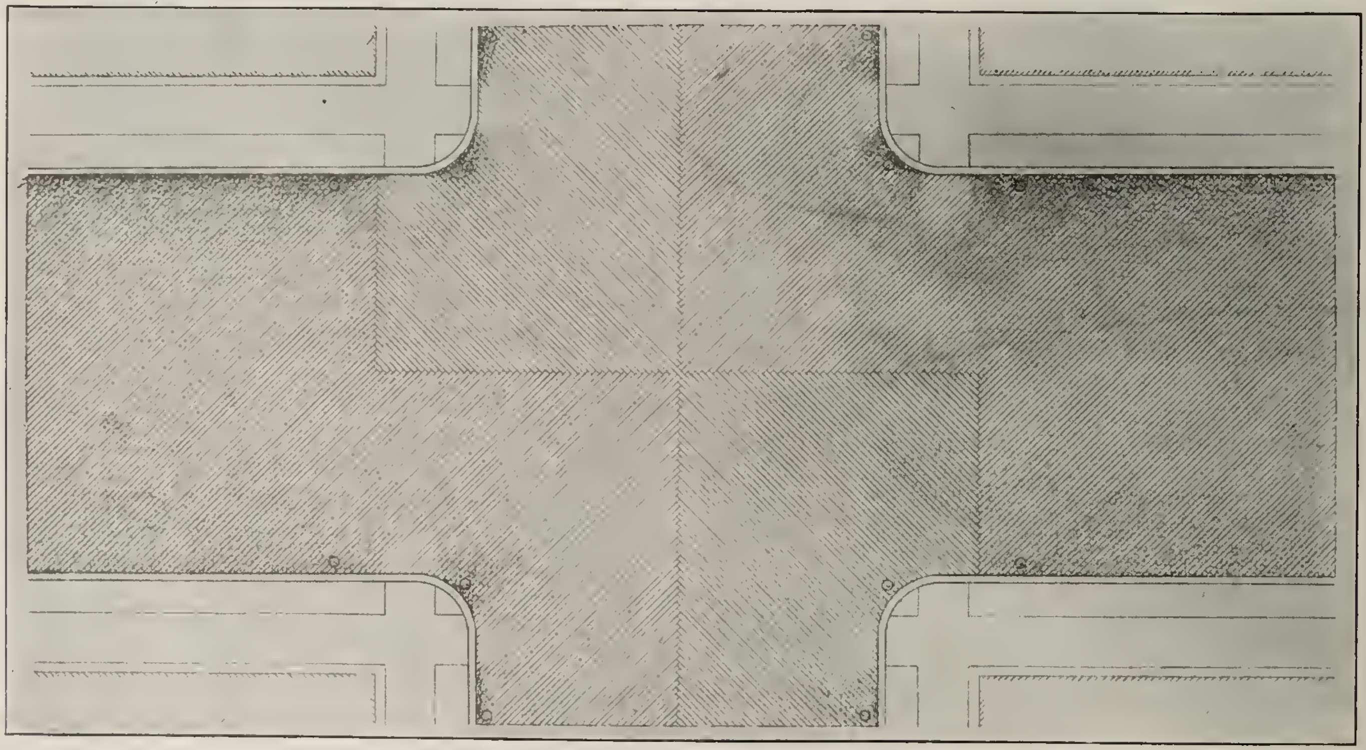
Models of Cleanliness and Durability—Advantages of Laying Brick Diagonally With Curb.

By Alonzo J. Hammond, C. E.

IT MAY BE interesting to note that a person might stand in a certain location at South Bend and during a rainstorm shed water from an umbrella which would flow to the Gulf of Mexico and also to the Atlantic ocean. Chicago has paid her thirty millions for the privilege of shedding water to the gulf as well as the ocean, while Dame Nature with her glacial upheavals has provided South Bend with the conditions naturally.

Geologists tell us that during the glacial period the Kankakee was a mighty river, flowing from southern Michigan to the Mississippi, and by successive upheavals and the formation of an ice gorge the headwaters of the Kankakee were turned in a northerly direction, forming almost a right angle to the former channel, and from this great bend in the river is derived the name of the city—South Bend. The effects of the glacial period are to be found in the large deposits of sand and gravel in the city and vicinity and the immense quantity of bowlders, some of huge size, which have covered the fields, and which have furnished the material for some of the handsome residences and public buildings of the city.

There are also deposits of clay, burning both red and white brick. The white brick are burned from a plastic blue clay found along the St. Joseph river, within the city limits, and is excavated from pits which lie much deeper than the river channel. This clay overlies a bed of quicksand and gravel and much care must be had in excavating for the clay, to avoid breaking through and having the pits flooded. The manufacturer of white brick has therefore several problems confronting him besides that of a successful "burn."



Intersection of Paved Street, With Brick Laid Diagonally.

South Bend is a city whose fame has been extended around the world by the indomitable spirit and enterprise of her manufacturers, and while she has long been known by reason of having within her borders the largest wagon works and the largest plow works in the world, and more recently of having had built by one of her most honored citizens the finest hotel in the State, it is not so well known that this same spirit led to the early attempt to manufacture paving brick out of the plastic blue clay before mentioned.

Mr. Samuel Leeper, at present one of the white brick manufacturers, was one of the pioneers in the attempt to produce a paving brick, but a number of enthusiastic friends of Mr. Leeper, who desired to get into the paving brick business, bought his interests, put in new brick machinery, down draft kilns, et cetera, and began the manufacture of street pavers.

Alonzo J. Hammond, C. E., South Bend, Ind.

They decided to make the brick of building brick size, so that seconds, etc., could be used for building purposes. It was soon found that the clay was very refractory, only about 35 per cent. of the brick at best being turned out pavers. Street contracts having been awarded for this brick, the company made determined efforts to fulfill contracts, but the enthusiasm waned as the losses increased, and the company closed up shop at a considerable loss to the stockholders, and this ended the attempt to make paving brick in South Bend.

Several streets were laid with this small brick and the pavement on West Jefferson street is to a large extent in a good state of preservation. This was a two-course pavement. A layer of brick was laid flat on the natural sub-soil, which was sandy, and on this layer was an inch cushion of sand, and then the course of pavers on edge, laid diagonally and using a sand filler. This pavement was laid in 1889, and while the brick have worn down, they have worn uniformly, so that a comparatively smooth surface is still seen.

The Main street pavement, laid in 1890, I believe, with the same brick, was constructed of a single course of brick on six inches of gravel with a sand filler. The surface of this pavement is not so good as Jefferson street. Some brick were taken out of the center of the roadway this summer and were found to have worn down from one and a half to almost two inches, or half the depth of the brick. The wear has been so uniform that it is not possible to detect with the eye the wearing of the brick on the crown of the pavement.

With the failure of manufacturing pavers in South Bend, the market was opened and the rapid growth of the city—from 21,000 in 1890 to 36,000 in 1900—has led to the paving of many streets with many varieties of paving brick, until now there are about twenty-two miles of brick streets, which constitute about 81 per cent. of the paved streets in the city. The pavements have been laid under a variety of specifications. There are two-course pavements; single-course pavements on practically the natural sub-soil, on a gravel base, on a natural cement concrete foundation and on a Portland cement concrete foundation. Sand filler, pitch filler and cement filler have been used and the brick laid at right angles to the curb and diagonal with the curb, or at an angle of forty-five degrees.

For the last two or three years all the brick paving, except on steep grades, has been laid with diagonal courses. This method does not give quite so good a foothold for horses, but there is less noise and the brick seem to wear better. On steep grades the brick are laid at right angles to the curb. One peculiar feature of the intersections of the streets in South Bend is the raising of the pavement to the top of the curb at the crosswalks, so as to make a continuous smooth surface along the sidewalk line all the way across the street. The method requires additional inlets to catch the street water and a consequent additional expense, but it is a great convenience to the public and avoids the sudden jar of stepping off a curb into space and landing six inches lower than you expected. Another feature of the intersections with brick laid diagonally, is the reversal of the courses of brick, so as to break joints and thus avoid all the small bats in the center of the roadway, found on intersections where the adjacent brick are laid at right angles.

Along the street car rails special brick are laid, which fit under the head of the seven-inch rail, forming a groove for the passage of the car flange. These brick are made in two lengths, so as to break joints, and are sized so that the brick will work well between the rails. While this construction is not quite so smooth as a flanged rail, yet it has given very good satisfaction. The prevailing method of construction demanded now is to excavate eleven inches on the roadbed, roll the subgrade with a heavy steam roller, put on sufficient gravel to roll down to a thickness of six inches, an inch cushion of sand and the block on edge, laid diagonally and using a sand filler, the brick being rolled with a seven-ton steam roller before the sand filler is put on. On a sub-soil, naturally of a sandy and gravelly nature, giving excellent drainage, this method of construction gives fairly good service, but of course does not reach the highest requirements for maintaining a true and smooth surface, as unequal settlements do occur.

BRICK FOR LONDON'S NEWEST BATH HOUSE.

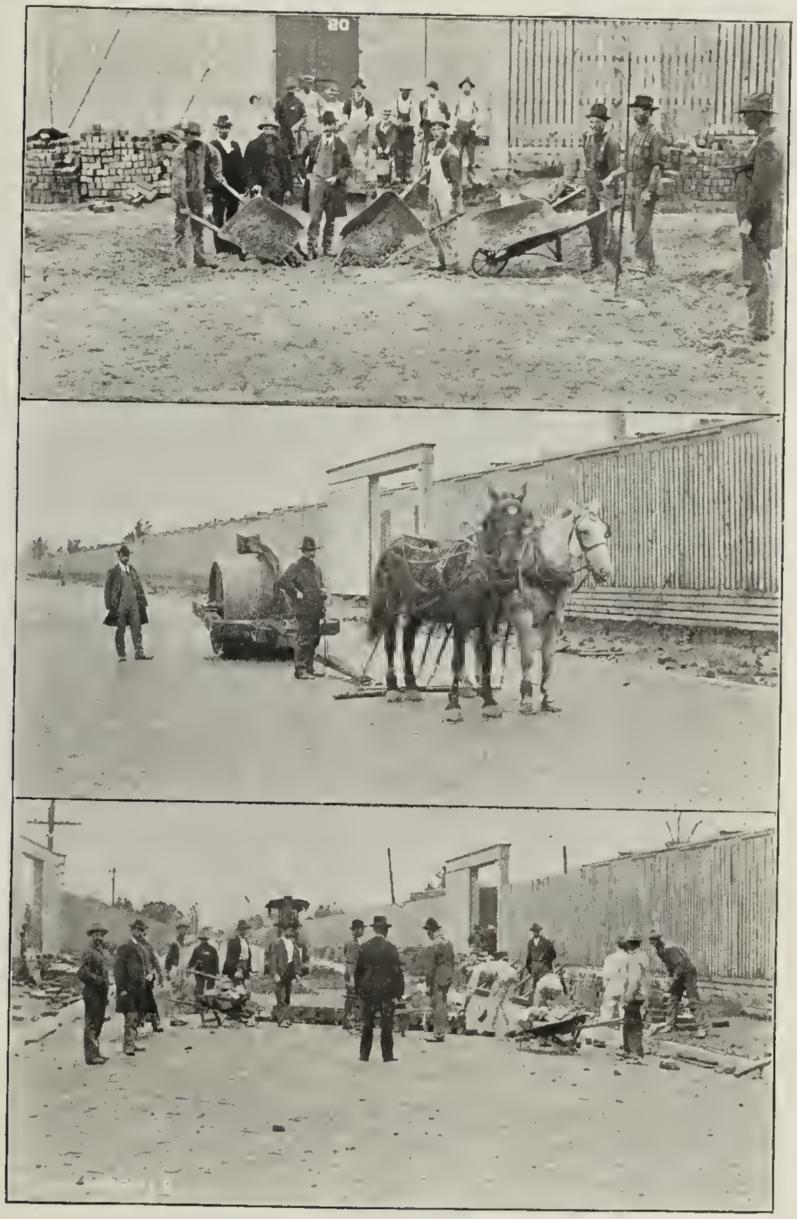
Clay products on a large scale have been used in the building of the new Holborn baths, London, England. The building is of red brick, the bricks for which were supplied by a Berkshire brickmaker. The swimming bath hall has been lined with glazed bricks from Lancashire, including ivory-white bricks for the walls of the bathing pond, salt-glazed bricks for the walls up to the gallery level and green bricks for the walls above the gallery.—Stone Trade Journal.

WILMINGTON, DELAWARE.

Its Brick Plants and Brick Pavements.

By W. P. Lockington.

WILMINGTON is a quiet but comfortable city, having within its boundaries much of historical interest, few Colonels, but three good brick plants and many miles of good brick roads and pavements. Making my way out Market street I was soon made welcome at the hands of J. P. Allman, president of the Delaware Terra Cotta Company, at the office on West Eighth street. From the remarks made I soon gathered that he was and is a close reader of The Clay-Worker. His plant was established in 1882 and is located on 65 acres out at Twenty-third and Claymont streets. Here, with the aid of a Penfield and a Chambers machine (end-cut), they are able during the busy season to turn out 75,000 daily. Since my last visit they have taken out the hot air dryer, which had been in continual use for nearly fifteen years, and are now considering whether another shall take its place.



Paving Street in Front of Singer Sewing Machine Co.'s Works, South Bend, Ind.

Speaking of the conditions generally, Mr. Allman said: "Last year was a good one, and but for the slump which occurred in the Wilmington building operations and heavy rains during the latter part of the season, we should, no doubt, have had an output of close upon ten million."

He was very sincere in expressing his pleasure that the Philadelphia brickmakers were having such a good year.

Throughout this city there appears to be a revival of the old form and color; by that I mean that the fancy and light shades of brick are now taking a back seat and the architects and operators are choosing the dark red brick.

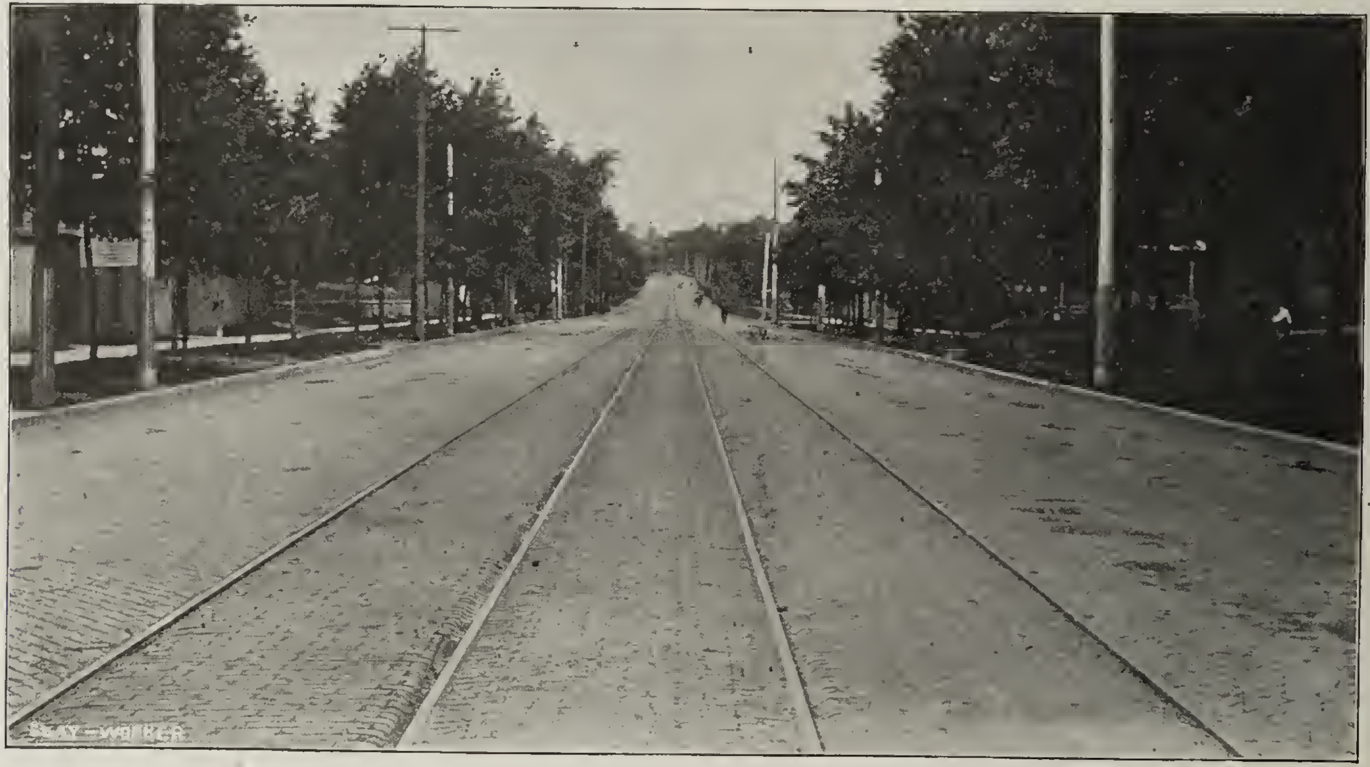
The prices ruling seem to indicate that it takes its cue from the Quaker City. This is no doubt due to the constant and easy communication between the two cities. The plants have been invaded by some of Philadelphia's hard pressed brick men (don't, please, misconstrue this phrasing). They must get brick from somewhere. But owing to the prohibitive freight rates it is impossible to handle them at $2.25 extra freight per thousand.

Prices quoted in this city are:

Salmon	$ 7.00
Hard	9.00
Stretcher	10.00@13.00
Press	18.00

Again, it may be the policy of the Wilmingtonians to hold back, since I learn that the Pennsylvania Railroad Company have already started some splendid improvements on the east or river side of the city.

This will comprise a new roundhouse, machine and car shops, blacksmith and general working shops, estimated to cost not less than three million dollars, and benefiting by the awful experience suffered by the Pullman Company when they erected their shops, who, instead of calling upon their local producers, sent all the way to Reading for three million brick. These were dumped helter-skelter alongside the track just before a very severe frost, salmon and hard frozen together in a frost-bound wedlock, and it cost the company something like $15,000 to get them started. Over 300,000 were hauled away and sold for $2 per thousand, and the company couldn't understand why the Wilmington brickmakers smiled.



A Smooth Pavement and a Good Driveway, Despite a Double-Track Trolley Line—Page 328.

The Brick Plant of James B. Oberly

Is located in the western section of the city, about two miles out. This is a trim little plant of about fourteen acres, fitted up with a Martin machine of the letter "A" type, giving every satisfaction and turning out 30,000 daily, and drying by the rack and pallet system. The capacity is 5,000,000 annually, but the prospects for this year will scarcely reach 3,500,000.

Mr. Oberly is digesting in sober earnestness the question of putting in a stiff-mud machine, and also a new and first-class system of drying. In speaking of the existing conditions, Mr. Oberly said: "We have hardly a call for salmon. Here we have a million in the yard, but the cry is only for hard." During the awful rain of the previous night he had lost nearly 20,000 brick, hence the reason of the well-digested thought on dryers.

Another serious obstacle to the pleasures of brickmaking in this city is due to the steep ascents and descents, making a fair haul utterly impossible, 600 to 700 constituting a good load. Again, no bats are allowed, and payments are only made on completion of the building. How would you like that?

Thanks to Mr. Oberly, I was enabled to meet the genial owners of the Christiana Brick Company. This plant is located at Stanton, some ten to twelve miles out. Their output is about one million annually of fancy, Pompeiian and gray, which here command $21 and $23 per thousand.

The solid building of the Equitable Guarantee and Trust Company, at Ninth and Market streets, was pointed out with some show of pride and satisfaction. This was erected in 1892, with a frontage of 60 feet and a depth of 117 feet, and running six stories, finished front and sides with a buff Clearfield brick and terra cotta. During the past summer two additional stories have been added, but so well have the old bricks stood that it is almost impossilbe to tell the old from the new.

Its Vitrified Brick Streets.

No city of its size between Philadelphia and Washington can boast of the number of miles of brick paved streets that is justly claimed by Wilmington. The experiment was first made in 1890 with a sample of 644 square yards. Before 1892 51,834 square yards had been laid down, and the general average for the years since then is about 25,000 square yards, far in excess of any other kind.

For the year 1901 no less than thirteen miles of vitrified brick pavement was laid down, and this for a city of 65,000 inhabitants speaks volumes for its future use.

W. P. LOCKINGTON.

The only power to be obtained at practically no cost is that of falling water. True. it costs considerable to harness the power, but after that is done there is nothing to compare with water for power at low cost.

Written for The Clay-Worker.

PROMOTION OF THE BRICK BUSINESS.

Interesting Suggestions for Progressive Clayworkers.

Second Paper.

By Burton.

ADVERTISING isn't such a difficult art to learn. Any business man is capable of doing the work effectively if he undertakes it in the right way. It isn't a question of involved sentences and long, high-sounding words. Such work does very well on a circus poster, but in advertising anything else such methods would be entirely out of place. There are a few underlying principles which must be understood, and a few plainly-marked paths which it is best to follow. Everything else is merely theory elaborated by this one or that one, and possibly has no more direct bearing upon the actual outcome than the farthest thing in the world.

There are plenty who are inculcating the doctrine, more or less pernicious, that advertising requires the interposition of a third person. The word pernicious is used advisedly. There is evidence that many men in different lines of business are deterred from advertising because they believe that they cannot do it effectively without outside assistance, and that additional expense is more than they feel like assuming. On the other hand, if the broader principles of advertising were understood a good deal more would be done and everybody would be a gainer. The publishers would gain because business men of all sorts would seek their columns more freely. The businesses in which these men are engaged would gain because they would be brought forcibly to the attention of very many people who now know nothing about them. The purchasers of different classes of goods would gain because they would have a wider opportunity for selection. Now the third person, the agent, comes into the calculation, and his influence is indirectly against this wide publicity. There must be one qualification of this statement. In handling large appropriations the agent may be essential, but then it is perhaps better to employ one exclusively and pay him for his work as you would pay any other man.

The merits or usefulness of advertising agents isn't the theme of this article. It was begun primarily to give some hints upon the matter of increasing the sale and use of brick for various purposes by advertising them properly and liberally in the publications that circulate among brick users, or those who have the selection of material used in building. Previous articles have pointed out clearly the opportunities for increasing the adoption of brick in different classes of constructive work. They have indicated wherein makers have erred in not presenting the claims of brick as graphically as is possible, thus creating a large demand where only a small one now exists. Suggestions will be offered based upon experience in practical work, which, if followed, would unquestionably result in much larger business. Nor is it necessary to limit this effort to one variety of brick, as, for instance, the building sort. Every class can be profitably included and every kind can be moved much more freely than now if the actual value for specified uses is clearly presented.

Promises have been made that some practical suggestions would be made for advertising, and this article has been prepared with that end in view. While the suggestions may not have the smoothness of the expert (?), who would have charged you perhaps $100 for the same advice, they will, if followed, produce results, and whether it costs much or little that is the information you want. It is that information alone which is valuable, and it is that information alone which will advance your business and increase its profits. Another thing must be remembered, in such an article as this only general principles can be laid down. Where a specialist is called in consultation he applies himself to the solution of one problem only, and upon that problem he secures every available bit of information. In this case the evolution of ideas must be such as will apply to all instances with such modifications as manufacturers in various localities are able to give them. It will be seen from this, then, that the work may seem incomplete, and yet will be quite as well done as the expert efforts concentrated upon one problem represented in a particular section.

The question of expense is of importance. Very many manufacturers who would like to increase their trade hesitate about advertising because they see that it will add largely to their expenses, while returns are thought somewhat problematical. There is probably no man who wouldn't invest money in an enterprise which promised adequate and profitable returns.

One of a Number of South Bend's Permanently Improved Residence Streets—Page 328.

It is exactly here that so many advertisers make a mistake. In any other investment they expect to wait before they secure their fullest returns. But the average man who inserts a $10 advertisement in a periodical expects to secure returns immediately, and if he can't trace at least $100 from that single insertion he is dissatisfied and declares that business is poor and that he can't afford to advertise. If he were making brick and the first burning failed to sell, he would immediately prepare a second burning and undertake to correct the fault which developed in the first one. If he looked upon his advertising in the same way there isn't much question about success. If a man has something that people want and use, advertising will do it good. There isn't any question about the use of brick, therefore the argument holds good that advertising would be beneficial.

The first usefulness of brick which attracts the average person is the construction of buildings, either dwellings or business structures. These are more or less spectacular, depending upon the builder and the attractiveness which seems to accrue from ornamentation. But assuming that a manufacturer has a plant for making desirable brick for building purposes, what should one do first? He should inform himself as to the publications which the men he wants to reach read. Now, there are two classes of men whom he needs to reach to accomplish his purpose. There may be others, but for purposes of argument and to simplify the suggestions, it is better to group them all under two heads. One includes the men who are going to build, and the other includes those who do the work, and they may be designated as architects, engineers, or builders. Whatever their names, their functions are similar, and they stand in confidential relations with those who are building the houses, or whatever else it may be.

It is of importance that these two classes of men be made acquainted with the value of brick as a building material. Possibly they know it already but the public understands the dietary value of Quaker Oats, yet the manufacturers continue advertising them quite as persistently as ever. That another man possesses knowledge of your particular goods is no argument against advertising them as freely as your resources will allow. Perhaps he has never thought of them as being peculiarly adapted to his special requirements. If he hasn't, your advertisement affords you an opportunity to clinch any partially formed arguments he may have heard, or to confirm any half-formed theories which he may have worked out for himself.

The way to reach those who do the technical work about buildings is through the trade papers which they read. The man who makes brick machinery advertises in The Clay-Worker, because you, as a manufacturer of brick, read it, and he thereby secures your attention as a purchaser. You should advertise in the architectural papers, the builders' papers and such other publications as are read by this class of men. If there are papers devoted to mason work, advertise in them. If there are papers for those who plan houses and other buildings, advertise in them, and so on through the list. To reach the men you want you must go where they are. You can't bring them to you unless you present some cogent reason for it. You can lay the advantages of your output before them. Stone men do it, but brick men have been notoriously deficient in enterprise of this sort.

The owners of houses and other buildings rarely read trade papers, therefore they must be reached through other mediums which they do read. Here is where very many might make serious mistakes, but if one will stop and consider a moment the problem is not so hard. Builders are generally substantial men. In many instances they are capitalists, and capitalists are quite likely to read very conservative papers, therefore, it would be a waste of time and money to prepare and insert advertising in that portion of the daily press which has fewest attractions for the conservative business man. On the contrary, the papers read by the business men, the conservative element of society, should be sought and your advertisement inserted in them. Your expenditure will bring you fair returns and you will secure the attention of men who will be beneficial to you. It isn't hard to find out what papers these men read. A good criterion would be the different methods of handling real estate news which is shown by different dailies. You can soon discern which ones will pay you best.

After selecting the mediums and determining upon the character of the advertising, the next question that will be raised will be how to do it. Right here is the most difficult portion of the problem. It is comparatively easy to prepare lists of proper publications. It isn't so easy to prepare dignified, and yet attractive, business-bringing advertisements. And on no account must anything undignified be printed. The attempts to be funny generally fall flat, and the various freak methods which characterize very many advertisers are more likely to repel than attract the people you wish to interest, therefore avoid anything of that sort. You will regret it if you do not, and unless you have some special talent for oddity in construction the best form is the straightforward style which tells the story plainly and without ostentatious attempts to be witty or funny. Plenty of space is a necessity and the larger your business, the larger your space should be up to certain limits. Beyond that there is a vast field for discussion which it isn't necessary to enter now. Perhaps later this point can be considered more fully. For the present a moderate amount of space is assumed to be all that is required.

This article is already too long, so the matter will be left here until next time, when some forms for advertisements which will draw business will be printed.

NOTES FROM TIDEWATER, VA.

SEVERAL NEW PLANTS are in prospect hereabouts. Reid Bros., Norfolk, Va., are going in the brick business on a large scale. The location of the plant will be one mile north of Suffolk, on what is known as the Jakeman farm. They also have an option of the Shingle Creek Brick and Tile Company's plant, of which Mr. M. T. Pinner is president, Frank Little secretary and treasurer and J. W. Long general manager. They expect to put in a complete plant with dry kilns. The machinery will be furnished by the Atlantic Brick Machinery Company, Atlanta, Ga.

The Hampton Roads Brick Company's plant was sold at trustee's sale on September 18. The machinery was bought in by W. N. McAgnes and A. B. Minor for $650. The farm, consisting of fifty acres, was bought by N. R. and R. W. Withers for $1,025.

Mr. Frank Reid, president and general manager of the Atlanta Brick Machinery Company, spent several days in this section last week in the interest of his company.

The Charlotte Brick Company, Charlotte, N. C., is making extensive improvements in the plant near Fort Mills, S. C. They are putting in a set of dry kilns and clamp kilns for burning. The firm consists of J. L. Villalonga, president; B. D. Springs, vice president; S. S. McNinch, secretary and treasurer, with office at Charlotte, N. C.

C. B. Chase, of Alexandria, Va., formerly general manager of the Lawrenceville brick and tile plant, spent several days in this section last week, and will in all probability be interested in one of the new plants to be put in here in the near future.

The S. A. Davis plant will be sold at trustee's sale on October 8 to the highest bidder. This plant is located one mile west of Suffolk and has not been running for nearly two years.

A colored laborer was killed at the plant of the Nansemond River Brick and Tile Company about a month ago by stepping into a Potts disintegrator. He was ground down to his hips, when the belts flew off. He died a few hours after being taken out, and was sent to his home at Norfolk.

H. L. JACOBS.

Written for The Clay-Worker.

BRICKS AND BRICKLAYING.

BY OWEN B. MAGINNIS.

I HAVE CHOSEN THIS TITLE because all construction consists of two elements, namely, the material and the labor necessary to put it into a mechanical and accurate form, so I will first take up the subject of bricks in building operations.

In modern construction these are of many and diversified kinds, some of which are excellent and some open to more or less criticism, so that I will now review them practically and generally, as I have found them in actual experience.

In commencing, I might state as an axiom that the quality of a rough wall brick or quantity of such bricks depends, first, on the nature of the clay out of which it or they are dug and molded; second, on the molding itself, and, third, on the burning or kiln work. The nature of the clay and its value primarily are the most important factors. Then comes the work of the machinery and burning, which, when extra well done, go to give builders what is termed in the architect's specification, "good, sound, well-shaped, hard-burnt brick." Avoiding now the mechanical operations essential in manufacturing, let me ask readers, especially those who make bricks, what essentials are requisite to this end, or what are good bricks from a builder's point of view? In answer I would say that all brickwork, to be a solid, cohesive bearing mass, necessitates that not only must the mortar and manual skill be of good quality, but the bricks themselves must be each capable of doing its own part in the bonding, without considering the way in which they are placed or laid. To illustrate, I would refer readers to a fence wall built by Thomas Jefferson at Monticello, Va., where this most learned and highly venerated statesman conceived the erroneous idea that it was possible to build a cheaper brick fence one brick thick on a curvilinear plan (as Fig. 1) than a straight fence two or more bricks thick on a straight plan—in other words, he would save bricks and labor, two very important matters of economy when we consider the facilities for obtaining bricks and bricklayers in Revolutionary times. Suffice that the third President's wall cost him more bricks and more ground space, but this exemplifies the value of each individual brick and its honesty of work in the mass. I have said that a good rough brick must be of good clay, by which is meant that when ready to be laid in the wall it must be smooth and flat on all six sides, with the arrises sharp and unbroken, free from air or blow-holes and cracks; be burnt and of a gray-red color—not roasted, nor of a black-red color; be light and porous enough to absorb water at least one-third of its weight, which quality of absorption constitutes the true value of brick bonding, because the capillary attraction inherent in the brick sucks the mortar to the outer surface and thence into the brick and by this means ties bricks indissolubly together. So I say to you, brickmakers, look to the amount of vacuums or capillaries in your clay, in order to give the greatest suction when bricks are laid or set. As to their shape, I could dilate at length on this subject, but unfortunately space precludes, and I will only refer to a few details.

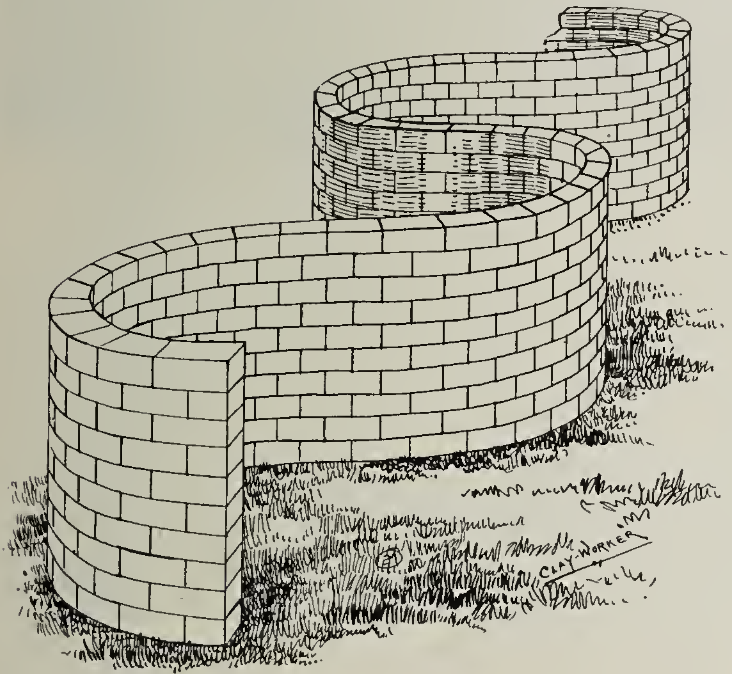


Fig. 1.

As Mr. Tiffany very rightly stated in a previous article in this journal, bricks should be smooth and regular on the surfaces; but they are not always so, at least they don't always come to the job thus, but in the cheaper and middle grades are an olla-podrida of "lammies," crooked, twisted and misshapen things, which are not fit for the commonest speculative tenement house wall, and are a day's trial to every skilled mechanic that handles them. Is it not possible to supply bricks of rectangular shape, such as the "Underhill," "Rose," "Tracy," "Tiffany," "Columbus," Calaban," and other prominent makes furnished, and thus get better and more rapid bricklaying? How many of us recognize the things improperly called bricks represented in Fig. 2 and inwardly groan at them as a constant source of irritation, and wonder how on earth it is possible to build a wall even to a line or corner with such? It is not possible to avoid hogging courses with these brick, and in the language of a New York bricklayer, "I would rather use good, regular pale brick any day than these infernal things," which leads to a few words on these yellow beauties.

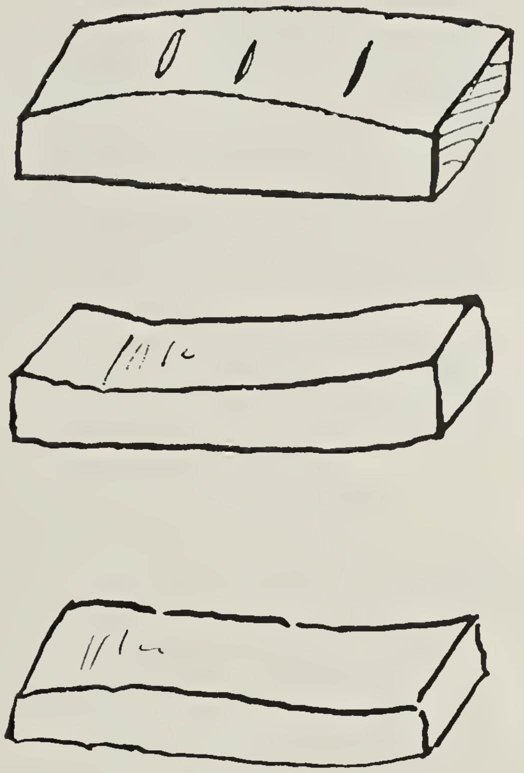


Fig. 2.

Generally speaking, I find this variety to be of two kinds, namely, what are wrongly termed "light hards," and the diabolical "pales." Both, to my mind, are totally unfit to go in a wall, be it inside in the body for filling in, or outside for face work. Being soft and porous, they will simply drink water, and when full will freeze, burst and crumble to pieces, especially when the thaws set in; but they may be and are useful in inside work where protected from weather.

Now, a word as to the use of old bricks in building—a practice at present very general in the larger cities, where the pulling down of old buildings to make room for modern structures, remodeling, and altering makes second-handed bricks cheap and plentiful in the markets, and so many builders use them for lesser or speculative work, and they are certainly not to be recommended for any better work, and why? Because, unlike new bricks, they have already done their work, are exhausted, and consequently unfit to form walls. Old bricks have wasted their capillary attraction and have their surfaces, even when scraped and washed, covered with a glaze of old mortar which totally destroys their absorptive power, so that technically and statically considered, walls built of old brick have little or no elasticity; and the bonds are only kept from sliding by the specific gravity of the mass of brickwork which composes them. I regret, however, to state that the imperfect and careless way in which old bricks are cleaned, rarely washed, and ofttimes never wetted, scarcely entitles them to the notice which I have given them here; but their popularity among builders, though generally condemned by the architectural profession, renders them a subject of comment and adverse criticism. As to the universal presence of round-cornered ends and edges among them, with a large percentage of "bats," I can only say these make them an unprofitable article, because they take just so much and more time to handle and lay both by bricklayers and laborers, and give a useless and unsightly wall.

It is indeed a pleasurable thought to realize the supply is minute, else "Bricklaying" would degenerate to the level of "bat" casting—a word which I once coined on a scaffold.

In concluding this first article, and before touching on the practice of laying bricks, I would ask readers to paste in their hats the simple maxim: "Good bricks build good walls; poor bricks build poor walls.

(To be Continued.)

Written for The Clay-Worker.

NEW BRICK PLANTS IN CLEVELAND.

Old Problems in New Places—A Model Building Brick Plant.

By A. Buckeye.

TWO NEW brick plants have been established in Cleveland in the past year, and another is soon to be added—the company having been incorporated last week under the name of The Cleveland Brick & Clay Co. This last project was promoted by W. M. Nichols, who was the superintendent of the Cleveland plant of the Canton-Cleveland Brick Co., which sold out to the Metropolitan Brick Co. a few months ago. The works will be located in Newburgh, on the branch of the C., T. & V. railroad, and will, it is stated, make paving brick of the Cleveland shale and the shales underneath it.

Though there are already three small paving brick factories in Cuyahoga county making exclusively for the home market, yet they are unable to supply the local demand, and large quantities are shipped in from Canton and other places. There have been sixteen miles of pavement laid in the city of Cleveland in the past year, and plans are already prepared for the paving of twenty-eight miles next year, of which brick are specified, either in whole or part, for 116 streets, asphalt for four streets and medina stone for four streets. Surely there is encouragement in this for a new paving brick company.

The Brookside Brick Co.,

Which began operations a few months ago on the South Side, near Brookside Park, are now turning out a very good common brick. The buildings seem to have been put up without any definite plan, except to make them cover the machinery, and without regard to durability or appearance—not a sight to make a brickmaker proud. Operations were suspended soon after starting by the burning of the dryer. Another, however, was hastily built, not so combustible. The heat for dryer is produced by an ordinary coal furnace, and the combustion gases and smoke blown through by a fan. The cars of brick come out of the dryer covered with soot, and the workmen look like a minstrel troupe in their "make-up," and must also have their respiratory organs well coated.

The machinery at this plant was furnished by The Henry Martin Co.; the dryer is evidently a home-made affair of which no one would want to be known as the designer.

Transportation Troubles.

The brick works planned and constructed by W. D. Richardson for G. G. Griese are still standing idle awaiting the settlement of Mr. Griese's estate. The executor states, however, that arrangements have been made to start up the works as soon as the B. & O. put in their switch—that is, make the connection on their right-of-way with the spur running to the brick plant. The damage to this enterprise by the delay of the railroad company in furnishing shipping facilities contains a lesson for all new establishments of this kind. The spur to the brick plant from the railroad is about 2,500 feet long, nearly 300 feet of which is a trestle over a stream and low ground. In the preliminary negotiations Superintendent Johnson stated that the railroad company would not build the spur, but would put in a switch on their track and extend it to the boundary of their right-of-way to connect with spur. Hence Mr. Griese immediately began operations upon the plant and upon this spur. As soon as the latter was ready for track-laying—the grading having been done, the trestle built and the rails and ties on the ground—at a cost of over $5,000, application was made to the railroad company to fulfill their part of the agreement and put in the short switch on their right of way. Now comes the unexpected but peculiar part of the transaction that is characteristic of large railway companies when they get a man in their power. Mr. Griese having spent $50,000 upon a plant which could not be operated successfully without transportation facilities afforded by this one railroad company, a contract was submitted to him to sign before they would put in this switch, though no mention had been made up to this time of any contract. In this contract Mr. Griese must not only agree to patronize this railroad exclusively for all time, but must agree to allow the railroad company to use his track to connect with any other industries that might locate along the line, where some excellent manufacturing sites were thus opened up. This arrangement would permit a rival brick plant, which was then being promoted on adjacent property, to use the switch and right-of-way secured by Mr. Griese without any compensation to him. And the railroad company claim that this is now their usual procedure in such cases—to confiscate a man's property for the privilege of his doing business with them. As Mr. Griese would not sign such a contract the railroad officials have purposely delayed all action in the matter, even after a compromise contract had been signed by Mr. Griese. The switch is now promised soon, though more than a year has passed since negotiations for it were begun. The moral of this to the brickmaker is never to spend a dollar upon a plant until, at least,

Front View of Griese's Brick Plant.

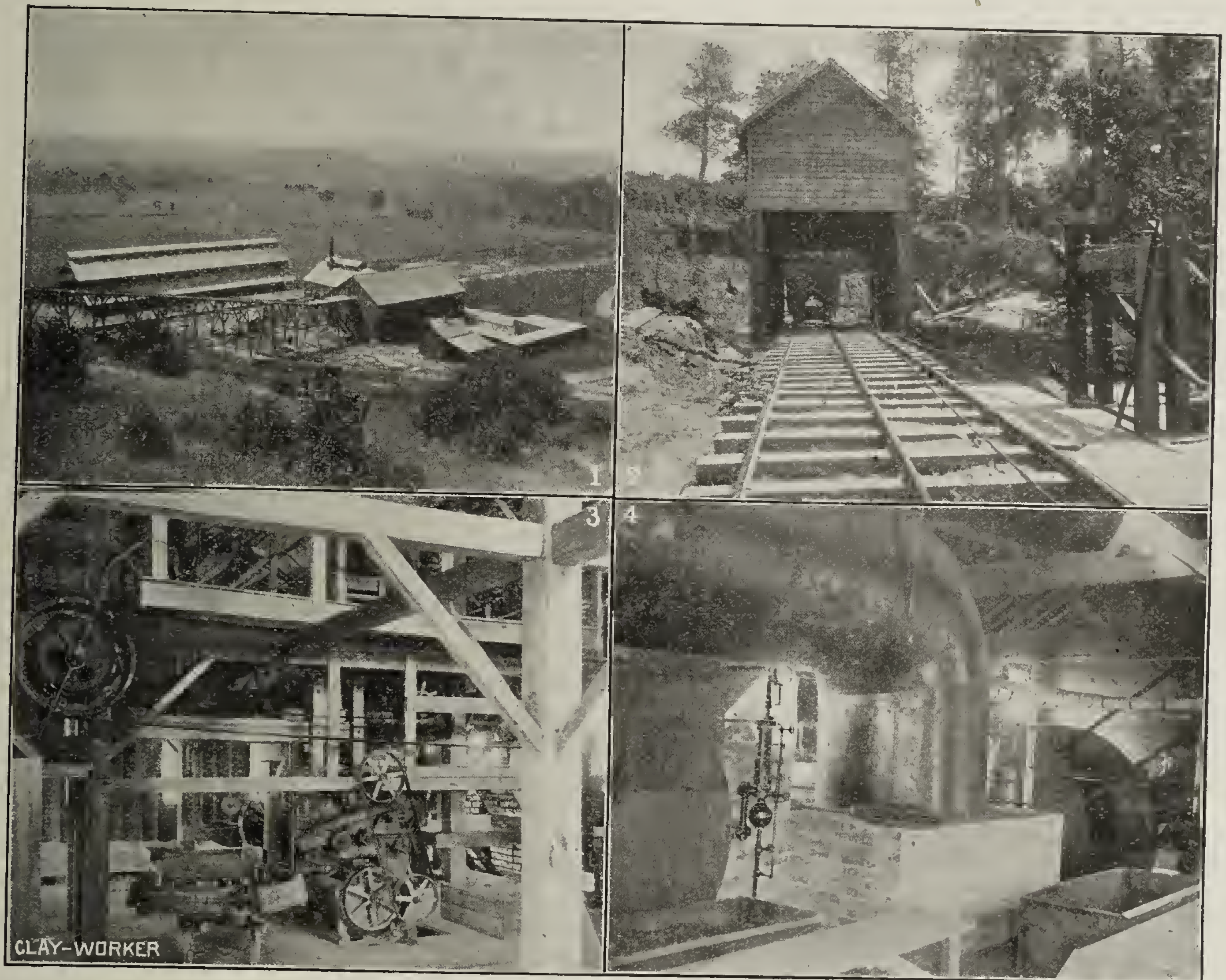
a contract with the railroad company has been signed, binding upon them as well as upon him.

This factory of Mr. Griese's is for the manufacture of common building brick. The whole plan, however, as projected by Mr. Richardson, included upon the same land a paving brick factory and a face brick factory, in order to utilize all of the material at hand; and this would doubtless have been accomplished had not Mr. Griese died before the company was incorporated. A brief description of the plant, which is built in first-class manner throughout, may be of interest.

A Model Building Brick Plant.

The clay is taken from the hill back of the works and is transported by gravity railway over a substantial trestle to the top of the factory, so that it may fall down through the machinery without being elevated. A noticeable feature is the manner of braking the loaded cars and of preventing an accident from a car getting away. There is a gate across the track about one-third of the distance from the top and a derailing switch near the bottom, both of which are operated by a man at the factory, who looks after the dumping of the cars. The gate is always closed except when cars are passing through, and the brakeman at the top of the incline must stop every car when it reaches the gate until the operator at the factory has, by throwing a lever, lifted the gate and at the same time opened the derailing switch. When the loaded car has nearly reached the bottom and the empty car has passed up through the gate, the lever is reversed and the gate and derailing switch closed. Thus it would practically be impossible for a runaway car to strike the factory.

The cars are dumped automatically into a granulator, from which the clay is fed to a disintegrator, and thence falls to a smooth roll crusher, and thence to brick machine—all of these machines being placed in a vertical line supported by heavy timbers. Another special feature of this plant is in the dryer—a tunnel dryer, two tracks to the tunnel, with nine-inch brick partition—which has a slope of one-quarter of an inch to the foot to within ten feet of the discharge end, where it is level. The roof, which slopes with the track, is made of four inches of concrete, three and one-half inches of book tile, and upon this a four-ply gravel roof, the water being conducted from a valley ten feet from the discharge end down through four-inch pipes in each wall to sewer below. Everything about the dryer is fireproof. The slope of the tracks enable the man taking cars from dryer to move all the cars in tunnel and stop them at will, by a simple device, the cars being coupled and uncoupled automatically. The heat for the dryer is supplied from the waste heat from boiler, assisted when necessary by heat from special furnaces. These latter furnaces as well as the boiler furnaces are constructed to prevent smoke, the draft being obtained from the fan that blows the hot gases through the dryer. There are two fans coupled on same shaft, one blowing the hot air through the dryer and the other exhausting the saturated air from the dryer.



In and About Griese's Brick Plant—(1) View from the Shale Bank. (2) Up the Trestle to Drum House. (3) The Machine House. (4) Hopper of Smokeless Furnace.

The plant had started and made and burned one kiln of brick when it was shut down on account of Mr. Griese's death. Burning was to be done in open top, scoved kilns until brick were thus obtained for the building of continuous kilns. The boiler and the main engine are from the Atlas Engine Co., Indianapolis, and the blower engine from Nagle, of Erie. The blowers were furnished by The American Blower Co., Detroit, and the brick machinery by the Wellington Machinery Co. The dryer cars were made by the Ohio Ceramic Engineering Co., and the clay cars by The Atlas Car Co., Cleveland.

It is a pleasure to a brickmaker to see a plant so substantially constructed and so well arranged, hence I have secured pictures that I trust may serve to illustrate this to your readers.

Shall I Get a Wet Pan? We propose to get a wet pan for our work, as our clay is rather limy and contains particles of iron sulphide. Would it be possible, by using the three-story wet pan to sufficiently reduce the limestone to make the clay suitable for shingle and lock-joint roofing tiles? Will the wet pan do all this or can anything more suitable be recommended? How has the Buehler three-story wet pan proved itself in practice? About what would be the cost for a daily output of 25,000 to 30,000 tiles?

Answer. If the quantity of lime in your clay is not too great, you should be able to get rid of it with the aid of a wet pan, but whether the clay would then be suitable for shingle and lock-joint roofing tiles cannot be determined without a close acquaintance with the material. If the lime is present in the form of small, hard limestones, then I would advise you to slum the clay. This is, after all, the best and simplest way of preparing clay. It is more reliable and cheaper. The three-story pan referred to is said to have given satisfaction. If the material is prepared in the pan it should be very sharply burned, in order to burn and kill the lime. On this point it would be advisable to submit samples and get the opinion of a chemist expert who is a specialist in these matters. (Thonind.-Z.)

Draft of Chimney. The chimney of my lime kiln is 98 feet 6 inches high and its opening at the top is 39 inches across, but for all that there is not enough draft. I am thinking of making the chimney about 33 feet higher. Can I get the same effect by putting on a John's draft multiplier and thus get a better draft without having to build the chimney higher?

Answer. If the chimney is surrounded by hills and the air is driven back into it, I would, in your place, put on a John's multiplier, as in such case the rotary addition causing the current of air to enter below on the opposite side sucks the gases out of the chimney. If, however, the chimney stands free then the multiplier, which costs quite a sum, will do you very little good. In this case the only thing to do, if the construction of the chimney will permit, is to build it higher, taking care not to reduce its internal diameter at top. As you do not give the size of your lime kiln, a more definite answer is not possible. It is just possible that the chimney does not give you sufficient draft because you pack the lime in the kiln too tightly. Make some experiments in this direction, have the lower flues broader and higher and the setting looser, then throw only a layer of small stuff on top. Perhaps you may find an improvement by doing this. I also recommend you to test with the draft gauge and make sure that there are no cracks in your kiln. It is very easy to have these in the brickwork of a lime kiln which has to bear considerable heat if the building of it has not been carefully carried out or the walls are not well insulated. If such cracks are found, either in the outer wall or in the masonry between the kiln chamber and the main flue, they must be made tight. If, after looking into this matter and trying the looser setting, there is no improvement in the draft, I would increase the height of the chimney. (Thonind.-Z.)

Small Brick Works. I have started a hand brick plant on a piece of land of about four acres. The clay is about 50 feet in depth. I want to produce from 500,000 to 1,000,000 brick a year, of which I would like to repress from 200,000 to 400,000 for making vitrified pavers and front brick. Is it advisable for this purpose to have a pug mill for horse power and a cutting table, and what kind of kiln is best? My means are very limited, for which reason I must confine myself to the most inexpensive possible outfit.

Answer. For such manufacturing as you contemplate a horse-power machine of suitable kind would be sufficient if your clay works easily and is quite free from stones. In such case a cutting table is superfluous. For repressing you had better get a hand press, a so-called fly press, with eccentric gear motion, on a portable frame. Such a press, with all accessories, costs about $240 and requires to work it only one strong man and a lad as helper. The output, depending upon the ability of the workman, is from 1,500 to 2,000 repressed brick per ten hours. If, on the other hand, you want to turn out all your bricks by machine, using horse power, and from these repress a portion for front bricks, then you must select a machine with a capacity of 800 full-sized brick per hour. To run this you will need three horses to produce the desired quantity of about 1,000,000 brick per year.

I would, however, not recommend you to get this. On the contrary, I think the first arrangement is preferable, as the cost of installation is the lowest of all. A pug mill for horse power, which will produce material ready for striking in the mold, to make 800 to 1,000 brick per hour, will cost, complete, about $250, and can be easily worked by two horses.

For burning this quantity of brick a small parallel continuous kiln, divisible into fourteen chambers, would be sufficient. This would cost, complete, about $2,900. If the lay of your ground is such that you need not be afraid of subsoil water, then an earth continuous kiln, sufficient for the yearly output, would answer your purposes and would not cost more than half as much as the first mentioned kiln. (Thonind-Z.)

Wants a Fine Red. Is it possible to get a fine red color on bricks and pan tiles that burn red, dappled and white stained, and about how much would it increase the cost of manufacture?

Answer. Without knowing the material an answer to this cannot be given. It is probable that you have a clay containing lime which, when fully burned, shows a yellowish color. If the kiln is not properly managed, that is, the firing is not right, the ware will be checky or stained, and this is more likely to happen in the continuous than the intermittent kiln. As for the bricks, the limy material should have a red burning clay mixed with it. The quantity depends upon the amount of lime in the original material. Very often considerable quantities are needed, so that it will only pay to do this if both the materials are at hand. It is here assumed that you want your bricks to be red throughout their mass. It is possible to get a good red surface by putting a slip on. This will pay for roofing tiles, but hardly for building bricks. For the tiles a slip is made of the red-burned clay and poured over the tiles when they are leather hard. The burning has to produce a good and durable bond between the two materials. Whether that is possible with your clay can only be determined by experiment. There are always difficulties with limy material, and these are all the greater the greater the percentage of lime it contains. Your best course is to look out for a red-burning material in your neighborhood to make your roofing tiles of, and, if necessary, a better quality of bricks. How much more the cost will be can only be found by trial.—Deuts. T. & Z. Z.

Lime Kiln. I propose very soon to set up a lime kiln as an accessory to our lime-sand brick manufacturing, and I would be glad to know what kind of kiln is best for a daily production of ten tons; a common kiln to be set with limestone and fuel as a complete charge, or a continuous kiln?

Answer. For a daily output—twenty-four hours—of ten tons, 10,000 kilo. lime, a continuous, tower, lime kiln is best, with half gas, or generator firing, according to the fuel you have; that is, if your raw material will fullfill the conditions demanded in this type of kiln, of not breaking up when it moves downwards. The cost of such a kiln complete should not be more than $1,500, but you can get full and exact information on this point from an expert kiln builder, to whom you should apply. (Thonind-Z.)

Australian Bauxite. In 1899 bauxite was discovered at Wingello, New South Wales, about 100 miles south of Sidney, and at almost the same time extensive deposits were found in the districts of Inverell and Emmaville, in the northern part of the colony. These are immense deposits, twelve square miles in extent, to a depth in places of 40 feet, of volcanic ash, which proved to be bauxite and wocheinite. In the Inverell district bauxite is found over extensive surfaces.

The bauxite of New South Wales varies in color from straw yellow to deep red. In the neighborhood of Inverell bauxite has only been used for road making, as its value for the production of aluminum was unknown. The deposits at Emmaville have been taken in charge by the authorities, but it does not appear that any systematic efforts have been made to find deposits in other parts of the country. In view of these great deposits of bauxite and the continually increasing use of aluminum, its manufacture in New South Wales would introduce a new and profitable industry. (Com. Intel.)

Sealing Stone Jugs. In chemical works a wax is used for sealing stoneware jugs which, for durability and resistance to acids, leaves nothing to be desired. This is made of roll brimstone 100 parts, tallow two parts, pitch two parts. To this finely ground glass, from which the granular portion is carefully sifted out, is added. It is better to grind the glass in a wet state. The sulphur, tallow and pitch are melted together until the mass is of a brown color and syrup-like consistency. Hereupon as much dry glass dust is carefully added until the material forms a soft dough. It is well to do the melting and mixing in a sand bath. The articles to be sealed must be thoroughly dry and are the better for being slightly warm. The wax must be made as hot as possible. (Thonind.-Z.)

The Best Lime-Burning Kiln. In answer to the question, "What kind of kiln is best adapted for burning lime on a large scale, and where are such in use?" The best system for burning lime in large quantities depends, in the first place, upon the kind of raw material you have to use and its behavior in the fire. Large pieces of solid limestone can be burned either in the horizontal continuous kiln or the tower kiln (upright kiln of blast-furnace type). For this kind of limestone in Germany both the continuous kiln for lime burning and the tower kiln, using gas fuel, are used. If the raw material is in large pieces, but has a tendency to crumble when moving in the fire, the tower kiln is not to be recommended. In such case only the horizontal continuous or chamber kiln can be recommended. The continuous kiln for lime burning should have deeply hanging plinth arches from the vaulted roof of the kiln, reaching down to the mass of the material to be burned. For limestone in a more broken condition—in smaller pieces—rotary kilns have lately come into use. In these kilns the limestone is fed into the upper end of the cylindrical kiln and reaches the fire zone by the effect of the rotary motion of the kiln and its inclined position. The lime passes slowly through the kiln and falls out, completely burned, at the lower end. As to the best of these systems for your purpose, we recommend you to get the advice of an expert, who should study the question on the spot.—Thonind-Z.

Clay Cells for Galvanic Batteries. What is required in a clay cell is that it shall be very oprous; that it shall be sufficiently durable, and that it shall offer the least possible resistance to the electric current. The presence of an acid odor and crazing of the glaze, if the rims of the cell are glazed, is of no importance in judging of their qualities. Two kinds of cells are used, those for galvanic elements, in which a weak acid is employed, and those for a strong acid. The clay that is used must remain porous at a dark, or a light red heat, but we are not restricted to any particular kind of clay. Too coarse a material is to be avoided. The best slum grade of fineness is about equal to the clay used for good stoneware. The fire should be between a dull and a bright red—if anything rather the higher than the lower temperature. At this heat the biscuit must be hard and ringing but still very absorptive. In cells for weak acids it is better to substitute precipitated chalk for the calcium carbonate, as the former is an active aid in producing porosity.

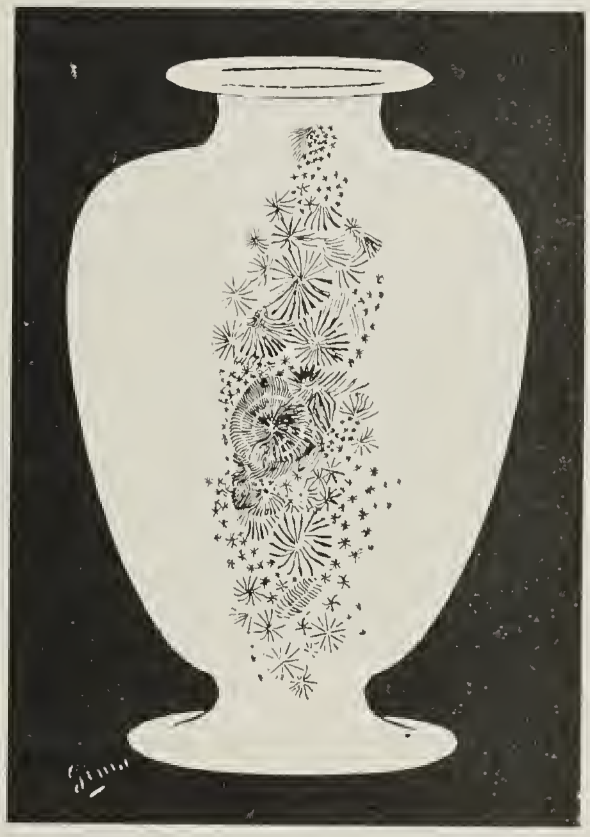
Mixtures for clay cells are nothing more than a calcic stoneware body, an example of which is the following: Quartz sand, 1,500; plastic clay, 600; kaolin, 600; parts by weight. The quartz sand selected is the finest silver sand. All the materials must burn white. If the rims of the cells are to be glazed then the following will be found suitable: Make a frit of quartz sand, 120; borax, 70; feldspar, 50; minium, 60; chalk, 15; kaolin, 5, and soda in crystals, 12½. For the glaze take: Frit, 100; feldspar, 15; white lead, 10 parts by weight. Instead of glazing, the rims of the cells can be made waterproof by dipping in melted paraffine. For cells for strong acids, the following mixture has proved suitable: Quartz sand (in the form of silty sand), 300; plastic clay, 150; kaolin, 100 parts by weight. If the silty sand is replaced by a mixture of clay and kaolin they are more durable. As a rule these cells do not have glazed rims.

In the manufacture of these clay cells they are either formed on the wheel, pressed, or cast. Hereupon they are turned, polished, dried, then burned in saggers. Fire cracks are very seldom met with. One burn carried to a sufficient heat is enough, only those with glazed rims have to have a biscuit and a glost burn.—Sprechsaal.

To Produce Crystals in Glaze. When making ware to be decorated with glaze containing crystals E. K. Bries prepares his body, or biscuit, according to the following combination: Alumina 35 per cent., silica 40 per cent., feldspar 25 per cent. For this he takes 31.1 of Zettlitz kaolin, 8 of Loethain clay, 36 of Hohenbach sand and 25 Swedish feldspar. The kaolin contains 96.55 per cent. alumina, 2:30 per cent. silica and 1.15 per cent. feldspar. The Loethain clay contains 62.24 per cent. alumina, and 37.76 per cent. silica. This burns at cone 8 to a good, close-grained biscuit. It has the right amount of translucency and in working is sufficiently plastic. For the crystalline glaze the following potassio-zinc-bisilicate glaze is selected:

$$0.3\ K_2O. \quad 0.7\ ZnO. \quad 2\ SiO_2$$

which agrees with the combination of: Potash 18.99 per cent., zinc oxide 25.99 per cent., and Hohenbach sand 55.02 per cent. The glaze showed crystals without the presence of titanic acid, but these were very scattered and not large. On adding 10 per cent. of rutil, or replacing one part of silicic acid by an equal value of titanic acid, the crystals became larger—as much as ¾-inch in diameter. The titanic acid does not form a glass in the potassio-zinc glaze and its molecules remain suspended in the glaze. This fact is of importance in the formation of the crystals. Their formation is still further favored by use of a hard-burned biscuit, also by keeping up a long-continued and even temperature up to the end of the burn and by very slowly cooling the ware. The vases, etc., must be completely finished, underglaze colored, hard-burned, etc., before the crystalline glaze is put on. This has a burn to itself, and during the whole time we must keep an oxidizing fire going; this must be held until cone 7 or 8 bends over and its tip touches bottom. To prevent too quick cooling it is a good plan to put the ware in double saggers, well luted. The inside of the sagger must be well glazed. The crystalline glaze with rutil in it burns an opaque milk-white, with a tinge of yellow. The crystals are ochre yellow. If instead of rutil we use titanic acid—titanium oxyhydrate is best—the crystals are pure white, with a pale blue tinted ground.



To produce colored crystals we use a biscuit that is tinted with color, or we add 1 or 2 per cent. of a metallic oxide to the frit. The white biscuit, after it is glazed with the usual porcelain glaze and hard fired, may have a preliminary coat of thin gold luster (liquid gold.) We can get turquoise blue crystals, colored by copper, on a pale blue ground when using rutil. Titanic acid, apparently, has a reducing action on copper compounds.—Sprechsaal.

BY THE LIGHT OF THE KILN FIRE

THE SEASON OF REVERIE.

"AND NOW the autumn days have come, the saddest of the year," and the faces of mankind are turned to the bright and fleeting past. In no occupation of life is this more true than that of the brickmaker, for now is the season of his ambition and energy at an end, and now comes the winter of his discontent, made happier in the light of other days. In the light of the kiln fire, in the fall, the light of other days becomes more than a passing fancy. It becomes for the time being a hallowed reality when every pleasant object of the past returns, clad in the golden draperies of our youth. Life, what is it but a procession of fancies from first to last, anyway?

Last June I heard a mudlark sing in his cosy nest, across the woodpile, in front of the arches, and the song he sung was burdened with the tender pathos of a soul that had awakened suddenly to a realization of the misty character of life's most strenuous dreams. The words as I reproduce them here are sad, indeed, and full of the hidden meanings that are mark of poetic genius and the despair of the prosy and unphilosophical. But the music, who can describe it? Only the man who has caught the score of the lark's joyous skyward song can ever hope to impart to a human intellect the slightest hint of the weird pathos and quaint humor of the lark's nesting song. The singer forgot to inform his audience of the nature of his musical number, or of its author, or of its title, but as it deserves at least a title befitting such a wonderful composition, I have bestowed upon it this:

Who Hath Not Found It Even So?

I.

I laid my head on a cask of brandy—it is my fancy I do declare,
For whin I'm drinking I do be thinking that I should marry some lady fair.
'Tis not my aim to waste life in sporting; I should be courting without delay.
I have in fancy some royal Nancy, for sure I grant ye she'd not say nay.
Then fill your glasses and to the lasses we'll drink a toast and we'll fill again,
For life is rosy and every posy was made for me, and the tide is in.

II.

In gold and jewels I will support her when I do court her, my lady fair;
No grief will chide her, no fear deride her—secure I'll hide her from every care.
O thin, I'll have her in some lone valley ten thousand miles from our native home,
Where Nature's charms and true-love sallies will be our comrades where'er we roam.
Then fill the glasses and to the lasses we'll drink a toast and we'll drink again,
For life is rosy and pick your posy; the goose hangs high and the tide is in.

* * *

N. B.—There is supposed to be a lapse right here, during which the tide goes out, the goose falls down or the cask of brandy takes a shift, or perhaps all three together form a cataclysm, for the next stanza betokens some dreadful event that changed the current of affairs, for here we have it in stanza three:

III.

O, in Kilkenny the marble stones, sir—the marble stones are as black as ink;
'Tis not supposed, sir, ther's those that knows, sir, 'twould make them blacker if we had a drink.
For in Kilkenney, and in places many, the fancy's funny and the fancy's free;
When wine is flowing the mind is going on fancy figures on a fancy sea.
Then fill your glasses and to the lasses we'll drink a toast and we'll fill again,
Kilkenney's marble it is no marvel to that which colors the hearts of men.

IV.

I have no feet for to walk the water, and neither have I the wings to fly;
If I had only a marriage portion to ferry over the flood so high.
I can not have her in some lone valley ten thousand miles from her native home;
For youth and folly make young men marry and springtime fancy is light as foam;
For in the springtime the young man's fancy lightly turns to thoughts of love,
But in the fall he says farewell, Nancy, for you were really my turtle dove.

V.

I'm always drunk and I'm seldom sober, I'm always roving from town to town;
But when I die and my days are over it's homely Molly will lay me down.
O, in Kilkenney 'tis known to many the marble stone is as black as ink;
But white or blacker it is no matter, I'll sing no more till I get a drink.
Thin fill your glasses, the fancy passes—we'll toast no ladies of high renown;
We'll shed a tear for the days that's over and dear old Molly will lay me down.

Oh, the days gone by! Oh! the days gone by! Can't you actually see the sweet soul of the little Hoosier poet soar up to the loftiest pinnacle of the mountain of desire and sentiment in that line of his simple little story of the longing of man's heart? And didn't you see the same in my mudlark's song? For 'tis in Kilkenny the marble stones are as black as ink, and all the tears that ever fell from heaven and all the fancies that man ever dreamed, and all the sacrifices he ever made and all the drinks he can ever drink will not change the color of the marble or of the days gone by to mortal senses.

It may be some consolation, however, that one poet found momentary relief from the monotony of the color scheme by burying his think basket in the latest design of sofa pillow, a cask of brandy.

But the fact remains. The parting days go pleasantly, but they never die. They only change in appearance, and as they pass farther and farther into the past lose the happy light and take on more and more that look which forces us to weep.

"Tears, idle tears, I know not what they mean,
Tears from the depth of some divine despair
Rise in the heart, and gather to the eyes,
In looking on the happy Autumn fields,
And thinking of the days that are no more.

"Fresh as the first beam glittering on a sail,
That brings our friends up from the underworld,
Sad as the last which reddens over one
That sinks with all we love below the verge;
So sad, so fresh, the days that are no more.

"Ah, sad and strange as in dark summer dawns
The earliest pipe of half-awakened birds
To dying ears, when unto dying eyes
The casement slowly grows a glimmering square;
So sad, so strange, the days that are no more.

"Dear as remembered kisses after death,
And sweet as those by hopeless fancy feigned
On lips that are for others; deep as love,
Deep as first love, and wild with all regret;
O Death in Life, the days that are no more."
—Tennyson.

* * *

L'ENVOY.

But fill your glasses, the fancy passes;
We'll weep no more till we quench our thirst;
For while we're drinking we do be thinking
The best is coming and we've seen the worst.

The past is with the Creator; the present is with us; the future does not yet exist. It is plainly no time for tears or idle dreaming or deluding indulgencies. It is time for action. Yet must I still sign myself THE DREAMER.

A VETERAN BRICKMAKER.

John Hilton, one of the leading citizens of Dunkirk, N. Y., holds the record for business activity. He has been in the brick business for sixty-six years, following the occupation of his father and grandfather.

The Ardmore Coal and Power Company, E. F. Ensworth, manager, of Ardmore, I. T., are building a new modern dry press brick plant, which is equipped with a four-mold Boyd brick press and a Frost dry pan. These parties have an abundance of red shale and fire clay, which were thoroughly tested and produce an excellent brick. They have secured the services of Ed Young, a well-known brickmaker from Texas, to take charge of the brick manufacturing department.

Special to The Clay-Worker.

THE BALTIMORE BRICK COMPANY AND MONUMENTAL CITY GENERALLY.

SINCE MY LAST visit to the city President Macken, of the Baltimore Brick Company, has been working industriously to set this company upon a good firm basis, with a view to making additional and more modern and thoroughly up-to-date improvements throughout the different yards, and to have sufficient of the wherewithal to do it, without stint or limit. The company has obtained a new charter under the laws of Delaware, authorizing them to issue $4,500,000 worth of stock. The company, which was recently taken out of the hands of the receiver, has been operating under a charter granted from New Jersey, and will now be enabled to extend their field and secure economies in the administration. This is practically the object of the change. In the reorganization it is proposed to expend some $3,300,000 of the capital to further improvements of the various plants and to hold the balance in the treasury for future uses.

The new securities will be issued under the plan already suggested about the first of January, 1903. Meanwhile, they are being listed, and at present are quoted on 'Change at 8 and up to 15.

Under General Manager Busey's superintendence plant No. 13 has been thoroughly overhauled and in parts remodeled. and now boasts of two new Chambers machines and the installation of steam shovels over at the mammoth clay pit. He has also installed two new Martin machines at plant No. 13. Plant No. 15 has been made as good as new by the addition of two new sheds, a new dryer and two new Martin machines. Thus making for these yards an output or capacity of 140,000 daily, or an approximate capacity of nearly fifteen millions.

The many new sewers and conduits opened at Ilchester, Mount Airy and Morgan, in the suburbs of the city, have the means of drawing the reserve stocks of the company. Consignments up to the tune of eleven millions have already been made, and the orders to follow will probably run into another eleven or twelve millions, thus making a nice little total of twenty-two or three millions. The new custom house will call for six million good brick, and the United States Engineers' building, at Annapolis, which forms part of the new and splendid series of buildings now completed there, will also call upon the Baltimore Brick Company for another two millions. It is estimated that the Naval Academy improvements will take not less than fourteen to fifteen millions brick. Without entering into the specific local operations, it is all sufficient to say that the fall operations, while not as extensive as the times would admit, are nevertheless good enough to keep the Monumental City brickmakers from wearing crepe around their hats during the coming winter. As a natural sequence, the lack of heavier building operations lulls all senses of a competitive nature, and hard brick are selling as low as $6.75 and stretcher as low $8.25 and $9.

Street Improvements—Brick Pavements.

From the office of the chief engineer of the city I learn some little progress has been made towards giving the city improved streets by taking up in various sections the old form of cobbletones and using vitrified brick. Experiments are now being made in a few of the better streets, counting some twelve or fifteen different parts, and laying for a section of one or two blocks, and in these the pavers used at present are those of the Metropolitan, Canton, O., blocks. This is an iron block of ten pounds weight, 8.5x3.4x4 inches. Taken at a cost of $24 per thousand f. o. b. Footways and crossings, however, will hereafter be laid with vitrified brick. In St. Paul street the space covered by the street railway tracks and seventeen inches of the same on the outside, together with gutters sixteen inches wide, along each curb line, has been paved with vitrified brick from Canton, O. The foundation of the pavement was formed with six inches of concrete, composed of one part Maryland slag cement, three parts sand and five parts broken stone, at a cost of $12,700.13 for the 5,799 square yards, being at the rate of $2.19 per square yard.

The total increase of area laid with vitrified brick pavement for the past fiscal year, on both public and private streets, is as follows:

Work done by city labor, 12,927 square yards.
Work done by private contract, 13,112 square yards.

In these the Maxwell, Canton, Clearfield, Guise, Mack and Montello bricks have been generally used.

The official sympathy leans strongly towards the use of bricks, and I trust, ere I make my next visit to Baltimore, I may see them improved by the use of the brick for its pavements, for, by the shade of Lord Baltimore, they need it.

Real Estate Operations.

For the past year these may be said to be scarcely up to the standard mark of Baltimore's average, as I have found from the city records a list of only 1,262 new improvements in the twenty two-wards, with an expenditure of less than $5,000,000. This may be considered but as a very inferior figure, taking the general average, for a city of this size.

W. P. LOCKINGTON.

GEORGIA BRICKMAKERS BUSY.

Editor Clay-Worker:

We are pleased to say in reply to your inquiry of recent date about the condition of trade here in Georgia that we have had a very busy season. Ours is an old-established plant, having been first established twenty years ago by C. C. Stratton. The business is now owned by a stock company, the entire stock being controlled by S. T. Coleman and W. E. Dunwoody, president and vice president respectively. We now own about eighty acres of clay land. The clay averages from six to eight feet in depth and is very fine and plastic. We gather our clay by hand with shovels and convey it to our machines by means of a dummy. We are making 75,000 brick a day on an end-cut Chambers machine. We have been using the Scott system of open-air drying the past season and are more than pleased with it. We burn wood in kilns of our own building. It takes us about eight to ten days to finish a kiln including the water-smoking. We ship our brick throughout Georgia and Florida, loading them direct from kiln to car. Like all brickmakers in this section, we have scarcely been able to keep up with the demand the past season. If you or any of the readers of The Clay-Worker should happen to be in this vicinity at any time, hope you will pay us a visit. The superintendent of the yard, Mr. J. J. Blanton, formerly of Manchester, Va., will gladly show you about the yard. Our city office is at 36 Exchange Bank building, where visiting brickmakers are always welcome. Wishing The Clay-Worker unbounded success, we are

Sincerely,
Macon, Ga. STRATTON BRICK COMPANY.

Works of the Stratton Brick Company.

Written for The Clay-Worker.

BRICKYARDS ON THE HUDSON.

A Visit to Some of the Plants that Furnish Brick for Greater New York.

THE NEW YORK BRICK MARKET is in much the same condition as has existed the past month, but an early advance in the price of brick is looked for, owing to the continued scarcity and high price of coal which is followed by a corresponding advance in the price of wood.

The organizing of The Empire Supply Company and of The John B. Rose Company has also tended to give the market an upward tendency, and unless something out of the usual line of events occurs the price of brick will not long remain at the low level. Most yards on the river are still running, though a few are somewhat crippled for want of labor, many of the colored hands leaving for the "Sunny South." Some of the yards are almost blocked for want of room. While the yards are comparatively full of brick, yet the majority of the various outputs are green, and many of the kilns will not be burned until fuel can be had at more reasonable prices.

Now that October is at hand the acceleration of shipments is apparent and the dealer becomes more particular and harder to please. Common hard range from $4.62½ to $5.25, according to quality, which is fully a dollar less than last year's prices. The advance in the price of fuel has increased the cost of burning in most cases from 50 to 60 cents per thousand, and it is doubtful if any manufacturer is burning his brick at present prices of fuel for less than a dollar per thousand. Unless some pretty close figuring is done the profit and loss account is likely to develop very strongly on the wrong side of the ledger at the end of the year with some manufacturers.

If no more brick are burned this fall, and the mining of anthracite in Pennsylvania is not soon resumed, the laws governing the supply and demand of common brick will doubtless more nearly approximate that ideal condition of affairs that has been pictured (even though in a dream) to the minds of most manufacturers. Will the time ever come when, under normal conditions, the supply and demand of Hudson river brick be equal?

The Hudson River Yards.

The Clay-Worker's correspondent had occasion the present week to visit a number of the Hudson river brickyards, and only regretted his inability to cover more ground in the limited time. It was only pressure brought to bear in this line that prevented a visit to other well-known yards. At the W. A. Underhill Brick Company's plants, at Croton Point, both their yards were found running to full capacity, and as the brickmaking season is drawing to an end there was found to be no lack of energy on the part of Mr. Charles E. Anderson to turn out the usual fall complement of brick to the machine. These yards have a considerable stock on hand, but have ample room to run to their full capacity the remainder of the season. This is one of the few yards on the Hudson where all the machinery, drying floors and kilns are under cover and all practically under one roof, and as long as they can keep their pits filled and the brick dry sufficiently fast, a few days of rain will not affect their ability to run.

A visit was next made to the Dennings Point Brick Works, where we were made welcome by Mr. Smith, the foreman in charge, and before leaving we had the pleasure of meeting Mr. Lent, the superintendent, who explained to us the merits and demerits of soft coal as a substitute for the highly-prized anthracite in burning brick. They are using soft coal here to a considerable extent in burning, and while they regard much of their work with bituminous coal earlier in the season as somewhat of an experiment, yet they still feel that there is doubtless more to learn with its use. However, the experiment has doubtless proved entirely satisfactory, judging from the looks of the kilns recently burned. Six machines are used here, and they have an annual output of about 15,000,000. The clay is soaked in pits, shoveled onto a conveyor and elevated to a pug mill, where it is thoroughly tempered and mixed before going to the brick machines.

It is in this particular, viz., in the preparation of the raw material, that the equipment of many plants on the river vary. We find some who use the tempering pits with the tempering wheels and wheeling into the brick machines; others use a soak pit and convey the clay direct to the machine, and others deliver it from the soak pit to a pug mill before going to the brick machine; others dump the clay mixture direct from the bank into the machine. Want of preparation is oftentimes accountable, in part at least, for failure to make good brick. Manufacturers of high-grade face brick and fire brick realize this more than does the average manufacturer of common brick. It may be argued that it is economy to save the power required to run a pug mill, for instance, and to save the wear and tear on machinery, but the question arises as to whether the benefits to be derived on the other hand do not overbalance the loss of energy and extra wear and tear of machinery on the other.

If the quality of the product is sufficiently improved, less bats and loss occur, a more marketable product produced, and one that will command slightly better prices, it is a question for each individual yard to settle as to whether it is economy to make the necessary outlay and stand the extra expense or not. Some materials on the river contain so much fine sand that it is an easy matter to work the clay too much, and the more pugging they would receive beyond a certain limit, the worse they would become.

A visit was also made to Walsh Bros.' plant, at Stockport. Here we met Mr. Walsh, who is in charge of the plant, and he at once made us feel at home and invited us to ride to the clay pit on one of their newly installed motors used in conveying the clay and sand to the works. It might be stated that this is perhaps the largest individual yard on the river, having an annual capacity of nearly 60,000,000 brick. They use a steam shovel in the bank, which requires three men to operate. Two electric motors, each handling eight cars, convey the clay and sand nearly 1,500 feet to the works. The bank is high and affords a natural incline. The track is elevated somewhat above the brick machines, affording excellent facilities for handling the raw material, and in some cases the clay is fed directly into the brick machines as soon as dumped from the cars above. A 750-horse power Corliss engine not only drives the main shaft which runs the fourteen brick machines, but runs the dynamo as well. Bituminous coal is being used here in burning kilns, as at the other yards visited. A great deal of general interest might be said of this plant, but space will not permit.

A short ride down the river brought us to Catskill. About ten minutes' walk from the landing found us at The Eastern Paving Brick Company's plant, where we were greeted by friend H. Haigh, who is in charge. This is easily one of the largest paving brick plants east of Chicago, and it is indeed a great contrast to the usual type of brick plants on the Hudson. Instead of the up-draft kilns here we found the down-draft, oblong kilns, and the Haigh continuous kiln for burning paving brick. But few plants enjoy as good shipping facilities as this one and none on the river have better. METROPOLIS.

TROUBLE ENOUGH.

Manhattan.—Are the people of Pennsylvania in favor of calling an extra session of the State Legislature to settle the coal strike?

Penn.—Well, most of us think the coal strike itself is bad enough.—Puck.

BRICK IN A NEW ROLE.

A New Fuel—Porous Brick Soaked in Oil a Substitute for Coal.

THE OIL-SOAKED BRICK as a fuel is receiving attention all over the country, and the various papers of the large cities are devoting considerable space to discussions of its practicability. Many preposterous claims are put forth as to the merits of this new fuel, but a test of it showed that a hod of bricks and a few gallons of kerosene will be "handy to have in the house" when the gas burns low and coal cannot be obtained.

A hard-burned brick was thoroughly dried in an oven and was then placed in a bath of kerosene about an inch in depth. The brick was turned occasionally, that all parts might come in contact with the oil, and at the end of twenty miutes had absorbed all of the oil it could hold.

Did Not Ignite Easily.

It was then placed in a cookstove and a match was applied, but it failed to ignite until kindling in the shape of a scrap of paper was placed beneath it. In a few seconds it was wrapped in a hot flame and continued to burn for thirteen minutes, throwing off about the same heat as comes from natural gas. The flames then gradually died out and the brick was dropped into a bucket of water. It had consumed just half a pint of kerosene that had cost 15 cents a gallon.

An ordinary "pale front" brick—a building brick that is just half way between the hard and soft varieties—was then tried with better results. It, too, was left in its bath of oil for twenty minutes, but at the end of that time had absorbed a pint of kerosene. When placed in the stove and ignited it gave out a hot flame for twenty-five minutes. At the end of that time there were still occasional bursts of flame playing upon it like sheet lightning, but not enough to cook with, so the brick was dropped into a bucket of water.

Burned a Second Time.

After it was thoroughly cooled, to avoid all danger of an explosion, it was again placed in the oil bath for twenty minutes, absorbing three-fourths of a pint of the oil, a few cracks that had formed in the brick when it was thrown in the water seeming to drink up the greater part of the oil. When ignited in the stove it burned fiercely for twenty minutes, and then, for ten minutes longer, long flames came from the oil-filled cracks. The next time it was tested it absorbed less oil and burned for a shorter length of time, so it was apparent that new bricks are the more satisfactory.

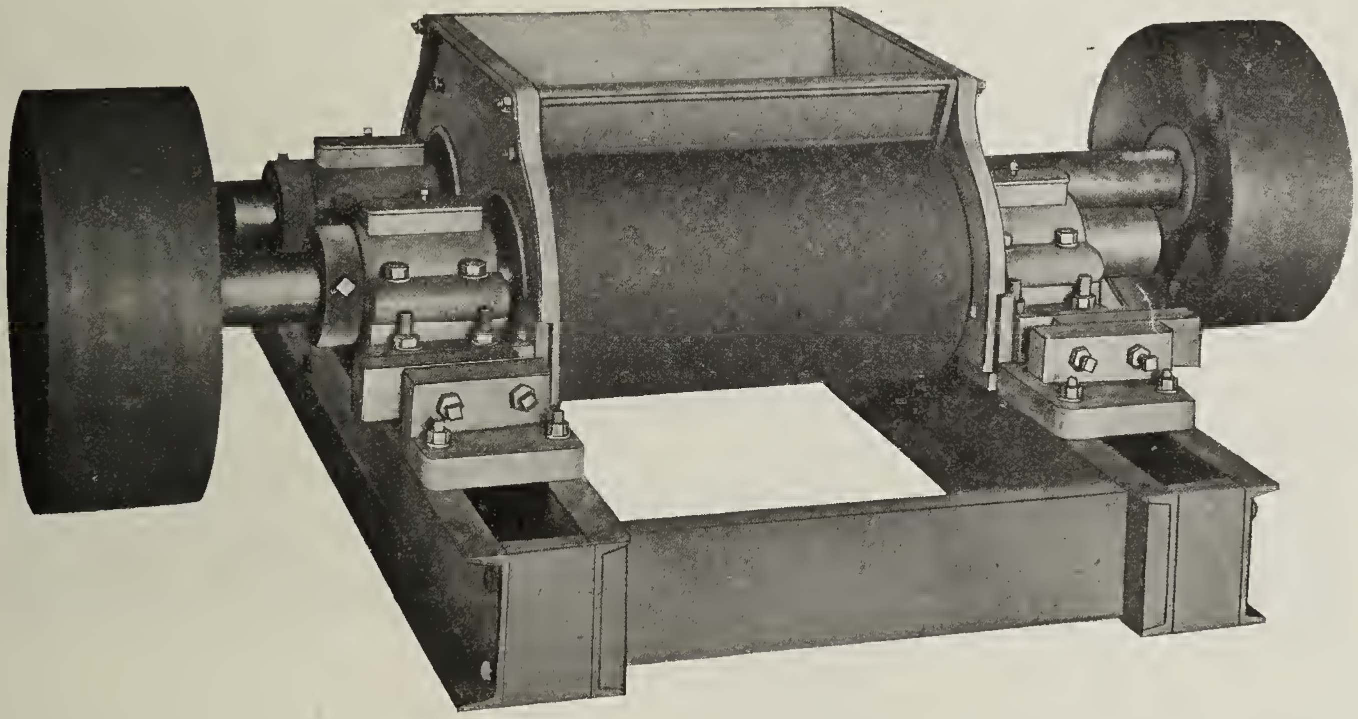
In using the oiled brick as fuel, care should be taken that it is thoroughly cooled before it is put in its oil bath, and the kerosene should not be kept in the room with the fire.

New bricks are the best, but if the brick is allowed to dry thoroughly for several hours after its water immersion it will absorb much more oil than if it is immersed in the oil bath directly it is cool.

By having a relay of oil-soaked bricks, it would be possible to keep a fire in the stove as long as desired. Little smoke comes from the bricks—not as much as from soft coal. So popular has this new fuel become in some cities that the watchmen in buildings in course of construction are kept busy guarding the piles of brick.—Indianapolis News.

ABOUT LIMESTONES IN CLAY.

In the September Clay-Worker were two letters from parties who desired to know how to get rid of the bad effects of limestone in clay. Doubtless many more of our readers will be interested in knowing how it is done at a number of places where such pebbles occur. In nearly all of the yards at Cleveland, O., there is so much limestone that it is necessary to get rid of them, and after trying a good many experiments, the problem was solved so that the bad results were overcome, as hereinafter described. The clay is first passed through a disintegrator, and then through an immense heavy smooth-roll crusher. The disintegrator throws out part of the limestones, and the rest are broken up. The material then drops between the smooth rolls, which are run very close together, so that the pieces of limestone are crushed entirely or so small that they don't damage the brick when burned. It has been found absolutely necessary to first press the material through a disintegrator, as the material will not feed through the smooth rolls when set so very closely together, unless it has first been disintegrated.



Special Lime Pebble Crusher.

The Wellington (Ohio) Machine Company make a special crusher for just this purpose and furnish us the cut shown. They state that the machine is very heavy and strong, which it must be to crush the hard articles, and it weighs 4,000 pounds. The rolls are made of a mixture of different irons, the same as used in making chilled car wheels, and at the proper melting stage is poured white hot into immense iron "chills," or cylinders of the proper shape, producing the very hardest chilled iron.

The bearings are long and heavy and a special high-grade anti-friction-bearing metal is used. The frame is made of four pieces of channel steel, making it perfectly rigid. As will be seen by the cut, the bearings carrying the rolls can be moved for adjustment, and after the adjustment is made they are firmly blocked with heavy screws, so that they cannot be moved.

Some eight or ten yards in Cleveland use such rolls, and the Wellington Machine Company state that they have sold quite a number to other yards where similar conditions existed, and that in every case this combination of machines has successfully accomplished the desired object.

THE NATIONAL DRY KILN COMPANY'S NEW FACTORY.

THOUGH a comparatively new firm, having started in business in February, 1901, the National Dry Kiln Company, under the energetic management of Mr. Edward Gerrard, has already outgrown their original quarters and has built a new factory at 1118 to 1134 East Maryland street, Indianapolis, where they recently purchased a large tract of land peculiarly well situated for their work.

As our readers may see by the accompanying picture, their new factory is a commodious frame structure. That portion fronting on Maryland street is devoted to office purposes, the interior is finished in natural pine and is very cozy and inviting in appearance. Back of the office is a well-lighted machine shop and assembly room, 100x200 feet in dimensions, which opens on a large storage yard which is already well-stocked with piping, rail and a general assortment of material for dryer equipment, for the manufacture of dryer cars, etc. A switch from the Cincinnati, Hamilton & Dayton railroad runs into their plant and alongside their stock shed for a distance of 350 feet, thus affording excellent shipping facilities, their products going direct from shop to car.

The National Dry Kiln Company's New Factory.

Mr. Gerrard says their business has been very satisfactory the past season, and that they have every reason to be satisfied. He generously attributes much of the company's success to the energy and ability of their traveling salesman, Mr. John McKay, who devotes his time chiefly to the northern and eastern territory, and Mr. C. H. Beale, of Montgomery, Ala., who looks after the southern trade. Brickmakers who may visit the Hoosier capital at any time are cordially invited to call and inspect the new factory and their line of brick cars (of which they make a number of designs), turntables and other dryer supplies.

AFAR CRY FOR CERAMIC KNOWLEDGE.

Prof. Edward Orton, secretary of the American Ceramic Society, recently received a request from Julius A. Arce, C. E., Arequipa, Peru, South America, for the "Transactions of the Third Annual Meeting of the Society." Similar requests from other portions of the globe would indicate that the society's field of usefulness is almost without bounds. The secretary advises us that the report of their Cleveland meetings is now in the press, and will be ready for distribution in the very near future. In the secretary's opinion, it will be the most valuable publication the society has yet issued.

WATER TANKS—THEIR UTILITY AND VALUE.

LOOKING ACROSS the wildnerness of roofs in a manufacturing city you cannot fail to notice the water tanks. Some of them are perched on the roofs, others stand on independent towers. It may not have occurred to you that the manufacture of these outfits is itself an important industry growing with the growth of the country and giving employment to an army of skilled artisans. The casual visitor to a factory is likely to overlook the tank and tower unless his attention be especially drawn to them. They have not the spectacular interest of molten metal or whirring machinery, but the manager of the plant, responsible for a prudent and economical conduct of the business, knows how important the tank and tower are for protection against fire and for ordinary water supply.

A notion of the extent to which tanks and towers are manufactured is afforded by information given by the W. E. Caldwell Co., of Louisville, Ky. A correspondent, who called on this house recently, found the office force working like beavers.

"A sudden rush?" asked the visitor. "Not sudden," was the reply. "We have kept it up like this since spring and we are thirty days behind our orders yet. On an average we send out thirty tank and tower jobs a month. They are used for fire protection by manufacturing plants, for water supply in villages and small towns and for private grounds. Besides from fifty to 200 tanks a month are sent out right along."

This output calls for about 3,000,000 feet of lumber—mostly Louisiana cypress and Georgia pine—and 300 tons of steel bands a year. If the bands were placed end to end the line would be 100 miles long. If the towers made in a year were piled one on top of the other the column would be about forty miles high. The total weight supported by the towers is about 20,000 tons, or 1,000 ordinary carloads.

Like every other money-making institution except the mint, the W. E. Caldwell Co. must be advertised. One illustration will show the activity of the publicity bureau. It sends out between 50,000 and 60,000 catalogues a month.

The Caldwell Co. has just received an order for two 10,000-gallon cypress tanks to the New York Architectural Terra Cotta Company, of New York. Each tank will stand on a tower fifteen feet high, on the roof of the company's factory.

Continuity is essential to successful advertising.—Ex.

Written for The Clay-Worker.

ST. LOUIS BRICK AND BUILDING NEWS.

BUSINESS has been quite good recently with brick and terra cotta manufacturers. Nearly every one of them report that they are having all that they can attend to. The only complaint heard is the scarcity of clay. The rainy weather that prevailed for a great many days recently has caused a lack of that material, and it was getting to be quite a serious matter. Fortunately the rain has stopped and the supply will soon be secured. Had the rain continued several of the brickyards would have been forced to shut down and wait.

The monthly statement of the building commissioner shows an increase of nearly $250,000 in building operations for the month of September over the corresponding month of last year. In September, 1901, eighty-eight permits were issued for new brick buildings, estimated to cost $417,619, as compared with 137 permits, estimated to cost $647,467, issued during the month just closed. Repairs, additions and alterations on brick buildings amounted to $95,543 for the month of September, 1901, and to $79,588 for the corresponding month this year.

One hundred and twenty-six permits for frame buildings, estimated to cost $23,321, were issued during September, 1901, and 188 permits, estimated to cost $34,713, in September, 1902.

The totals were: September, 1901, $542,291; in September, 1902, $775,035.

Prices of brick continue to be the same as last reported, viz.: Merchantable brick, $7.75; strictly hard, $8.25; red pressed brick, $17.50; sidewalk and paving brick, $8.50.

New buildings are being continually projected. Many of them are large ones, and among them are several hotels. The latest is a $1,000,000 hotel out near the World's Fair grounds.

There still continues to be a scarcity of small buildings. Very few of this class are talked of, in spite of the fact that they are needed.

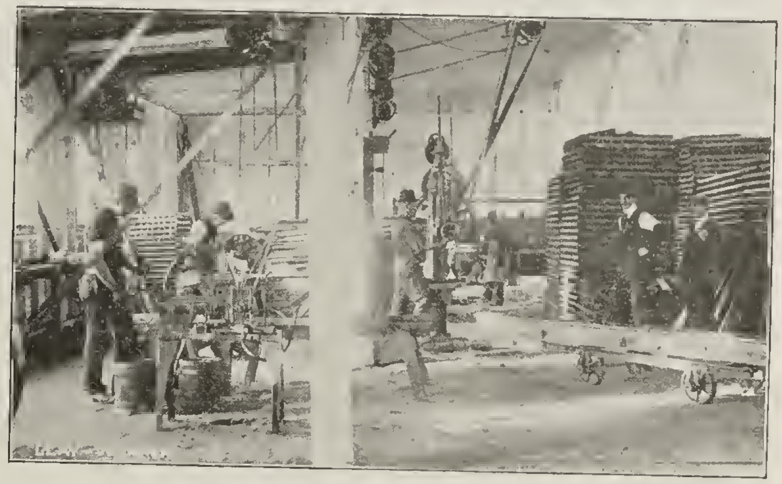
For several months the rent lists in the various real estate offices have not contained a sufficient number of flats and apartments to accommodate customers. In most instances such places have been leased to new tenants before the old ones moved out, and it has been a very rare thing for flats and apartments to remain posted more than a day or two.

But even more decided is the scarcity of average-sized houses—the kind wanted by small families in moderate circumstances. It may be said that they are not to be found except by accident. Few are rented to new tenants, perhaps not a dozen a month in certain parts of the city, while inquiries for them amount to hundreds daily.

In saying that a great many houses could be rented if built, the location must be considered. Convenience to street cars and the desirability of the neighborhood are essential points. At present small tenements may be found vacant in various sections of St. Louis, but they are not considered desirable by persons who can afford to pay enough rental to have a small home fitted with all modern conveniences.

Several reasons are assigned for the delay in building, one of which is the fear among investors that overbuilding prior to the World's Fair period might cause a reaction later. This is not so. With construction in progress at a rate that would consume all the building material the local market could supply and give employment to many more mechanics and laborers than are now in the city, three years' work would not result in an over-production of houses. The advanced cost of construction, it is said, is having more to do with retarding work than is the fear of over-building. Many persons are holding off with the idea that prices will be reduced after the World's Fair. Whether this will be the case is doubted by many, and no one seems to look for a return to the scale that prevailed four or five years ago. At that time, it is said, conditions were such that lumber dealers and the manufacturer of brick and other supplies sold at almost any price to make expenses, as the demand was small. Better markets, especially in St. Louis, have caused the rise, not only in prices of material, but of labor. Within the last six months lumber has advanced about 20 per cent. Bricks are now selling for nearly twice what they did a few years ago. Structural iron also has advanced, and the supply is very limited. Carpenters who were making 35 cents an hour several months ago, are now receiving 45 cents an hour. Brick masons are receiving an

General Manager Gerrard at His Desk.



A Corner in the Machine Room.

In the Main Office, National Dry Kiln Co.

advance in the same ratio. Notwithstanding these conditions, it is believed that the necessity for more houses in St. Louis will force much building within the next eighteen months.

The Wiliams Patent Crusher and Pulverizer Company are still kept busy getting out orders and really having all the work they can attend to.

The Fernholtz Brick Machinery Company are working full time on orders, and then can only keep even. Mr. Scott, vice president and general manager, says that they are more than pleased with their season's business.

The Illinois Supply and Construction Company recently moved their offices from the Century building to the eighth floor of the Columbia, where they have cozy quarters, and where visiting brickmakers are made to feel at home. They are very busy, the demand for their machinery and kilns being greater than ever before. They are giving especial attention to the equipping of plants with oil-burning apparatus and are headquarters for information on oil burning. A. SAINT.

Written for The Clay-Worker.

POTTERY NEWS.

THE NEW "OLD END," a new addition to the extensive plant of The Knowles, Taylor & Knowles Company, of this city, has been completed and is now in complete operation. The new buildings are four stories in height and have a frontage of 200 feet on one street and 100 feet on the other. The new part is equipped with the very latest machinery and mechanical equipment, and is one of the most complete and up-to-date potteries in this city.

The Edwin E. Knowles China Company, of this city, are erecting a new kiln in their plant in Chester, which will be eighteen feet in diameter, rather larger than ordinary whiteware kilns.

The new buildings of the Harker Pottery Company, of this city, are completed and are now in complete operation so far as the mechanical equipment is concerned.

Burgess & Company, proprietors of the American Stilt and Pin Works, have purchased the buildings formerly occupied by The Wellsville Soap Manufacturing Company, and later by The National Manufacturing Company, in Wellsville, and will turn the factory into a stilt and pin factory. One kiln has been erected now and others will be erected as fast as possible. The company will probably wreck the old works in the city proper just so soon as the new factory has been completed. as the ground on which the old factory is situated has become more valuable than the factory itself, as it is situated in the heart of the city.

The new buildings of the West End Pottery Company, in this city, are nearing completion, and the company will soon be ready to install the mechanical equipment which goes in the new addition. Two ware kilns will be erected and two decorating kilns, all of which have been started. The decorating kilns are most completed.

The American Ceramic Art Company, of East Liverpool, has been incorporated under the laws of the State of Ohio and will decorate all kinds of ceramic ware. Semi-porcelain and china produced in this city will compose almost the entire output, although some small ware will be imported.

The capacity of the Bell Pottery Company, of Findlay, O., is being considerably increased. It is probable that the company will erect one or more additional kilns in the near future, although this has not as yet been definitely decided upon. The company have recently added to their pottery outfit a complete plant for the production of vitreous electric porcelain.

It is said that the Barberton Pottery Company, of Barberton, O., will, in the coming spring, just double the present output of their plant. An entire new plant will be erected, which will be an exact duplicate of the one now in operation.

The Central New York Pottery Company has been incorporated to do business at Chittenango, N. Y., taking charge of the plant formerly owned and operated by the Chittenango Pottery Company, and later by the Ashwood Pottery Company.

The stock of the Sebring Potteries Company, of Sebring, O., who formerly operated The Oliver China Company, The Sebring Pottery Company, The Sebring China Company, the Sebring Cooperage Company and the French China Company, has been divided between the different stockholders of the old company, and all of the above-mentioned concerns will, in the future, be operated altogether separately and owned separately in place of being run and owned together, as they were formerly. The Sebring Pottery Company will be owned and operated by Mr. F. A. Sebring, W. H. Sebring, C. J. Albright, J. H. Norris. The French China Company by E. H. and O. H. Sebring; The Oliver China Company, Geo. and Fred Sebring; The Sebring Cooperage Company, Mr. O. H. Sebring; The Sebring China Company, Mr. F. A. Sebring. The change has been contemplated for some time and was really expected before.

The Onondaga Pottery Company, of Syracuse, N. Y., are building a new three-story addition to their pottery in that city. The new buildings will be used entirely for decorating shops and will materially increase the company's output in that department. The capital stock of the company has been increased from $200,000 to $250,000.

The Crooksville Art Pottery Company, of Crooksville, O., have nearly all of their machinery installed and will soon be ready to make clay. They expect to have ware upon the market by the first of the year.

The National Pottery Company, the new sanitary plant which is to be located at Evansville, Ind., have commenced work on their moulds and will soon break ground for the new plant, which at first will have a capacity of about four kilns. It is the intention of the new company to erect a plant that will be up-to-date in every particular. A. M. Weil, president of the Crown Potteries Company, with plants at Evansville, Ind., and Peoria, Ill., will be the president of the new company, and H. F. Weaver, formerly connected with the Universal Sanitary Manufacturing Company, of New Castle, Pa., as general manager, will also be the general manager of the new company.

The new sanitary pottery which is being built by The Resolute Pottery Company, of Trenton, N. J., will be completed this week and it is said that the new company expects to begin operations within the next two weeks. The plant will have a capacity of four kilns, which will be increased as soon as the business of the company will warrant.

The Logan Pottery Company, of Logan, O., have their entire plant under roof and the two kilns are nearly completed, so that they expect to have the entire works in operation by the last part of the year. The output of the plant will be confined to stoneware, which, however, will in design be something special in the stoneware line and the shapes will be modeled more after the general whiteware line.

It is said that ground will shortly be broken for the new pottery which will be erected at Columbus, O., for The Columbus Pottery Company. This plant will make the second in that city, for ground has already been broken for the immense new works which will be located there by the Bell Pottery Company.

It is said that a new whiteware plant will be erected shortly at Wabash, Ind. The deal is being promoted by East Liverpool (O.) parties and Wabash land agents. It is said that the deal will be a "go."

Mr. John M. Pruden, the oldest potter in the city of Trenton, and possibly in the State of New Jersey, died at his home in that city some days ago. Mr. Pruden was born in Elizabeth, N. J., and his father was a pioneer potter. Mr. Pruden ran the business for a long time, and it was finally sold to the Beerbower Pottery Company, in whose hands it still remains.

TOM POTTER.

WRITTEN FOR THE CLAY-WORKER.

BUFFALO BRICK AND BUILDING NOTES.

IT IS WITH pleasure that I can again report increased activity in the building line. The superintendent of the Bureau of Buildings says the month just passed was one of the best building months in the history of the department. The permits issued aggregate a larger sum than any other September on record—347 permits were issued and the total estimated cost amounts to $1,077,865.

Our brick association has been obliged to refuse orders. The supply does not equal the demand, in fact, Contractor Franklin informed me he had been forced to buy the one and a half million required for the Hampshire street sewer out of town. He had got some from the Niagara Falls Brick Company and Brother Weyer had helped him out some from his yard at Wanakah.

Right here I might mention that two prominent brickmakers from the West visited Brother Weyer's plant the fore part of this month to see his twenty-one-chamber continuous kiln, with chambers extending clear across the kiln and holding over 60,000 to each chamber. It was not quite finished. Still he had burnt up to where the new chambers were being finished. You can wheel in one end and out the other, there being no partition wall in the center. They spoke very highly of the construction, plan and machinery. Everything that had been done was substantial, regardless of expense. He was increasing the drying capacity with a six-tunnel addition to his brick dryer. With his all-the-year-round plant he can work this winter, when our yards, with one exception (Brother Brush's), will be lying still. He will be in a position to help out in case of a brick famine in this city.

We are having very fine weather, only one light touch of frost, and the yards will all run up to the last minute.

Buffalo to Detroit.

Gustave Voelker has gone to Detroit to take charge of the Wolf brickyard. On this big yard he will no doubt have a chance to extend himself. The Wolf yard has a capacity of some twenty-six million brick, with a steam shovel to supply one Chambers end-cut machine, one Martin and eight Kramer soft-mud machines, and a demand for more than they can make. It will keep him thinking where to get the men to handle this output, for the great trouble there, as elsewhere, is to get the men.

They use oil for fuel, burning in scoved kilns (had just burned one holding 740,000 in about seven days); while the cost is a little more than with coal in this section, there is quite a saving in labor, as the head burner only has to regulate the valves. F. H. Wolf is a thoroughgoing, self-made, up-to-date business man, ready to adopt any improvement that he can see will benefit his yard. The brief visit I had with him in this city was cut short only too soon by time for leaving of the train.

Louis Kirkover, the old retired brickmaker of this city, stopped me on the street the other day and wanted to know if the Lancaster Brick Company had any pallet boards for sale. He told me he was thinking of going back to making brick again. He has the land out on Clinton street, but would have to purchase a complete new outfit.

Buffalo to Washington.

Monday, October 6, I boarded a chartered train on the Lehigh Valley railroad and accompanied Chapin Post, No. 2, G. A. R., on their recent trip to Washington. Had a delightful time; weather was beautiful; trees and flowers in full bloom. Many frequent visitors to Washington say they never saw the national capital look so well before. Forty years had passed since I had visited the nation's capital. Then the country was in the throes of a civil war. Now all was peace and prosperity. Many new and magnificent buildings and statues have been erected, parks laid out, electric roads and steamboat lines on the river, where once were ships of war. Thousands made the pilgrimage to Mt. Vernon by way of trolley and returned by steamboat. The parade was, as usual, a moving spectacle that held the spectators for over six hours, and one not soon to be forgotten. One man, said to be one hundred years old, from North Dakota, and dressed to represent Uncle Sam, was frisky as a colt. His comrades all carried bunches of wheat. South Dakota had canes with an ear of corn attached. Louisiana came with sticks of sugar cane and cotton on top. Georgia had cotton bands on their hats. Florida was represented by its palm leaves and a live crocodile in a box. Oklahoma had a banner stating, "We want Statehood." The constant, ever-changing panorama of passing posts kept the spectators there till 4:30 in the afternoon.

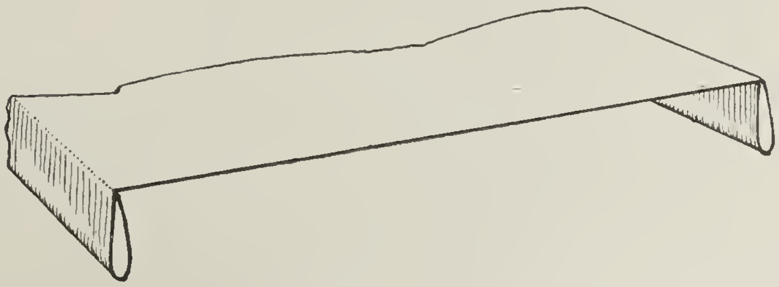
The membership of the Grand Army of the Republic is 263,745, a little more than half what it was twelve years ago. There is an annual loss of 14,500 members on an average. Not many years will elapse till they all have passed away, but the organization will undoubtedly be perpetuated by the Sons of Veterans.

On my way home I stopped off in Baltimore. I noticed the large amount of brick paving around the Baltimore & Ohio railroad depot, and as I sauntered up Charles street saw they were paving Chase street with the Metropolitan block, made in Canton, O. I also noticed a very large building on the opposite corner on which they were lighting the lamps, getting ready for the night gang to work all night. The cellar was 24 feet deep and it was to be eleven stories high. Could not learn the details, as foreman had just gone. NORTON.

Buffalo, Oct. 11, 1902.

IMPROVED ALUMINA STEEL PALLETS.

ONE OF THE LATEST improvements put out for the benefit of the clayworking trade is an improved aluminum steel pallet. The advantages claimed for same are that they will not rust or peel under any condition and are not affected by acids, gases, dampness or sudden change from heat to cold, or by extreme heat, and are non-corrosive. The Cleveland (O.) Car Company has recently made arrangements to manufacture these aluminum steel pallets under the inventor's guarantee. They have special machinery for double crimping the edges, which, they claim, adds more than four times the strength of the single crimped plate. Their double crimped edged aluminum steel plates, which we illustrate, are less perishable, for the reasons stated, than any metal pallets heretofore used, and they are in a position to offer them to the brick, tile and cement trades at prices which will justify their use. For further particulars, our readers are requested to write to the Cleveland Car Company.



Written for The Clay-Worker.

PACIFIC COAST NEWS.

BRICK MEN HERE report that the trade situation is still favorable and that the outlook indicates a continuation of the brisk demand. Building operations are moving along with apparently as much rush as six months ago. In the lines of special work some big contracts are expected to be given before long. The Board of Supervisors of this city have decided on the reconstruction of a part of the Sixth-street sewer, at a cost of $50,200. The part to be reconstructed extends from Tehama to Harrison street, and includes the lateral sewer in the adjacent streets which connect with the Sixth-street sewer. Some more important work is to be done at the Government Navy Yard, at Mare island, in San Francisco bay. It is understood that contractors will place orders for two million brick for this work.

Charles Calvin Merrill, who died in Mexico City a couple of months ago, left an estate valued at $45,000, most of which consisted of shares of stock in the Mexican Clay Manufacturing Company and in an unpaid balance due from that company. The will of Mr. Merrill is being probated at Los Angeles, Cal.

The Craycroft Brick Company, whose plant is located at Point Richmond, on San Francisco bay, has fired its first kiln of brick, and it is expected that the brick will be ready for the local market within a few days.

W. B. Gilbert, of this city, has recently been at Glen Ellen, Sonoma county, California, investigating the clay deposits of that district. It is understood that Mr. Gilbert and his associates will now go ahead with the proposition of establishing a brick plant at or near Glen Ellen.

After three months' preparation, Cary & Larson, proprietors of the Lodi brickyard, at Lodi, Cal., have been burning their first kiln, containing 185,000 brick. The proprietors are quite confident that their experiment will be successful.

H. A. Giddings is now using oil instead of wood at his burnings at Ventura, Cal. He has secured an oil burning plant of the latest improved make and has just completed the installation of it.

J. H. McKnight since disposing of his clay beds, a few months ago, at Corona, Cal., has associated himself with the Los Angeles Pressed Brick Company, owners of one of the largest manufacturing plants for clay goods in southern California. This company has recently erected a new and extensive plant in Los Angeles, and is now prepared to produce a large quantity of pressed brick, fire brick, etc. In order, however, to successfully compete with other firms in the same line of business, a better class of fire clay than they had been using was necessary, and the company, therefore, purchased through Mr. McKnight fifteen hundred acres from the San Joaquin Ranch Company for $15,000. The tract is in the Santa Ana canyon, and is said to contain an immense supply of valuable fire and potter's clay. Work on the opening up and developing of this deposit is now under way. There is said to be a good field for terra cotta and ornamental clay goods in southern California, but as yet there seems to be no one embarking in this particular line.

The fine clay deposits south of Grantsdale, Mont., are about to be submitted to a thorough test, and if the tests have the expected results the deposits will be extensively developed. The beds are very large. At present there is no pottery in the State of Montana, and a pottery located in the vicinity of Hamilton would be in a position to supply Montana, Washington and Oregon with yellow and stoneware. The Grantsdale clay would have to be mixed with a small quantity of clay similar to that used at Helena in the manufacture of bricks, about one of the brick clay to five of the Grantsdale clay.

W. G. Hunt, who recently disposed of his interest in the Montgomery brickyard, at Kalispell, Mont., has associated himself with H. A. Kohler, formerly of Echo, and they have made arrangements to manufacture brick at Sandpoint, Idaho. They have purchased sixty acres of land at Sandpoint, on which is a 32-foot layer of fine brick clay, and operations will be commenced at once. The plant will be on a large scale, a forty-horse-power boiler and engine having been already set up. Steam dryers will be constructed, so that the plant may be operated all winter. It is said that a low rate has been granted by the Great Northern, so that their brick can be placed in Spokane, Wash., and orders are reported for a million brick in advance by the new company. The outlook for the new yard is most encouraging, as the demand for brick in Spokane this season has been much greater than the local yards there could supply.

The Citizens' Club, of Chehalis, Wash., has received the returns on the samples of clay which were sent East some months ago for a practical test. A part of the clay, three samples from three deposits which are located close to Chehalis, was sent to the Ohio Pottery Company, at Zanesville, O. Two of these samples did not show up at all favorably for pottery, but one of them gave a most satisfactory test, and the indications are that a pottery plant will be established at Chehalis in the near future for the manufacture of crocks, jugs, jars, churns, etc. The returns from the Chisholm, Boyd & White Company, of Chicago, to whom samples of the same deposits had been sent, are also most satisfactory. The sample from which the pottery was made shows up best, but each of the other two clays will make excellent brick.

A large deposit of fine clay is reported to be located on Ditch Creek Flats, Morrow county, Oregon, on the lands of the Hepper Railroad and Coal Company.

The first kiln of pottery burned by Clapp & Thurston, proproprietors of the Annabella pottery, at Annabella, Utah, was completed a few weeks ago and turned out fairly well. The proprietors feel quite encouraged with it. They find that central clay is very good for water pipes, flower pots and other unglazed ware, while that brought from Willow creek makes some of the best glazed ware. They will start on a second lot within the next few days.

SUNSET.

San Francisco, Cal., Oct. 5.

BUILD BRIDGES OF BRICK.

The news that the famous London bridge is to be enlarged ought to be of great value and interest in this country, as it is a demonstration that the people of olden time knew much more about building permanent bridges and roadways than do the engineers of the twentieth century. In this country we are busy talking about the unsafe condition of the famous Brooklyn bridge, a steel structure which has been in existence less than a quarter of a century, and the trustees are talking about spending $1,000,000 in repairs, while in England they are preparing to enlarge a bridge that has stood for more than a century. Until a century ago London bridge was the only structure crossing the Thames, and for hundreds of years it accommodated all the traffic, but now that two-fifths of the people of London live on its southern side, the bridge is unable to handle the traffic, even with the help of the new Tower bridge, thirteen other bridges, a public ferry and a tunnel. An average of 22,000 teams and 100,000 pedestrians still cross the famous old bridge every day, and as its 53 feet of width is severely taxed to furnish accommodations, it has been decided to build out the sides and increase the width to 66 feet, no changes being made in the old stone foundations, and no steel entering into the construction of the new part. Steel rots and rusts in a few years, but granite and vitrified brick last forever, and these will be used in building out the "corbelings" or cantelevers that will support the extensions. It is a lesson America has been slow in learning, but many of the railroads of the country have seen the light and using nothing but stone and vitrified brick for their bridges wherever possible, and city and county governments will soon take similar action.—Ex.

Written for The Clay-Worker.

PORCELAIN OF GREAT VALUE.

THE ADMINISTRATION of the famous porcelain factory at Sevres, weary of watching the prosperity of fraudulent imitators, while its own business from a commercial point of view at all events languishes, has decided to place itself in direct relations with the public. Hitherto the purchase of modern work from the most renowned of all the European kilns has been a matter of some difficulty, with the result that the annual "turn-over" has fallen to something less than 100,000 francs.

The Paris exhibition of 1900, however, gave such a fillip to the trade that orders equivalent to the output of five or six ordinary years were received, and it has at least been realized that those who have something to sell, even when it takes the form of Sevres china, should try to deal directly with the purchaser. A retail shop is, therefore, to be opened at Paris, into which the wealthy amateur may walk and make his selection, without the trouble of a journey to headquarters. This concession to the ways of the modern world should be assured of success. Enormous quantities of imitation Sevres, well executed, beautifully decorated, and furnished with the proper marks, are sold everywhere at prices which are probably little, if at all, smaller than the State manufactory itself would charge for the genuine article.

The collector of china speedily finds—usually by experience as painful to the feelings as it is injurious to the pockets—that to "beware of the imitations" is the first lesson he has to learn. Every great style, every esteemed "mark" has been copied by men who are such consummate artists in forgery that even the elect are often in doubt, and are sometimes actually taken in. Dresden and Sevres have both suffered grievous things at the hands of the counterfeiters, but the French national establishment has been particularly unfortunate in this respect. Its unique distinction and the enormous prices commanded by the products of its best period have made it well worth while to copy its designs, to forge its marks and to imitate its beautiful coloring.

To reproduce exactly the exquisite tints obtained by the old pate tendre is a practical impossibility, since even the factory itself has forgotten how to do that: but the more modern and durable, if less artistic, pate dure is more readily dealt with. The amateur collector, however, constantly finds it extremely difficult to distinguish between them, and fraud is thus simplified. Avowed copies of "soft-paste" Sevres have been made in the past by English firms of the highest reputation for their own original work and without any thought of deceit, yet these efforts are to-day much more easily confounded with the genuine article than the modern French china, excellent as it is, which is deliberately intended to mislead.

The poreclain produced at Sevres is still beautiful and charmingly decorated, as well as being of high technical quality, but the secret of the old "soft-paste," which allowed of such exquisite effects of color, is no longer available. To make this paste—which is a mixture of fine clay and silex and other materials, while "hard-paste" is an amalgamation of china clay and feldspar—is not enough. It must be pure white. The modern imitation has a grayish hue, whereas the white of old Sevres was dazzling. Upon this fragile, semi-transparent porcelain the deliciously artificial groups and figures and landscapes of Boucher, Watteau, Lancret and Vanloo were painted, and the perfection of this soft paste at its best, which corresponds roughly to the reign of Mme. de Pompadour, enabled these pictures to blend with the "body" in a manner which no other European porcelain has ever rivaled. It is to this circumstance and to the pure beauty of its delicate colors that Sevres owes its fame.

To look upon the blue de roi or Rose du Barry is an abiding delight, while the modern chemist has never discovered a tint more delicately translucent than Helbol's turquoise. The Sevres factory traces its origin back to 1750, but by 1769 its most glorious period was over, and the more utilitarian hard-paste ware took the place of the delicate eggshell porcelain, with its tender blues and soft reds, its dainty figures, artificial landscapes and classical scenes, which are now worth a king's ransom. The collection at Windsor has been valued at £100,000, and a single plate of the service, in 144 pieces, which was made for Katherine II. of Russia, commands about £150 in the auction room. The finest examples, however, never come into the market. They are national possessions, locked up in museums and palaces, where even revolutions are powerless to touch them.

NEW CHINA FOR THE WHITE HOUSE.

President Orders a Complete Set Engraved with the Great Seal of the United States.

FINDING the service in the White House insufficient when entertaining on a large scale, President and Mrs. Roosevelt have decided to purchase a complete set of new china, and have asked an expert from Albany, N. Y., to submit designs for inspection, stipulating only that the great seal of the United States be the central figure of the decorative design.

It is claimed that this will be the first time the government seal has been so used. Literally this is true, though the main features of the seal have been used several times on the White House china. Mrs. Lincoln ordered a set in which the American shield, the eagle with outstretched wings, and the motto, "E Pluribus Unum," in colors, appeared as the central figure of the decorations.

In the set ordered by Mrs. Harrison the shield and the eagle with extended wings adorn the center of each dish and a band of forty-four stars forms part of the border design.

The shield and eagle also appear on the set ordered by Mrs. Grant, though in this instance they are a part of the border decoration instead of being the center.

The cut-glass service of the White House consists of over 500 pieces, on every one of which, from the salt cellars to the punch bowl, the coat-of-arms of the United States is engraved.

The mistress of the White House is authorized to purchase such china as the needs of the establishment may demand, but even the President himself may not take so much as one small dish away, the steward being held responsible for every piece after it has been numbered among the White House possessions.

During the Cleveland administration the damaged china in the White House closets was sold at auction, and the fact that plates sold at that time will to-day command $25 on the souvenir market shows plainly that even damaged dishes from the White House are not easily obtainable.

FUEL BRICK.

The organization of a Briquette Fuel Company in St. Louis is in line with the evolution of an industry that for some time has been making headway in Europe. The time is opportune for this enterprise, and local facilities are in favor of its success. The plant will be located at Litchfield, Ill., where coal is in generous abundance, and buildings and power are already available. The briquette is a coming factor in the economics of all fuel users, and economy is the watchword of the age in all industrial enterprises.—Age of Steel.

Among the industries of Kansas City which are enjoying prosperity, we believe the brickyards have their share, the only drawback being the lack of teams to deliver their brick, so there is nothing left for them to do but to invest their hard-earned profits in the purchase of horses, mules, wagons and harness, so they can do business.—Kansas City Architect and Builder.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

ENGLISH COUSINS PROFIT BY AMERICAN METHODS.

Information Desired on Artificial Draft.

Editor Clay-Worker:

We want to express to you our appreciation of your valuable paper and to say that we find the editorial and technical articles most useful, while the fancy and fiction in the advertisement columns are a never-failing source of interest.

We do not belong to the class of English firms who believe there is nothing worth knowing outside our own "tight little island," as we have learned many things from across the water. Last year a member of our firm spent three months in the States with great pleasure and profit, and this year another member, Mr. Maurice Sutcliffe, is spending four months with you, and the last we heard from him he was at Bucyrus, Ohio.

We should like to say two things: The first is, that if any of your readers, either clayworkers or engineers, are in England we will do our best to show them anything we have and to get them introductions to any of the best yards. The next is, to ask you to give us some articles on the "Results of Induced Draft Fans for Boilers and Kilns, as you Americans lead us considerably in this class of work.

Wishing you every success, yours faithfully,

SUTCLIFFE VENTILATING & DRYING CO.

Manchester, England, Oct. 3, 1902.

With the Wisconsin Clayworkers.

Editor Clay-Worker:

With the large amount of building of every character going on in the city of Milwaukee, there is a very active demand for brick, and both the local manufacturers and the representatives of outside companies are kept busy filling large orders. The great works of the Allis-Chalmers Company, at West Allis, are nearing completion. In the construction of those buildings many millions of brick have been used of varying qualities, from the ordinary brick of the superstructure to the finer qualities used for the interior of the boiler rooms. A number of large apartment houses are nearing completion and several others are about to be erected.

The Builders' and Traders' Exchange formally opened its handsome new quarters at 456 Broadway on Saturday evening, October 11. The building was erected from competitive designs submitted by members of the Milwaukee Architects' Club. It is of beautiful, artistic design, four stories in height. In the basement is an elaborately appointed buffet; on the second floor is the suite of rooms occupied by the Exchange, and on the third floor is a hall, where meetings will be held. The fourth floor is used by the Architects' Club. All the principal builders, manufacturers and material men of Milwaukee are members of the Exchange, and are naturally elated at finally being housed in a building of their own in the downtown portion of the city. The present officers of the Exchange are: President, H. Ferge; first vice president, M. Pattek; second vice president, George Schwarz; treasurer, John Bonner; secretary, John P. Sherer.

Ricketson & Schwarz have the contracts for many large and important public buildings being erected in various Wisconsin cities, notably the Carnegie libraries at Janesville and Beloit, Oconto and Neenah; the Neenah court house; the Green Bay city hall; the Waukesha insane asylum; the Oconomowoc high school; the Lancaster court house, and the Merrill court house. In the library work a fine quality of gray mottled brick from St. Louis is being used to splendid effect with Bedford stone. The addition to the Milwaukee Industrial School, for which they supplied the brick, was recently completed at a cost of about $65,000. The firm also has orders for 26,000 yards of paving brick in Milwaukee, the order calling for the Poston block, which they get from the Wabash Clay Company. They also have orders for 3,000 yards of paving brick for Sheboygan.

Concerning brick pavements in Milwaukee, leading dealers state that they could have sold larger quantities for use in this city this year had the paving blocks been available for work which was not advertised for until late in the season. In other years it is likely that the mileage of brick pavement in Milwaukee will be considerably advanced.

Secretary Schwarz is actively engaged in preparing a programme of unusual interest for the next meeting of the Wisconsin Clayworkers' Association, to be held at Green Bay, and has secured promises from a number of prominent men in various departments of brick structural work to read papers at that meeting, among them being City Engineer Poetsch, of Milwaukee; D. V. Purington, of Chicago, and W. D. Gates, of the American Terra Cotta Company. Mr. W. G. Titcomb, of Providence, R. I., well known to all brick men, has promised to attend the Green Bay convention and will come all the way from his home city to be present at and participate in that meeting.

Mr. Eden W. Drake, the Prohibition candidate for Governor of Wisconsin, was taken ill at Eau Claire while out campaigning in the interest of his party, and was compelled to cancel a number of his speaking engagements.

Natural Evolution—Horse to Steam Power.

Publishers Clay-Worker:

Inclosed find check for $2 to pay for my Clay-Worker the coming year. We have a small country yard, running a horsepower Horton machine, making 750,000 each season, which we sell here at home for $7 a thousand, kiln run. However, our trade is growing to such an extent that we will soon have to change to steam power. J. L. HANCOCK.

Benson, Minn.

The Situation in Chicago.

Editor Clay-Worker:

Chicago started early in the construction of sky-scraper buildings, and was among the first, if not the first, to use steel construction. Perhaps Chicago has not built as many of these structures as has her only rival, New York. Chicagoans have hardly recovered from the surprise which came to them when it became known that the First National Bank had decided to build on a large scale, the new improvement to take in the Monotauk building, which was but about ten years old, and in every way a first-class building of masonry construction, which was to be, and has already been torn down, when another of great magnitude comes to them. The First National Bank building and ground will represent when completed an expenditure of about $5,000,000.

Now comes the Continental National Bank, which proposes to build a twenty-story building, which will be erected on the southwest corner of La Salle and Adams streets, and will necessitate the removal of a building now occupied by them which was built about fifteen years ago—a fireproof, masonry constructed twelve-story building, the designs for which were made by Architects Burnham & Root. They also propose to add ten stories to the Rand & McNally building, including it in their new structure, which will cover about an acre in area, having 210 feet on La Salle street and 165 on Adams street. Mr. Cass Gilbert, of New York, has been selected as the architect of this new structure. Why a New York architect has been commissioned to make the plans for this new building is giving some of our people something to think of in this connection. There are some rather strange reasons thought to be behind the decision of the bank authorities in making the selection, but as the real reason is known only to the officers of the bank we refrain from mentioning any of them here.

Activity in building still continues, and those who are in touch with the conditions of the real estate and building interests speak of the future as being full of hope for still greater increase.

The report of the commissioner of buildings shows a considerable increase over the report for the preceding month, as well as a decided gain over the corresponding month of September of last year. During September permits were granted for the construction of 573 buildings, with a frontage of 16,817 feet, and costing $3,517,450, an increase over the corresponding month of a year ago of 81 buildings, 2,793 feet of frontage, and $603,290 in cost.

The Chicago correspondent of an exchange has written quite an elaborate article on the "white on bricks," in which he informs his readers, among other things, that "a number of scientific men, aided, it is said, by the chemical department of the University of Chicago, have taken up a matter which is of more than passing interest." Then follows nearly a column of information on the subject, from which I select the following as possibly of interest to the readers of The Clay-Worker:

"A man down in Indiana has recently taken out a patent on a remedy, consisting of one part beeswax, three parts paraffine, three parts Venice turpentine, one part dissolved glue, one part raw linseed oil, and three parts coal oil, which was mixed hot and applied to stone or brick. It is claimed that this coat is waterproof to prevent the exudation of any saline substance that may be contained in the building material."

The correspondent is very wise when he says: "I am not authentically informed, however, as to results of an experiment with this material." Many good things have come from Indiana; much good is still there—many good clayworkers—and I predict that they (the clayworkers) will be slow in the adoption of the use of this new material. Why compound so many materials One of those he mentions is all sufficient and capable of being used to a much better advantage than all this array of materials compounded.

All the Chicago dealers and manufacturers of brick, either pressed or common, are happy—have all that they can do in their lines.

The clayworking machinery men are all busy so far as Chicago manufacturers and dealers are concerned. One dealer when approached said: "I have sold more machines this year than in any year since I have been in business, and am going to make this my banner year. Like many other dealers in this line of manufacture, he is modest, claims not to be proud, and for this reason, and others which likely some of his competitors can guess, he is not willing to have a list made and published in The Clay-Worker. He says, however, The Clay-Worker is a good friend to the brick dealer and the machinery maker.

The Thomas Moulding Company have just booked an order for the enamel brick made by the Tiffany Enameled Brick Company, for the new First National Bank building, and are having all they can do in keeping up with their orders for front brick. All the manufacturers are in the same case—are troubled more to get the brick than to make the sales.

By reference to the Construction News report of work on the boards in the offices of the Chicago architects I find in their Oct. 11 issue they give two manufacturing buildings, two office buildings, two dwellings, a Home for Aged Jews, law school for the University of Chicago, one church and sixteen apartment buildings. If straws show how the wind blows, you have sixteen apartments to nine other buildings of all classes. It is sure that this city builds more in apartments than in any other line as regards the number of structures. It is to be regretted that they are mostly built to sell to parties outside the city who are looking for investments. The buildings are of the cheapest possible construction that the authorities will allow put up. In time—and not a very long one—these buildings will be hardly suitable for tenements. FAX.

Chicago, Oct. 13, 1902.

Brickyard Chat.

Editor Clay-Worker:

Men who have never had to shovel clay, bear off brick or sit up through the small hours of the night and worry over a kiln that is working contrary, who never had any experience on open yards, and have never seen a week's work melt away before a great storm, and the like, that has been the experience of a brickmaker who has been following the business for twenty years, do not know how to appreciate an up-to-date, modern plant, which works like a seven-day clock. The inexperienced when starting in the business usually put in a school chump, who knows nothing at all about clay, but sits on a stool and pencils out where you can cut off one man in the clay bank, another in the setting gang, another at the delivery belt, and put in an inexperienced engineer because he is cheaper. They can very easily figure on a high stool and polished desk, with plenty of "ferments" to incite their brains, how they can make about 200 per cent. on their investment, and how, by grinding down the men who are doing the work, they can save enough to take a trip to the seashore during the hot days of August, etc. They come around the yard with patent leathers on, and wipe the sand and smoke off their eyeglasses with a silk handkerchief and say, "What, two setters and tossers to set thirty thousand brick per day? Eight men to dig and load thirty thousand per day," and if they should happen to walk down to the clay bank they would have to find a cool place under a shed on a spring truck and fan, and wipe the perspiration for half an hour before they could ride home in a rubber-tired turnout. What do men expect of their fellowmen to-day? Make 200 per cent. on their work and then grumble because they cannot make 300 per cent., when they do nothing but profit by some other fellow's lifetime experience. They would not do for $100 what some men do for one dollar.

What I want to say is this: Some men want to make a fortune off their fellow-men in a few years and retire, and then see the same men work out their lives for their gain, and when they get too old to be worth 200 per cent. profit to them, after they have worked out their younger days, then to see them turned out, as old horses, to die. Is this just, in the name of humanity? No. If you have a man who is worth fifty dollars per month don't pay him twenty-five. If he is worth one hundred, give it to him. He should share the profits to a certain extent, because he is the maker of them.

Why do we have this great coal strike to-day? Because the men who grind down the true manhood to one penny for every 500 per cent. profit are robbing them of their life's blood. They want to make one million dollars for every dollar these poor devils make who risk their lives in the bowels of the earth. Is this just? And the public are made to suffer as well as the diggers of the coal. I will say, further, that I practice what I preach, and I always advance my men according to what they are worth and do for me. I think it is taking advantage of anyone to do otherwise, just because you can do so. I have known men in my neighborhood who have been working for $40 per month, and they would repeatedly ask for a raise, and the boss would say: "No, we are hardly making expenses and cannot give you more. A new yard was started and offered him $75. Then the old boss said: "Now, I don't want you to leave me. I will raise you to $75 to stay." Had the boss not been taking advantage of him because he could do so when there was no competition, and when competition did come, then offer him what he knew all the time the man was worth to him and what he should have paid him. I experienced this same thing in my younger days when working on a salary. I was working for $50, and could get no more at this place, so I took another job for $75, and my old boss said: "Don't go. I will give you the same to stay with me." But I left him, for I knew he would never have given me more unless compelled to do so by competition.

Experience is the best teacher. Put yourself in the other fellow's place and do by him as you would be done by. If you have a man working for you to-day for fifty dollars and you know he is worth one hundred, give it to him before he leaves you and you are compelled to offer him what he is worth.

I have heard men boast of their lady stenographer, how she did two men's work in the office, and they paid her but $8 a week, and said she was worth $20 to them. Is this not taking advantage of her just because they can? Let the brickmakers get together and demand more for their product, instead of trying to grind down their men, for the brickyard man is the hardest worked of any class of people on the market. Economize at the right end of the string. Brick to-day are the cheapest manufactured article on the market, and the manufacturers are to blame for it. They are a necessary article and must be had as much as any other article which is produced. Why not demand a fair price for them, which will justify the manufacturer in getting a profit out of the business and paying his men what they were worth.

STIFF MUD.

Wants Large Size Drain Tile.

Editor Clay-Worker:

Perhaps some of your readers can tell me where I can get large size tile from ten to sixteen inches, f. o. b. their nearest station of the Illinois Central railroad. I am making tile up to eight inches very satisfactorily, but cannot supply the demand for large sizes, and want several carloads.

We are selling brick for $7 to $8 for kiln run, and cannot supply the demand for either brick or tile. The weather has been very unfavorable and we will not make more than 3,000,000 this season. Could have sold 5,000,000 easily. It has rained here nearly every day for three weeks and it has been almost impossible to keep a crew together. Best wishes for The Clay-Worker.

Walter Clark.

Clarksdale, Miss., Oct. 6.

Unless the situation changes, lumps of coal will not be put in Christmas stockings this year.—Puck.

"Most ahguments," said Uncle Eben, "doesn't decide nuffin' excep' de question of which one is gwine ter keep still an' let de yuthuh do de talkin.' "—Washington Star.

WITH IOWA CLAYWORKERS.

Editor Clay-Worker:

Rainy weather continues to make the lot of the brick and tilemaker in northwestern Iowa a hard one. The different plants expected that, with fair weather the latter part of the season, the back orders could be cleaned up and possibly some stock made up for winter trade. On the other hand, Jupiter Pluvius has been at the bat and continued to rap out home runs in the shape of heavy downpours until life has been made miserable for the poor clayworker. A conservative estimate of the loss occasioned by bad weather is placed at 25 per cent. Not a single plant in this part of the State has escaped loss of time and business this season. Some of them have been damaged considerably, and while some have been hindered more than others, all have suffered to a more or less extent. The business done under these conditions has not been a profitable one. Orders could not be shipped promptly as in other seasons. There has been an advance in the price of coal and the condition of the clay for working through the machinery has not enabled the plants to turn out the ordinary quantities.

"It's an ill wind that blows no good," is an old saying, and holds good in this instance. While the wet weather has hindered the manufacture of brick and tile it has stimulated a greater demand than ever before for drain tile. With this heavy demand comes another feature which means more money for the maker in the shape of larger sizes. Six, eight and ten inches have been the popular sizes. Fourteen, sixteen and eighteen will be the popular sizes from now on. Lowlands in northwestern Iowa have until this year found a ready sale, because they could be bought for less, and with ordinary weather a fairly good crop could be raised on them. With tiling they could be made equal to untiled high lands. This year has settled the low-land farming, and convinced the farmer that the only safe way is to have a system of tiling through his farm.

The backward season will make it necessary to work very late this year, and, in fact, several of the larger plants have expressed their intention of working all winter, and provisions are contemplated to enable them to carry out their intention.

Messrs. Straight & Campbell, of Lehigh, Ia., are completing their sixth kiln of their new plant erected the past winter and spring. Their entire roduct has been easily disposed of this season, and Mr. Straight states that the firm will build at least two, if not three, new kilns next season. They are very much pleased with their outlook for future business and express satisfaction with their new location.

Messrs. Bradshaw & Co., of this city, are unloading machinery for their new brick and tile plant at the south edge of the city, on a tract of eight acres of ground adjoining the Minneapolis & St. Paul railroad. The new plant will have a capacity of from 15,000 to 25,000 per day. Brick is now being burnt for the kilns, and the firm expects to put up eight to ten kilns in all. The main building will be 40 by 65 feet. It is almost completed, and two cars of machinery are now being unloaded into it. The new plant will make sewer pipe, as well as pressed brick, both buff and red. It is estimated that the deposit of clay available for their use is 50 feet through. They expect to make sewer pipe in all the sizes up to 36-inch. The erection of the new plant has been made necessary by the extra expense attending the making of their products at their old plant, as about one-third of the clay had to be mined. They do not expect to operate the old plant longer than next year. They hope to have the new plant all ready for business by spring.

JAMES E. DOWNING.

ADVERTISING NUGGETS.

Don't expect to reap a good business from bad advertising.

Judicious advertising of the right sort will start the business ball rolling and keep it rolling.

The right kind of an ad. doesn't have to have the position of honor at the top of the column to attract attention. It is like a house set on a hill and cannot be hid.—Printer's Ink.

OFFICIAL ANNOUNCEMENT.

The Seventeenth Annual Convention of the National Brick Manufacturers' Association and the American Ceramic Society To Be Held at Boston, Mass., February 2 to 7, 1903.

THE QUESTION of time and place for holding the seventeenth annual convention of the National Brick Manufacturers' Association has been canvassed thoroughly, and after weighing carefully the advantages offered by the several cities from which invitations were received, it has been determined to accept the call from New England and hold our next meeting in Boston, February 2 to 7, 1903.

While Boston, though called the Hub, is somewhat one side of the center geographically, it is so easily reached by fast through trains from every section of the country that its one-sidedness in location is but a slight disadvantage which is more than offset, many times over, by its many-sidedness in all other respects.

No city in all the nation possesses more of interest to the progressive workers in every calling than does Boston. It is one of the great head centers of industrial, commercial and educational influences which tend toward the advancement and betterment of all mankind. No city is richer in historical lore. The Old South Church and Bunker Hill are dear to the hearts of every American citizen, while in modern institutions of learning she leads the world. Her great Public Library, Institute of Technology, Museum of Fine Arts and Charitable Mechanics' Association are only a few of her noted institutions of special interest to visitors. Her underground railway is a model system of rapid transportation.

But in choosing our next meeting place we have been influenced more, even, than by these many attractions, by the fact that New England is the birthplace of many of our older members, and a convention in Boston will enable them to visit the home of their childhood. Even the younger members, particularly those whose parents were New Englanders, will welcome an opportunity of visiting the scenes of the tribulations and triumphs of the Puritans. As this is our first meeting in New England, it is confidently anticipated that a large and most memorable gathering will result. We are assured by the local manufacturers of unequaled facilities for associational work. Further details as to place of meeting, reduced railroad rates, exhibition hall, etc., etc., will be announced subsequently.

THE EXECUTIVE COMMITTEE,
GEORGE M. FISKE, President.
THEO. A. RANDALL, Secretary.

PEACE AND PLENTY IN THE LAND OF COTTON.

Publishers Clay-Worker:

We have had our share of business this season. There has been quite a great deal of building going on here this year, but the price of brick have remained the same. A large cement plant was built here some time ago, and they are now making the finest Portland cement out of the rock which has been lying here for years with no one to think it was worth working. We are contractors as well as brick manufacturers, and are just finishing a pretty church, which is brick throughout and is quite a credit to our little town. Wishing The Clay-Worker the success it deserves,

McGRATH BROS.

Demopolis, Ala.

Written for The Clay-Worker.

FIRST WHITEWARE POTTERY IN THE WEST RAZED.

A New Brick Structure Takes Its Place.

WHAT HAS BEEN KNOWN as the "Old End" portion of the plant of the Knowles, Taylor & Knowles Company, of East Liverpool, and what was the first white pottery in the West, has been wrecked, and what was a shackly old frame building is now replaced with a substantial four-story brick building, equipped with the very best and latest type of machinery throughout. The new buildings front for about 200 feet on Walnut street and 100 feet on Forest street.

The building fronts on Walnut street, and the portion that fronts for about twenty feet on Walnut and sides on Forest street for about 100 feet is four stories in height. This portion of the new building is used exclusively as clay shops, and is equally divided into two portions, one-half being devoted to pressing departments and one-half to jigger shops. A part of that portion that fronts on Walnut street is one-story only in height, and is devoted entirely to kiln rooms. The two-story buildings at the right are the offices of the company.

In the removal of the old buildings an interesting landmark has been removed and the first whiteware pottery in the West destroyed. Not only was this the first plant in which whiteware was made, but it was the first plant in which the pull-down was used. This important factor in the pottery business was given to the world by Isaac W. Knowles, who first built the plant and who was the founder of the vast plant of the Knowles, Taylor & Knowles Company that invented the same.

Mr. Knowles first erected the buildings that have been but recently wrecked, and did not live to see the wrecking of his old plant, or the buildings which took their place. This plant was not the first pottery in the West, but was the first one whose capacity was devoted to the production of whiteware. The first pottery was erected by Bennett Brothers, and the plant was the second one erected in East Liverpool and the first one to produce whiteware. For more than thirty years after the first pottery was erected in East Liverpool yellow-ware was produced, but in the year 1873 Knowles, Taylor & Knowles turned their attention to the production of whiteware. The venture was a success, and many of the other potteries which had sprung up in the meanwhile now turned their attention also to the production of this class of goods.

The Knowles, Taylor & Knowles Company was founded by Isaac W. Knowles, and the firm of Knowles, Taylor & Knowles was formed by I. W. Knowles, John N. Taylor and Homer S. Knowles in 1878. At this time the capacity of the plant was limited to two kilns, having been a one-kiln plant until the firm was formed. In 1884 the capacity was increased to five kilns. In 1888 the china works, a plant for the production of true china only, was erected and had a capacity of six kilns. This portion of the new extensive plant was destroyed by fire in 1889, but was, however, speedily rebuilt. The company was later incorporated with the corporative name of the Knowles, Taylor & Knowles Company. The equipment of the immense plant of the Knowles, Taylor & Knowles Company is the best that money can buy, and all of the plants are up-to-date in every detail. They are all so arranged that the raw materials may be handled at a minimum cost and all the different plants front on railroad sidings so that the raw materials may be unloaded direct from the cars into the bins.

The light for the vast works is well supplied by the company's own electric light plant, which is complete in every detail. They have their own private telephone exchange, which is connected with all of the different telephone systems in the city, and which throws all of the different departments into direct communication with each other. They operate their own engraving department and do all of their work in this line. They also operate a complete wood-working department and make everything they use in this line, no matter for what purpose. They also operate their own forge and machine shops, and do nearly all of their own work in this line.

All parts of the different buildings are thoroughly sprinkled with the automatic sprinkler system, thus reducing the risk to a minimum and also lowering the insurance rates to the lowest possible notch.

The capital stock of the Knowles, Taylor & Knowles Company is $1,000,000, all of which is paid in. The company owns and operates thirty-one ware kilns and thirteen decorating kilns. The concern manufacture three distinct classes of ware—white granite, semi-porcelain and china. Their lines are as complete as any on the American market, and the concern never fails to have as much business as they can well take care of.

THE BUSINESS EBB IN EUROPE.

The business situation in Europe for some time past has been more or less gloomy. It is a case of a periodic ebb that sooner or later will send its undertow another way. The shallows stretch from Russia to Spain. Austria has its keel in the mud, Germany is stoutly grappling with depression, and Belgium, Italy, Holland and the Scandinavian countries are in more or less like circumstances. France is showing something of a rally, and has at present the brighter horizon of the continental countries. Great Britain has had buffetings with adverse conditions, both within and without its sea ramparts of mobile granite. It has been beleagured with astute and vicious competition, and as the best hated and most feared of industrial stalwarts it has been smitten hip and thigh, but remains as redoubtable as ever, and in the face of odds sturdily holding its own. With nations as with individuals the mutations of time have their morning, noon and night, till the moving shadow on the face of the dial completes its circle. The sovereignty of primacy in trade changes hands, and Great Britain is no exception to the rule. Sceptres change hands in the marts of commerce as on the thrones of empires, and there will never be a halt in these transfers. Taking the situation altogether on the other side of the Atlantic, commercial depression is widespread, if graded in degree. The causes leading to these conditions are many-sided, complicated or obscure. If history repeats itself, this depression will be but temporary, though the process of change may be slow-footed. In commenting on these conditions a representative of the American Tool Company, of Cleveland, O., after a year's tour of the markets of the old world, says: "I have visited, solely in a business way, every country in Europe, with the exception of the Balkan states, and everywhere is heard the cry of hard times. This universal depression, however, will hardly continue much longer. As regards the future of our export trade to Europe, there is but little foundation for the belief that Europe will in time be able to dispense with the bulk of goods she is now importing from the United States. But one thing is certain, viz., that American manufacturers will be forced to expend more energy than they have heretofore shown if they are to hold their own in the old and open new markets. There is a great deal to tell of openings abroad for our manufacturers, but the only safe advice to those who think they have something that is needed abroad is: Send out a good man, and if there is any business to be got he will find it."

As it is, the present era of prosperity in the United States is a matter of mystery to the less fortunate in other countries. Were it otherwise, the depression of business in Europe would have its reflex in this country."—Age of Steel.

Saving a few dollars in the first cost of a machine may be the worst sort of extravagance.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

NINETEENTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

Foreign subscriptions 65 cents additional.

☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

27 Monument Place.] T. A. RANDALL & CO., Indianapolis.

XXXVIII. OCTOBER, 1902. No. 4.

CURRENT COMMENT.

The right time to do a thing is always now.

* * *

This applies to everything in life, but it applies with distinct and peculiar force to our own craft.

* * *

Now is the time to give that order for the new machine that has been a "long felt want." Now is the time to overhaul the whole equipment and see that everything is of the best. Also, now is a good time to see that the subscription to the Clay-Worker is in running order.

* * *

The time is now for a review of the whole situation, the past and the present, so as to get as close an estimate as possible of the future. Find out the little leakages, what effect they have upon the vessel and what it would cost to stop them. Set out the pieces as on a chess board and play the game of the past season, in your mind, over again, but differently, to get a lesson from it for the future.

* * *

The time is right now to remember that American manufacturers of machinery have attained their pre-eminent and dominant position in the world by using only the best, in brains and tools, by promptly discarding the out-of-date machine tool and substituting something better; leaving to others the old-style machine and the antiquated method. The clayworker, the manufacturer, of whatever kind of ware from clay, who is well advised, will follow this example, the only one that leads on to the sure road to success.

* * *

There are many improvements to be made on the brick plant and now is the time to start on them. If we are in a rut in the method of getting our clay, in preparing it, drying it, burning it, to say nothing of handling and selling it, now is the time to pass everything in review, see what changes should be made and make them. Fuel is dear; then let us see that our system of burning is the best. Is there complaint about the bricks as received at the building? Then it is to our interest to see to the handling, and if, in our own yards, power is wasted and culls are copious, the machinery should be examined with very critical eye.

It's time.

* * *

The sun of knowledge rises in the east. 'Tis well, therefore, for educational organizations like the National Brick Manufacturers' Association and the American Ceramic Society to "look to the East." Hence, the selection of Boston for the next national convention meets with general approval. The Eastern clayworkers will attend because it will be so convenient, and the Western members because of a desire to see the "Hub" and visit with her brickmakers, than whom there are none more hospitable. From the first meeting in Cincinnati, in 1886, each succeeding convention has seemed the best, and so it will be with Boston. Not only will there be a large attendance there, but in the character of the proceedings and in social features Boston will set a new standard. Clayworkers who are not already identified with the association will be welcomed and made to realize that it is good to meet together if they will come to Boston, Feb. 2 to 7, 1903. See official announcement on a preceding page.

THE COAL STRIKE.

The fear we felt last month that the end of the deplorable struggle between capital and labor was not within sight was fully and painfully justified. The serious consequences for the people with fewest of this world's goods and the still worse condition to come when winter is here make a very black picture, with but one ray of light to illumine it. The action of the chief executive of this country was so absolutely correct and so self-restrained as to compel the admiration, not only of all parties, but of all the world. The temptation might well have been great to attempt arbitrary action and force a settlement, for the sympathies of millions of citizens would have been with it, but in spite of all the temptation, that sublime principle of our glorious Constitution, the sacredness of individual liberty within the law, was held intact and reaffirmed.

CLAY EXHIBITS AT THE WORLD'S FAIR.

At the last convention of the N. B. M. A. Mr. Jefferson Middleton, of the U. S. Geological Survey (Mr. Middleton is the clay man of the survey), proposed that a committee of five should be appointed by the president to encourage and promote the exhibition of clay products at the St. Louis World's Fair. The resolution was carried, the committee was recently appointed, with Prof. H. A. Wheeler, of St. Louis, as chairman, and the first meeting has been called, to be held at St. Louis the 20th of this month. The members of the committee appointed by President Fiske are: Prof. H. A. Wheeler, chairman, St. Louis; Messrs. Jefferson Middleton, U. S. Geological Survey, Washington, D. C.; George J. M. Ashby, St. Louis (secretary pro tem.); H. de Johannis, Chicago; Arthur D. Rogers, Boston, Mass. Mr. George H. Hartwell, of Chicago, has been invited to the meeting, and the president and secretary of the N. B. M. A. are members, ex officio, of the committee.

Though all the members appointed on the committee are men well known to clayworkers, none of them is, now, a manufacturer of clay ware nor directly interested in manufacturing. This offers the advantage that they cannot be embarrassed by any thought of a possible feeling of personal interest as themselves exhibitors or competitors of exhibitors.

This committee will represent the interests of clayworkers of every kind at what promises to be the greatest of all the great world's fairs, and we plead for a hearty support to it. Such support will react to the benefit of everyone, not only to the exhibitor, but to every clayworker, and he will find his lines fall in pleasanter places through the higher appreciation in the public mind, brought about by our splendid exhibits of every description of manufacture from clay.

EXPANSION OF AMERICAN COMMERCE.

In an address given by Hon. O. P. Austin, Chief of the Bureau of Statistics, before the Manufacturers' Club of Philadelphia, the multitudinous immensity of the figures—running into tens of billions—was such that the average mind, like the aboriginal who can only count up to five, is scarcely able to grasp their meaning, except as units, tens and hundreds. We have more mills, more miles of railway, more fields of wheat and corn and cotton than any other country in the world, and our exports, that in 1870 were less than our imports, have grown so that, from 1870 to 1902, the excess of our exports over our imports is over $5,000,000,000.

Turning to the consideration of our home markets, Mr. Austin says: "There are four great groups of manufactures which stubbornly hold their own in the import trade, despite the efforts of the manufacturers of the country to capture the home market. These four groups are manufactures of cotton, manufactures of fibers, manufactures of silk and chemicals. It seems a strange, almost incredible fact, that the country which produces three-fourths of the cotton of the world and boasts of having the best manufacturing machinery, the most successful inventors and the most ingenious and successful workmen, should be importing many million dollars' worth of cotton manufactures every year and should actually have permitted that importation to increase year by year rather than diminish, as is the case with most classes of manufactures."

It seems to us that we may call especial attention to another branch, that of ceramics. We have here raw materials, clays and kaolins, which in abundance and quality are unequaled in the world. The speaker's words of praise, applied to manufacturers of machinery, fully apply to our machine men in every branch of clayworking. Our workmen, too, are no less ingenious and successful than those in other lines, and it is time that, instead of importing $10,000,000 worth of chinaware a year, our excess of exports over imports should flow in this direction also.

COMBINATIONS AND TRUSTS.

The trust bogy is exercising the minds of the "Children of Men" in many industrial countries, and one of the recent evidences of this is the action taken by the Czar of Russia. Trusts, syndicates and combines have been agitating the industrial world for a long time, but just at present there is more anxiety as to their ultimate effect in Germany than elsewhere. It is not generally known that Germany is, of all countries, the home of the trust. There it is not unwillingly tolerated by the authorities, but its existence, in every branch of production, is encouraged. The Germans are asking each other, in their most disastrous time of trade depression the modern empire has known: "What are the Kartells (syndicates) doing for us, the trusts which exist for the prevention of ruinous competition and to distribute, as fairly as possible, the benefits of trade among all classes?" The complete failure to do this is shown in the pitiful conditions of the past year and more in that country. The question arises in our minds: If, in an autocratically ruled state, syndicates that are favored by the powers that be, have so little effect, what need is there for the mass of the people elsewhere to fear them?

Men who discuss the matter turn their eyes to America, the home of the most marvelous prosperity and the most stupendous trusts, and find much to admire in our trusts, because of their completeness. The steel trust, for instance, gets hold of everything belonging to its business and does not allow some other trust to control anything—such as raw material, or transportation—that is of vital importance to it; hence the steel trust is able to effectively control, or, at least, to influence, prices. This it has done in the boom times by preventing an extraordinary inflation. It is hoped that when the inevitable duller times set in it will be able to prevent undue depression.

The tendency of the most advanced peoples to-day is towards the highest organization and economy of effort. As a consequence of this, great numbers of middlemen, of small masters and independent workmen have to cease wasting their own and the world's time and step on one side, or find some other work to do. Beyond the temporary inconvenience and suffering which all changes make, the world is all the better for this. In this country no man can yet show that mischief has been done by the action of trade combinations. They steady markets, equalize supply of goods, prevent extraordinary fluctuations of price, and if the men who do the work of organization make a few millions of profit, they deserve them.

In our own line combines and trusts have, unhappily, from the nature of things, met with little success. In the boom times of brickmaking a combine is not needed, and in dull times it is of no use. In dull times there are sure to be some manufacturers who, anxious to keep their works going, yield to the temptation to cut prices and the combine goes to pieces.

In this matter of the regulation of trade for the greatest good of all we are still groping in the dark, and it seems a disgrace to us that, with all our progress, we are yet still little further advanced in regard to trade competition than were our savage forefathers of a thousand or more years ago.

TRADE LITERATURE.

F. E. Hook, Hudson, Mich., is mailing a little booklet with a very catchy cover design. It tells how to save painter's bills by using Hook's pneumatic coating machine, which is advertised on page 368 of this issue. Manufacturers who wish either to whitewash or paint their factory buildings will find the Hook methods both effective and economical. The little book will tell you all about it.

The Jeffrey Century Belt Conveyors are fully described and very handsomely illustrated in a new catalogue received from the Jeffrey Manufacturing Company, Columbus, O. It is printed in two colors, and contains matter of interest on elevating and conveying machinery of all sorts. They will be pleased to mail a copy to any of our readers desiring information on such matters.

The American Blower Company, Detroit, Mich., have out a dainty little booklet, pocket size, containing a fine general view of their immense plant and interior views of all the principal departments. These views are grouped in an exceptionally artistic manner. They will be pleased to mail a copy to any of our readers, that they may see how extensive a plant they have, and how well it is equipped for the production of engines, fans, blowers and all manner of dry kiln fixtures.

The Fernholz Brick Machinery Company, St. Louis, Mo., have favored us with a copy of their new catalogue, a handsome and substantial book of forty pages, devoted to dry press machinery and brickyard supplies. Those of our readers who are interested in this process of manufacture will find much valuable matter in the book. Among other special features is a full description of the Fernholz patent mold-box, for which peculiar advantages are claimed. The book also contains cuts of clay mixers, clay gatherers, clay crushers and all manner of brickyard machinery and equipment. Write for a copy, mentioning The Clay-Worker.

The C. W. Raymond Co., Dayton, O., have recently issued a new and exceptionally handsome catalogue. It is a book of 130 pages. The cover design, though in one color, is very rich and pleasing in appearance. The chief illustration is a superb engraving of their "999" brick machine and automatic down-cut cutting table, following which is a brief treatise of the stiff plastic process of making brick. All of their large line of brick machinery, cutting tables, clay crushers, represses, pug mills, mold-sanding machines, clay screens, dry pans, and in fact everything in the way of machinery used about a modern brickyard is carefully described and illustrated. Every brickmaker ought to have a copy of this book, and can get it gratis by simply asking them for it.

Hendrick's Commercial Register. A new edition of this valuable directory is just out. It contains more than 300,000 names and addresses of manufacturers and dealers in all manner of structural materials, each division being carefully classified. It is an invaluable work to every one desiring a list of those engaged in the various building industries. It contains the best published list of brick manufacturers on the market. It is substantially bound in cloth and sent by mail or express, charges prepaid, to any address in the United States for $6 by the publishers, S. E. Hendricks & Co., 76 Elm street, New York city. Those of our readers who prefer to do so, can order the book through The Clay-Worker office.

Warner's Perfect Open-Air System of handling and drying brick is fully set forth in an attractive catalogue intended for general circulation among the brickmakers of the United States and Canada. A feature of the Warner system which strikes us as being new is the use of canvas for covering drying racks. It is claimed that by this process green brick can be more rapidly covered or uncovered in the racks than by any other method.

An Extensive Line of fancy earthenware is well illustrated in the annual catalogue being sent out by A. H. Hews & Co., North Cambridge, Mass. Almost every conceivable design of flower pot and vase made of clay is pictured, as is also a full line of cuspidors and a lot of novelties, such as money banks, umbrella racks, etc. Every clayworker ought to have something of this sort in his home, for it shows the art possibilities of potter's clay. Those desiring to make selections are requested to write for a copy of the catalogue.

"Hunt Cable Railways," as designed and built by C. W. Hunt Company, 45 Broadway, New York City, N. Y., are carefully illustrated in a twenty-page catalogue, a copy of which, we take it, will be forwarded to anyone sufficiently interested to write for same. From the sketches and pictures shown it would appear that the Hunt cable railway system may be easily adapted to brick, tile and pottery plants. It is a field that Messrs. Hunt well may cultivate carefully. There may not be millions in it, but there is enough to justify very considerate attention.

CONVENTION DATES.

The Illinois Clayworkers' Association will hold its twenty-fifth annual convention at Bloomington, Ill., Jan. 6 and 7, 1903.

The Wisconsin Clayworkers' Association will hold its third annual convention at Green Bay, Wis., Jan. 27 to 29, 1903.

The American Ceramic Society will hold its fifth annual convention at Boston, Mass., Feb. 2 and 3, 1903.

The National Brick Manufacturers' Association will hold its seventeenth annual convention at Boston, Mass., Feb. 4 to 7, 1903.

ASSISTANT SECRETARY OF THE N. B. M. A. HONORED.

At the recent National Encampment at Washington, D. C., Miss A. M. Wallace, the assistant secretary of the N. B. M. A., was elected national president of the Ladies' Aid Society, auxiliary to the Sons of Veterans, a position which her business experience will enable her to fill with marked ability, and it is a safe prophecy that this organization of earnest, patriotic women will prosper under Miss Wallace's administration.

TABLE OF CONTENTS.

New St. Louis—World's Fair City, 1904. 317
What is an Economical Burn? 320
Things That Are To Be 321
The Evolution of the Potter's Wheel 322
A Famous Brick Center........ 253
Light and Heat.......... 326
Obituary—J. D. Fate 327
South Bend Brick Streets....... 328
Bricks and Bricklaying........ 333
New Brick Plants in Cleveland. 334
Foreign Scrapings 336
By The Light of the Kiln Fire. 338
Brick in a New Role.......... 341
About Limestone in Clay 341
The National Dry Kiln Company's New Factory........... 342
Afar Cry for Ceramic Knowledge.......... 342
Water Tanks.......... 342
Improved Alumina Steel Pallets 353
Build Bridges of Brick 354
Porcelain of Great Value....... 355
New China for the White House 355
Fuel Brick.......... 355
Official Announcement 358

CORRESPONDENCE :

Capital Brick and Building News 324
Wilmington, Delaware......... 329
Promotion of the Brick Business 331
Notes from Tidewater, Va...... 332
The Baltimore Brick Company and Monumental City Generally 339
Georgia Brickmakers Busy..... 339
Brickyards on the Hudson..... 340
St. Louis Brick and Building News. 343
Pottery News.......... 352
Buffalo Brick and Building News. 353
Pacific Coast News.......... 354
English Cousins Profit by American Methods........... 356
With the Wisconsin Clayworkers 356
Natural Evolution—Horse to Steam Power 356
The Situation in Chicago....... 356
Brickyard Chat.......... 357
Wants Large Size Drain Tile .. 357
With Iowa Clay Workers....... 358
Peace and Plenty in the Land of Cotton.......... 358
Pittsburg and Western Pennsylvania Clay Industries..... 368

EDITORIAL:

Current Comment 360
The Coal Strike.......... 360
Clay Exhibits at the World's Fair.......... 360
Expansion of American Commerce.......... 361
Combinations and Trusts 361
Convention Dates.......... 362
Assistant Secretary of the N. B. M. A. Honored 362
Trade Literature 361
Editorial Notes and Clippings. 364

MISCELLANY:

Incompetent Workmen........ 327
Brick for London's Newest Bath House.......... 329
A Veteran Brickmaker......... 338
First Whiteware Pottery in the West Razed 359
The Business Ebb in Europe... 359

Index to Advertisements on Front Inside Cover Page.

WANTED—An experienced man in the art of brickmaking to join company now forming to make brick near the city of LaCrosse, Wis. Address, W. SMITH GRUBBER CO.,
10 2 d b LaCrosse, Wis.

FOR SALE—One second-hand 4-mold brick press of standard make in first-class condition. SIMPSON ENGINEERING CO.,
10 1 d 1763 Monadnock Bldg., Chicago, Ill.

TO LET—Large Eastern pottery, 3 kilns, boiler, engine and machinery. 250 feet water front on first class wharf. S. N. C.,
10 1 d b Care Clay-Worker.

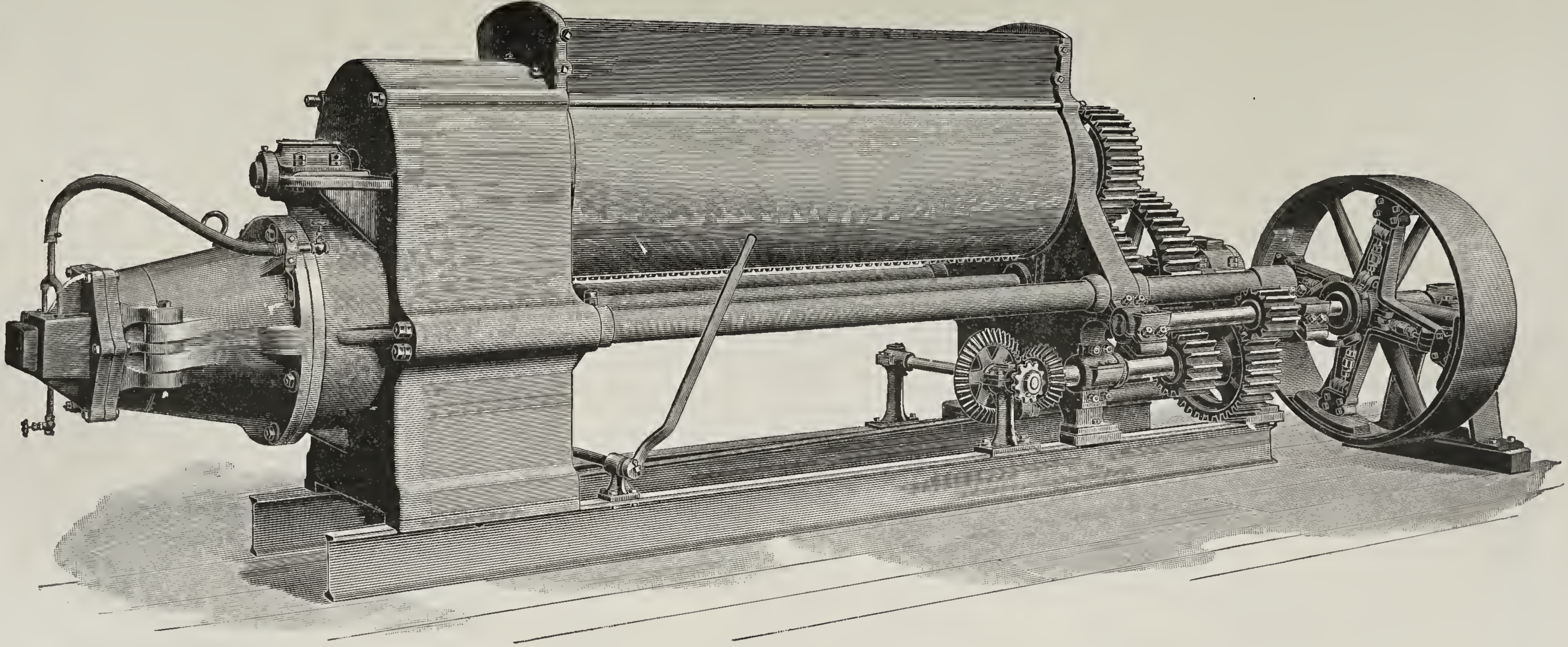
FOR SALE—A lease, with the privilege of purchase, a tract of land lying near the mouth of the Illinois river, in Jersey County Ills, containing an inexhaustible supply of the finest shale, a vein of Gypsum. and also said to be underlaid with a fine vein of coal. Rail and river transportaition. T. P. PLUMRIDGE.
10 tf d 1119 Missouri Trust Bldg., St. Louis Mo.

For Sale, Wanted, Etc., Ads. Continued on Pages 369, 370 and 371.

THE BEST IS THE CHEAPEST in trade journalism as in everything else. The Clay-Worker is the best magazine published in the interest of the Brick, Tile and Pottery trades. It contains more original and valuable matter than all its cotemporaries combined. It is the most widely circulated and best read. $2.00 a year. Every issue worth more.

THE HEAVY BRICK MACHINERY

Is made by Raymond. ✠ It is not as Cheap as some others, but it lasts. ✠ It has Staying Qualities. ✠ You Avoid Expensive Break Downs, and Incidentally Break ups by using it. ✠ ✠ ✠ ✠ ✠

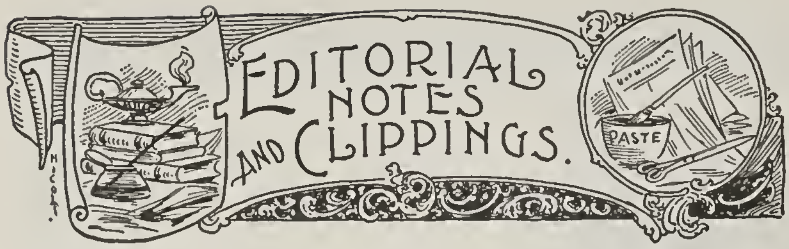


WE DON'T MAKE all the Brick Machinery sold in the U. S., but those who use it say it is the best. We have every reason to believe this is true because that is just what we try to make. We can attribute the unprecedented demand for our machinery to no other reason than the fact that it is strong and heavy and satisfies the trade. Users of our machinery are our friends because they get good value for their money.

The C. W. Raymond Co.

DAYTON, OHIO, U. S. A.

NEW YORK OFFICE: 39 and 41 Cortlandt Street.



EDITORIAL NOTES AND CLIPPINGS.

Draughan & Draughan will establish a brick plant at Prestonburg, Md.

Sawyer Bros. write that they are going to manufacture brick at Livingston, Tex.

Hachet & Large have commenced the erection of a brick plant at Bay City, Mich.

Osceola, Pa., is to have a $100,000 fire brick plant. Local capitalists are back of the project.

S. T. Walker, a well-known brick manufacturer, died at his home in Augusta, Ga., September 22.

E. Brevold, of New Richmond, Wis., will build a new brickyard at Red Wing, Minn., in the near future.

Shepard, Farmer & Co., of Boston, Mass., has purchased the brickyard of George N. Rich, at North Adams, Mass.

Deforest and John Brooks will engage in the manufacture of brick at Warren, O. Both gentlemen are practical brickmakers.

F. C. Janes is at the head of a movement to establish a shale brick plant at Willard, Kan., where extensive deposits of shale are located.

Although of large capacity, the Latrobe (Pa.) Brick Company will double their capacity, and work on the improvements will be made at once.

A condemnation jury at Baltimore, Md., has decided that the Baltimore & Ohio Railway Company must pay $49,999 to the Baltimore Brick Company for land wanted by the railroad company.

The new brick plant of the Joyce Bros., at Fetterman, W. Va., has been completed and the first day's run was quite successful. The plant will be operated steadily from this on and have a daily capacity of 20,000 brick.

Walter Clark, Clarksville, Miss., advises us that he is in the market for large size tile, from 10 to 16 inches. Mr. Clark says he is very busy and is unable to supply the demand for either brick or tile.

J. C. Hiatt and J. H. Linkletter have sold their interest in the brick plant at Whittier, Cal., to John Cole and T. F. Hensely. The new owners will install new machinery and improve the quality as well as increase the quantity of their output.

J. C. Steele & Sons, Statesville, N. C., write that they have been extremely busy this season, and the outlook is good for a splendid fall trade. They have recently made an addition to their foundry which enables them to take care of their increased trade without any trouble.

M. J. Lee has sold his tile plant at Brocton, Ill., to Samuel C. Cowgill, of Summitville, Ind., who will double the number of kilns, build new dryer and put in some new machinery in the near future. Mr. Lee will devote his entire attention to his tile factory at Crawfordsville, Ind.

Allen Rogers, a leading citizen of Spring City, Pa., died September 19. Mr. Rogers had been a member of the firm of Rogers & Co., fire brick and stove lining manufacturers of Royersford, Pa., since 1884. He leaves a wife and three grown children.

Work has begun on the immense pottery plant at Marshalltown, Ia. Manager C. M. Mathews says this will be the largest pottery in Iowa, and will cost upwards of $50,000. Recent tests show that the clay is well adapted to any use in the pottery line.

Arthur and Harry McHose have purchased the Boone (Ia.) Clay Works, which for many years has been owned by J. B. McHose. The new firm will be known as McHose Bros. Mr. Arthur McHose will have charge of this plant, while Mr. Harry McHose will look after their brick and tile plant at Grinnell. Mr. J. B. McHose will turn his attention to other lines of business.

The Mineral Wells Press Brick Company, of Mineral Wells, Tex., whose new plant was started a few weeks ago, has burned several kilns of brick with very satisfactory results. This plant is equipped throughout with machinery manufactured by the Chisholm, Boyd & White Company, of Chicago. The brick are made from a superior quality of shale, which they have in unlimited quantities.

One of the large flues in the boiler at the Greentown (O.) Tile Company's plant blew out when William Carl, fireman, and George Schlichty, foreman, were in the boiler room, and both men were so badly burned by the escaping steam that they died soon after.

The brick plants of the Red River Valley Brick Company, Grand Forks, N. D., closed down the first week in October. The aggregate output of these yards numbered about 14,000,000 brick. It was intended to keep them running for a week longer, but the wet weather made this impossible.

Articles of incorporation have been filed by the California Fireproof Construction Company, of Los Angeles, Cal. The company is capitalized at $75,000. The stockholders are E. G. Durant, A. H. Green and J. M. Wishard, of Pasadena, and F. M. Porter and A. J. Crookshank, of Los Angeles.

The budget of expenses for the fiscal year for the city of Cleveland, O., contains appropriations for the construction of 29 miles of street pavements, 26.7 miles of which are to be of vitrified brick. Evidently the powers that be in Cleveland appreciate a good thing in street paving material.

Dr. A. E. Harlan, of Alexandria, Ind., and C. F. Heritage, of Anderson, Ind., have purchased the plant of the Madison Brick Company, at Summitville, Ind. They take possession of the property at once and will increase the capacity of same. Mr. Heritage will have personal charge of the business.

The plant of the Indiana Brick Company, which was partially destroyed by fire recently, will be rebuilt in a new location nearer the city of Alexandria, Ind., and in a locality where clay will be more plentiful. In rebuilding the plant arrangements will be made whereby either coal or gas may be used as a fuel.

The Crooksville Brick Company, of Crooksville, O., has commenced work on their new brick plant, which will be equipped with a Boyd brick press, 9-inch dry pan and other machinery furnished by the Chisholm, Boyd & White Company, of Chicago. They expect to have the plant in operation about November 15.

P. L. Strout has closed down his brick plant at Belfast, Me., on account of a scarcity of clay. There are a number of other clay deposits in that vicinity, however, and it is probable Mr. Strout will build a plant on a new site. One of the local brick manufacturers, Mr. George O. Holmes, is contemplating putting in machinery.

When Peter Waldenstrom, a distinguished visitor from Sweden, was in Jamestown, N. Y., a few months ago, he was greatly pleased with their paved streets, and on his return took several samples of brick with him. As a result the Jamestown Shale Paving Brick Company has received inquiries from contracting firms in Sweden.

The Herbst Drain Tile Company has been incorporated at Herbst, Grant county, Ohio, with a capital stock of $15,000. The directors are John Prior, John B. Reed, J. W. Eakins, H. C. Shobe and J. W. Rust. The company has purchased the tile factory and grounds of John Rust for $13,000, and will at once begin the operation of the same.

The price of brick in Buffalo, N. Y., has been raised from $6.75 and $8 to $7.75 and $9 a thousand. A heavy demand for brick and no sunshine for drying, in addition to the depletion of stocks by the heavy demand last year, are given as the reasons for the increase. The manufacturers are organized, and hence are able to control the market.

Mrs. F. E. Carl, manager and proprietor of the Grenada (Miss.) Brick Company, is another woman who is a successful brickmaker. She is not a figurehead, but an active manager, overseeing the making and burning of 8,000 hand-made brick every day. She not only furnishes brick for home consumption, but ships within a radius of 100 miles.

The Coaldale Paving Brick Company, Coaldale, Ala.; the Tennessee Paving Brick Company, Robbins, Tenn., and the Virginia Paving Brick Company, Lynchburg, Va., have recently consolidated under the name of the Southern Clay Manufacturing Company, with headquarters at Chattanooga, Tenn. John W. Sibley, formerly president of the Coaldale Paving Brick Company, is general manager of the new concern. The Southern Clay Company has assumed and will settle all outstanding obligations of the above named firms and will fill contracts.

The B.-K. Enameled Brick Company, of Cleveland, has completed the building for their new brick plant at Leavittsburg, O., which is equipped with a Boyd four-mold brick press and

[CONTINUED ON PAGE 366.]

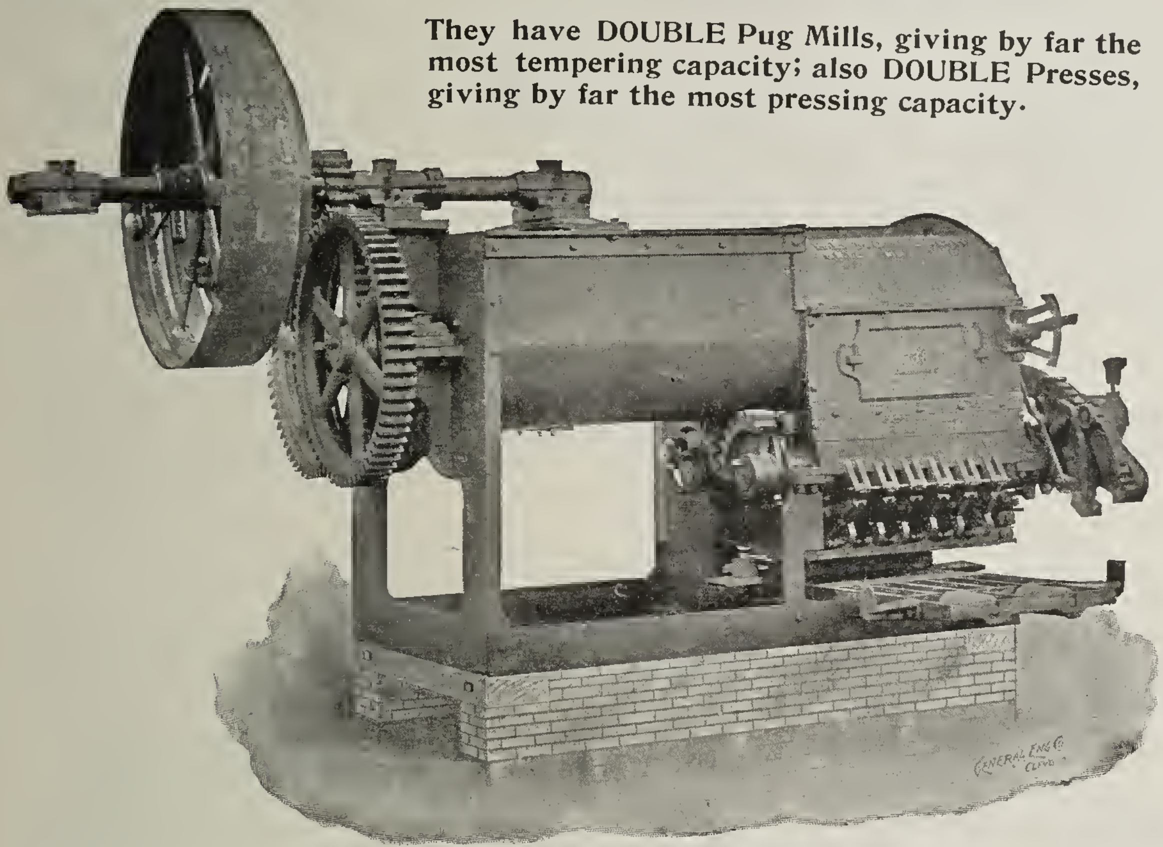
LIGHT HOUSES

Do not have to hire bands or fire cannon to call attention to their shining—**THEY JUST SHINE.**

Thus it is with the two "soft-mud" machines we manufacture (one horizontal and one upright). **Each** is at the head of its respective class, and the number of each in use, (note the figures) **tells the whole story.**

Over 125 "MONARCH" BRICK MACHINES in use.

They have DOUBLE Pug Mills, giving by far the most tempering capacity; also DOUBLE Presses, giving by far the most pressing capacity.



READ THIS.

A Fresh one Every Month.

◆ ◆ ◆

ASHTABULA, O., Oct. 5, 1901.
The Wellington Machine Co.,
Wellington, Ohio.

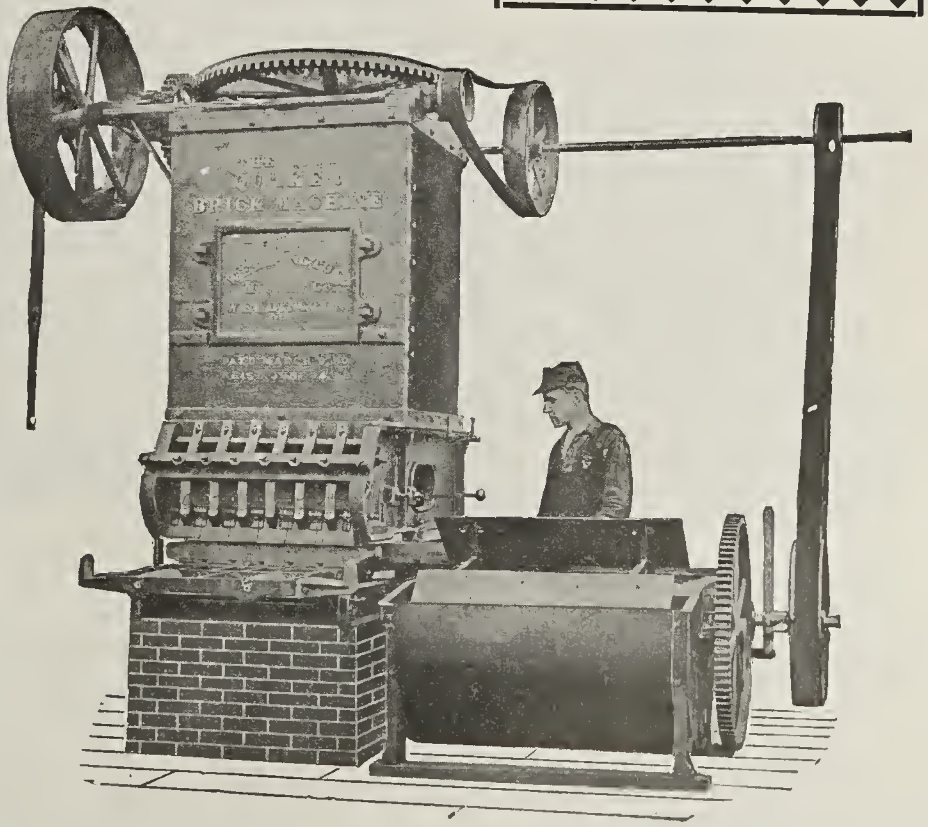
Gentlemen — This is the fourth year that I have used the ten-year old "Monarch" Machine, and it has made about 1,500,000 each year since I came into possession of it. The past year it has worked better than any of the four previous years, and has given very good service.

Yours very respectfully,
C. W. SIMONDS.

OVER 500 "QUAKERS" in use, both Horse and Steam Power, now made entirely of Iron and Steel.

OUR MOULD-SANDER is the BEST, SIMPLEST AND CHEAPEST.

WITH our ROLLER-BEARING BRICK BARROWS you can wheel 20 per cent. more load and do it as easily. Order one subject to approval.



ALL OTHER SUPPLIES. Send for Catalogue.

The Wellington Machine Co.,
WELLINGTON, OHIO.

EDITORIAL NOTES AND CLIPPINGS CONTINED.

Stedman 40-inch disintegrator. This plant was designed by the Chisholm, Boyd & White Company, and erected under the supervision of D. E. Brooks, who is an old-time dry press brickmaker. The plant will be in operation at an early date.

Delbert C. Morris, 213 Hammond Building, Detroit, Mich., writes that his company, the Detroit Red Pressed Brick Company, is desirous of securing the agency of a good, responsible pressed brick company who would like to have their brick sold in that market. Parties interested are requested to correspond with Mr. Morris direct.

The Yankee Hill Brick Manufacturing Company, of Lincoln, Neb., has received and is now installing a four-mold Boyd brick press and other brickmaking machinery furnished by the Chisholm, Boyd & White Company, of Chicago, at their new plant at Lincoln, Neb. Mr. Turner, the general superintendent, states that the plant will be in operation not later than November 1.

The Standard Brick Company, which was organized several months ago for the manufacture of fine pressed building brick, has begun operations at their factory, near Crawfordsville, Ind. At present the plant has a daily capacity of 14,000 brick, but the manager, Mr. F. L. Warner, says he expects to build new kilns, which will increase the capacity to 25,000 or 40,000 brick per day.

H. B. Skeele, president of the Ludowici Roofing Tile Company, with headquarters at Chicago, Ill., writes us, under date of October 10, that they had just broken ground at Johnston Station, Ga., for a new roofing tile plant, which will be modern in every respect, including brick buildings. Mr. Skeele says they want to start right and so incloses subscription for a copy of The Clay-Worker for the Georgia plant.

The new steam brick plant of Hugh O'Brien, at Brewer, Me., is now in operation and is coming up fully to all expectations. The brick turned out are of excellent quality and the brick plant is an object of great interest in the town. The success of this, the first steam brick plant in Maine east of Portland, will no doubt result in the installation of improved machinery and appliances in a number of the yards in that section.

H. Ames & Son have purchased forty acres of land about half way between Eden Valley and New Paynesville, Minn. They will move the machinery from their Litchfield yard to their recently purchased property, and will begin the manufacture of brick on a large scale. The firm thoroughly understand the business of brickmaking and their yard will be a good thing for the two towns between which it will be located.

In a recent communication the Cleveland (O.) Car Company advises us that they are erecting large modern car shops upon several acres of land five miles west of the Cleveland union depot, on the Lake Shore railroad, at the juncture of Lorain street, known as West Park postoffice, Cleveland, O. They are equipping the shops with the most modern and up-to-date machinery for the manufacturing of brick, clay and cement cars.

After a good deal of experimentation the Avon Faience Pottery Company, of Tiltonsville, Ohio, has developed the most unique and purely original line of colorings extant. It is what might be called Egyptian in appearance, with a great variety of original colorings in quaint styles and odd treatments. The decorations are all underglaze and are of the Nouveau art order. Unlike the fancy ware in rich, heavy colored glazes, the Avon ware will not craze. The company will have a good line of jardinieres, vases and art goods in this ware ready for market soon. W. P. Jervis, well known as a writer on ceramic subjects, is now installed as manager at the Avon Faience Company's plant.

One man was killed and another seriously injured in a cave-in at the clay bank at the yard of John Wilson, Cleveland, O.

The plant of the Keystone Fire Clay Company, at Fogelsville, Pa., was destroyed by fire Sept. 21. The loss is partly covered by insurance. The plant will be rebuilt at once. Edwin C. Kramlich, of Fogelsville, is general manager of the plant, and J. O. Madtes, of Calasaqua, is secretary and treasurer.

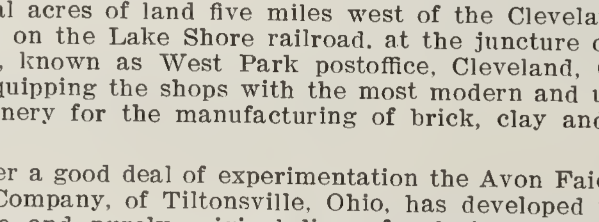
The Eureka Brick Company has filed articles of incorporation and will take charge of the brick plant recently started at Traverse City, Mich., by H. N. Wilder and A. H. Brown, who in connection with George L. Davis and Martin Vander Bosch, of Grand Rapids, Mich., compose the new company. The plant now has a capacity of 40,000 brick a day. New buildings and machinery will be added and the output of the plant greatly increased.

The Kenmare Hard Coal Company, Kenmare, N. D., has just purchased a complete brickmaking outfit from the Fernholtz Brick Machinery Company, St. Louis, Mo. This company is very fortunate in having a shale bank and coal mine combined. Just below an excellent bed of shale is a fine deposit of lignite coal, and beneath the coal vein is a bed of fire clay. They will furnish hard coal to St. Paul, Minneapolis and other cities in that territory, and expect to do quite a good business in the brick line. In these times the brickmaker who controls his own coal supply has a veritable gold mine.

The Pressed Brick and Tile Company, which was organized to manufacture brick and tile at Winnipeg, Manitoba, has started to make brick on a limited scale for the purpose of constructing down-draft kilns. A side track has been laid to the brickyard by the Canadian Pacific railway, and main buildings, with machinery, coal houses and a boarding house have been erected. The company now has sufficient orders to keep the plant working full capacity to Christmas. It is expected that as soon as the kilns are completed the works will be turning out 30,000 pressed brick per day. E. F. Hutchings, of Winnipeg, is interested.

Three new yards will be in the market next season for the building brick trade at Des Moines, Ia. The largest of these will be the Goodwin yard, which will be located on the South Side, and will have a capacity of about 40,000 brick a day. This plant is now rapidly nearing completion. The next largest will be the new F. L. Frost yard, which is now being built in Sevastopol and which will turn out 20,000 builders a day. James Main, who recently purchased a yard on the East Side, has been placing new machinery and enlarging the yard, and in another season will be making about 25,000 brick a day.

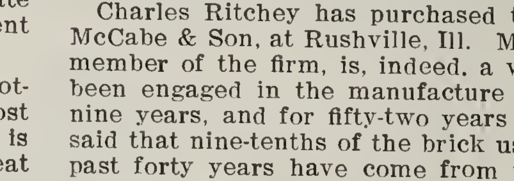
Charles Ritchey has purchased the brick and tile plant of McCabe & Son, at Rushville, Ill. Mr. John McCabe, the senior member of the firm, is, indeed, a veteran clayworker, having been engaged in the manufacture of brick and tile for fifty-nine years, and for fifty-two years in the same county. It is said that nine-tenths of the brick used in Rushville during the past forty years have come from the McCabe plant. James McCabe, the junior partner, expects to enter the brick business again next year in some other locality, and his long years of experience will insure his success and be a passport to a good position should he desire to engage with someone else.



The Boss System of Brick Burning

requires no outside furnaces which are expensive to build and maintain; will burn slack and poor grades of fuel which cannot be consumed with success in any other manner.

Peek Hole for Brick Kiln



They are not only very convenient, but will save the cost of themselves at the burning of every kiln.

To users of

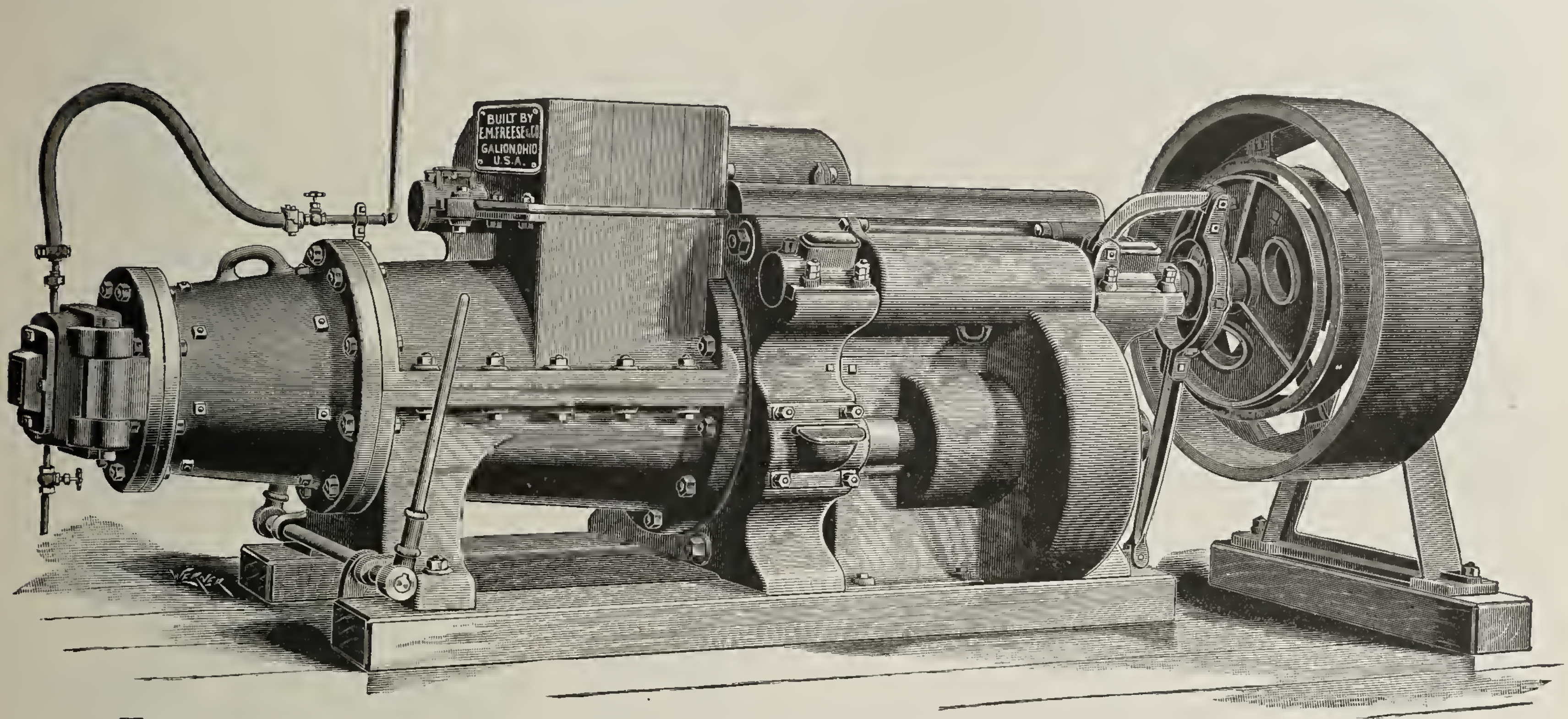
Slip Clay.

I have an extra quality of Slip Clay which has been used by potteries for over forty years. It contains known quality. I can fill orders promptly.

Send for . . .
Descriptive Catalogue.

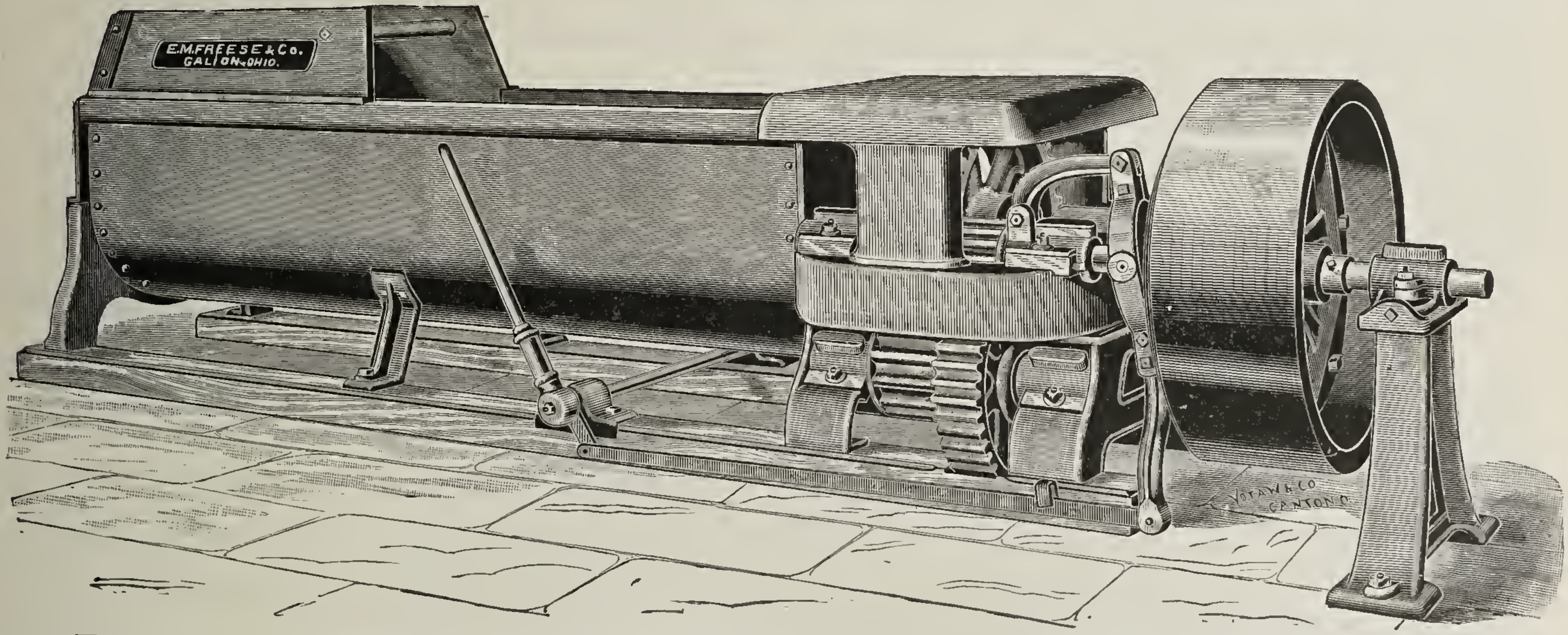
JOHN C. BOSS, Elkhart, Indiana, U. S. A.

Our Mammoth Brick Machine


BUILT BY
E.M.FREESE & CO.
GALION, OHIO
U.S.A.

THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug-Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.

THESE PUG-MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitted for making a fine quality of brick.

E. M. FREESE & CO., = = Galion, Ohio.

Mention The Clay-Worker.

WRITTEN FOR THE CLAY-WORKER.

PITTSBURG AND WESTERN PENNSYLVANIA CLAY INDUSTRIES.

AMONG THE NEW Pittsburg clayworking concerns formed during the past month was the Youghiogheny Brick and Supply Company, which will have headquarters at Pittsburg and will operate a plant in the Yough valley, near McKeesport, Pa. Pittsburg capital is in the new company.

The Homestead Brick Company has been in operation some months, and its plant is one of the most modern building and paving brick plants in the upper Ohio valley. The company has installed a large amount of new machinery and is well filled up with orders.

The Columbian Fireproofing Company, of Pittsburg, has just secured the contract for the new building for the English Army and Navy Department at Woolwich, England. The company has also booked a number of important contracts in different parts of the United States.

The Richmond Conduit Company, of Pittsburg, has secured the contract for the conduit work on the new King Edward Hotel building, at Toronto, Ont. This company is operating to its full capacity in order to supply the demands for its product.

The plant of the Climax Fire Brick Company, at Climax, Clarion county, Pa., was partially destroyed by fire two weeks ago. The loss was nearly covered by insurance, and the work of repairing the plant and installing new machinery is already well under way.

The American Clay Manufacturing Company is a Baltimore concern in which Pennsylvania capital is largely interested. The company is preparing to erect a modern plant at Northeast, Md. The headquarters of the company are Baltimore, and W. A. Birmingham, of Philadelphia, is president of the company.

The Montgomery Brick Company, of Mont Clare, Pa., is installing a plant for the manufacture of building and paving brick. The company was recently formed with a capital of $20,000.

The Reynoldsville Clay Manufacturing Company, of Reynoldsville, Pa., recently incorporated under the laws of Pennsylvania with a capital of $50,000, has secured control of a valuable tract of clay land and is installing a brick and tile plant at that place.

The Blackhorse Paving Brick Co., of New Cumberland, W. Va., has completed a number of improvements at its new plant whereby its output has been doubled. The company owns a large clay land area at New Cumberland.

Some delay has been experienced in the work of the new plant of the Pennsylvania Silica Brick Company, on the Ligonier Valley road, near Latrobe, Pa. Recent reports have been to the effect that the plant would be ready for operations this month, while the fact is that the company will not begin making brick for a month or so. In the meanwhile work is being rushed on every department of the big plant, which when completed will be one of the most complete of its kind in the country. The plant now being completed will be made the nucleus for a number of plants which the company will add as rapidly as possible. All kinds of silica clay products for industrial purposes will be manufactured. The headquarters of the company are in Pittsburg.

The project of manufacturing brick from shale taken from coal mines is now being considered in Pittsburg, and a company will soon be organized for the purpose of installing a plant.

The Ellsworth Brick Company, of Ellsworth, Pa., has recently undergone some improvements. The entire product of the plant is taken by the Ellsworth Coal Company, which is developing a great mining town in Washington county, Pa.

The Virginia Pottery plant, at Harrisburg, Pa., which has been out of operation for some time, has been purchased and put in operation by the Massenetta Art Pottery Company.

The Empire Asphalt Paving Company, of Pittsburg, has been awarded contracts for paving a number of the streets in that city with Trinidad asphalt.

The Derry Pottery Company, recently incorporated by Pittsburg capitalists to erect a large pottery plant at Derry Station, on the Pennsylvania railroad, fifty miles east of Pittsburg, has begun work on the new plant. The company is capitalized at $100,000 and owns several hundred acres of coal and clay lands at Derry Station. W. J. Harvey, a well-known Pittsburg pottery operator, is general manager of the company, and the work of installing the plant is under his supervision. The new building is 500x150 feet. Stephen Stone, Joseph Keeling, Patrick Ridge and C. E. Owens, of Pittsburg, are largely interested in the new company.

Keeling & Ridge, the well-known Pittsburg contractors, are installing a large brick plant near Derry Station, Pa., in order to supply the great demand for various kinds of brick required for their work.

GILBERT.

SPECIAL "NEVER-BREAK" GOODS.

STEEL BRICK PALLETS.

Any flat, formed, sheared, pressed or Stamped Sheet Steel Work, 18-gauge and heavier. Describe what you want and tell us the quantity. We'll let you know the price and delivery.

The Avery Stamping Co., Cleveland, Ohio.

IT'S YOUR BUSINESS

If you wish to pay even $1.00 PER GALLON FOR PAINT.

OUR BUSINESS is to furnish the BEST PAINT MADE AT LESS THAN 50 CENTS PER GALLON.

The "STAY-THERE" paints stay wherever they are put; they are adapted to HOUSE, BARN, FACTORY, WAREHOUSE and other kinds of painting, and are sold under a BINDING GUARANTEE NOT TO CHALK, PEEL NOR BLISTER. Will cover more surface than other paints.

CAN WE DO BUSINESS WITH YOU?
If so, we shall appreciate your enquiry for sample colors and prices.

We are LEADERS in the manufacture of

Painting and Whitewashing Machines Which Do the Work of Twenty Men with Brushes.

Sales Agent for
THE ORIGINAL KELLS BRICK MACHINE.

Address F. E. HOOK, 16-29 Hook Bldg., Hudson, Mich.
Agencies in Nearly All Large Cities.

FOR SALE—At a bargain, a brick and tile factory in central part of Iowa. Good buildings, new machinery and good clay. Address OLD MAN,
10 1 c Care Clay-Worker.

POSITION WANTED—By man practical in enameling bricks, terra cotta, art tiles, etc.; also in the manufacturing of electrical porcelain, dry-press process.
CLARENDON,
10 1 c Care Clay-Worker.

FOR SALE—Swift's Wonder of the Age Grateless Furnace Kilns. Cost of construction less than ½. Write for particulars.
F. E. SWIFT,
7 tf d Washington, Ia., U. S. A.

FOR SALE.

New nine-foot dry pan, iron or wood frame.

New nine-foot wet pan, iron or wood frame.
W. H. KNOWLES,
10 1 cm Ottawa, Ill.

Evens & Howard Fire Brick Co.

ST. LOUIS, U. S. A.

Sewer and Culvert Pipe. Locomotive Tile.
Furnace and Boiler Tile. Fire Brick and Cupola Blocks.
Flue Lining and Chimney Pipe.
Sanitary Earthenware. All kinds of Fire Clay Products.

The Crown Fire Clay Co.,

Akron, Ohio.

HIGH GRADE FIRE BRICK,

For Lining Kilns, Etc., a Specialty.

Also Hollow Blocks, Flue Linings, Wall Copings, Etc.

When writing for prices, state for what purpose brick are to be used.

——Catalog Free.

Too Many Brickmakers

Use Cheap Brick in Kiln Construction. The Best is the Cheapest no matter what it costs. We can supply your wants in strictly

High Grade Fire Brick,

At MODERATE PRICES.

SEVEN WORKS in two States on THREE COMPETING TRUNK LINES.

Reese-Hammond Fire Brick Co., General Offices, BOLIVAR, PA.

Correspondence Solicited. Annual Capacity 100,000,000.

Let us quote you prices on Savage Fire Brick **FOR** Bag Walls, Kiln Linings, Boiler Settings.

Savage Fire Brick Co.,

Pittsburg Office, 810 Park Bldg. KEYSTONE JUNCTION, PA.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than $1.00.

FOR SALE—An old established and splendidly equipped plant for making stove linings and fire brick, at North East, Md. Excellent clay in abundance. Will be sold much below its value. Address
DANIEL A. KLEIN,
2311 North Calvert Street,
10 1 cm Baltimore, Md.

FOR SALE—100 Chambers cage roller-bearing dryer cars, wrought iron and pipe frames, with wooden and perforated pallets. Prices and better information given on application.
ASHEVILLE BRICK AND TILE CO.,
10 3 cm Fletcher, N. C.

WANTED—Situation as superintendent of brick plant; a man who has a thorough knowledge of burning paving, building and fire brick, and understands soft-mud and dry-press process and good organizer of men, and of successful experience and strictly temperate. Address FAUL,
10 1 c Care Clay-Worker.

WANTED MANAGEMENT—I would be pleased to arrange with brick manufacturers, front brick particularly (plants located in good winter climate), to give personal attention during January and February only to the installation of yard and business systems in their plants. Correspondence invited. "SYSTEM,"
10 1 d Care Clay-Worker.

WANTED—By a thoroughly practical superintendent, a permanent position in terra cotta, stoneware, or enameled brick plant. Has fifteen years' experience, and the best references. Can design, build and equip plants with all modern improvements.
Address GERMAN,
10 1 d Care Clay-Worker.

WANTED—A position as manager or superintendent of either dry-press or stiff-mud plant. Have twelve years' experience and can handle any kind of labor; also work in any capacity. Can give the best of references. Address
ALBERT CARTER,
Gen. Mgr. Cooper Light and Mfg. Co.,
10 1 d Cooper, Tex.

WANTED.

Active man to conduct correspondence in selling clayworking machinery. Must be up in the various branches of the clay trade, well versed in machinery and of good education. I want executive ability and the force to back it. Only those possessing the above qualifications need apply. Good position for the right party.
Address G. W.,
10 1 d Care Clay-Worker.

FOR SALE.

The machinery of the Austin Brick and Tile Works, consisting of an 80-horse-power boiler and engine, an Auger brick and tile machine, pug mill, granulator, winding drum, cable and dump car, shafting, pulleys and belting, automatic brick and tile cutting tables, trucks, barrows, grates, kiln doors, bands, one Penfield elevator. Address BARR,
10 3 dm Care Clay-Worker.

FOR SALE—Half interest in new modern brick plant, located in eastern Indiana, built this season. Capacity, 30,000 daily, with local business in sight for next season of over two million. No competition. This interest will be sold to a good practical brick man; no other need apply. It will take $6,500 to buy half interest and build some improvements that are to be made. No offer but cash will be considered. The opportunity of a lifetime to right party. This interest is sold on account of death of partner.
Address K. C.,
10 1 d Care Clay-Worker.

WANTED, FOR SALE, ETC.—Cont.

FOR SALE—A new iron Quaker brick machine. Good reason for selling. A bargain if sold at once. Address
W. S. VANDEVENTER,
9 2 c Mound City, Mo.

WANTED — First-class dry-press brick burner and foreman. State reference, age and salary expected.
U. S. BRICK PRESS CO.,
10 1 cm Erie, Pa.

FOR SALE.

One flower-pot machine with five dies for 2½, 3, 5 and 6-inch pots; been used but a few weeks.
THE C. PARDEE WORKS,
9 2 c Perth Amboy, N. J.

FOR SALE.

Brick plant in best town in Michigan. Can sell output at $3.50 to $10 per thousand. Will sell cheap. Address
CON,
9 2 cm Care of Clay-Worker.

FOR SALE—A large number of cast iron and steel, single-deck brick cars. These cars are equipped with anti-friction bearings and are in perfect condition. Of modern construction. Address CARS,
8 4 d Care Clay-Worker.

FOR SALE AT A BARGAIN—A fifteen-inch cylinder Mascot brick and tile machine, made a Bucyrus, O.; practically new machine and in good condition. Price very low. Address S. CHENEY & SON,
9 2 dm Manlius, N. Y.

WANTED.

One second-hand granulator.
One second-hand conical-shaped crusher.
One belt clay elevator.
One pug mill.
Address B,
9 4 d Care of Clay-Worker.

MACHINERY WANTED.

Any one having stiff mud machinery for sale will please communicate with us. We are also in the market for a brick dryer. Address
THE BRANDT CLAY PRODUCT CO.,
9 tf d Binghamton, N. Y.

FOR SALE—A three-mold Boyd brick press which is in good condition. Have given up the dry-press process entirely, else would not sell this press. Will be sold cheap for cash or on time to thoroughly responsible parties. Address
NEW ENGLAND STEAM BRICK CO.,
9 tf d Providence, R. I.

TILE PLANT FOR SALE.

Inland brick and tile plant for sale on new railroad survey. Unable to supply demand. Five acres land, good house, 22 h.-p. engine, one Brewer No. 5 brick and tile mill, one Quaker mud mill; dry-shed capacity 60,000, kiln 60,000. Will sell for $1,500. Good reason for selling.
Address H. A. CHENEY,
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FOR SALE.

One 9-foot Dry Pan, iron frame.
One Arnold Steamer.
One Revolving Screen.
One Miller Hand Press.
One 15-H. P. Portable Engine and Boiler.
THE T. B. TOWNSEND BRICK & CONTRACTING CO.,
10 tf d Zanesville, Ohio.

WANTED.

By a thoroughly qualified man, either a position as superintendent of a brick plant or a partner who can furnish the greater part of the necessary funds to establish a brick plant in some suitable locality. Advertiser is a good mechanic, understands machinery and can give the very best of references. He also has the absolute right to the very best kiln for burning either bricks or tiles in the market, a great fuel saver, is continuous and gives fine results, and under perfect control of operator. Correspondence solicited. Address
BOX 225,
10 1 c St. Thomas, Ont., Canada.

See Wanted, For Sale ads. under Table Contents.

The Best Brick Drier

Is the Drier which dries the Brick safely, quickly and thoroughly in the shortest time and with the least cost and labor. This the **Phillip's Fan Dryer** will do. The first cost of construction is moderate and cost of operation is much less than old style dryers. Soft Mud, Stiff Clay or Dry Press Brick dried speedily and economically. The **PHILIP'S DRYER** is no experiment but is now in successful operation in a number of plants in the U. S. and Canada. **Phillip's Inside Fan Heater and Dryer,** proves to also be a "Condenser."

Relief from back pressure guaranteed.

Exhaust steam alone ample for heat supply.

If you are interested in the drying problem don't fail to write for circulars.

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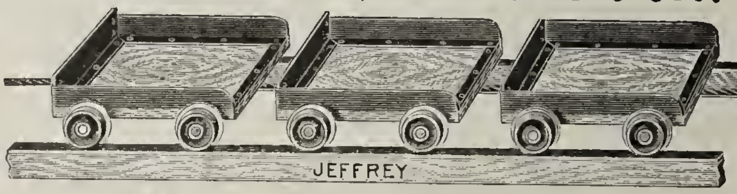

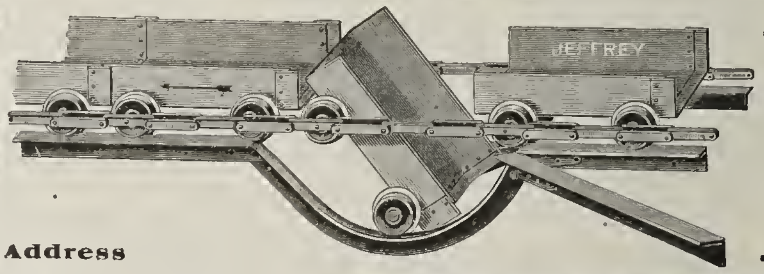

We can save you money. Write us.

Address

The Jeffrey Mfg. Co.,
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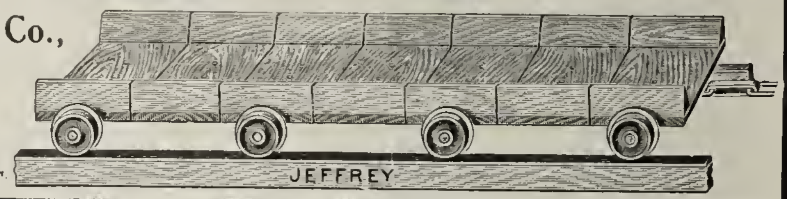
New York. Denver.



Books for Brickmakers

"CLAY GLAZES AND ENAMELS," H. R. Griffen	$5.00
"BRICKMAKERS' MANUAL," Morrison and Reep	3.00
"BRICKMAKING AND BURNING," J. W. Crary, Sr.	2.50
"TABLE OF ANALYSES OF CLAYS," Alfred Crossley	1.00
"VITRIFIED PAVING BRICK" H. A. Wheeler, E. M.	1.00
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Mailed, postage free, on receipt of price.

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Brick Pallets.

It is the opinion of the best Manufacturers that the Pallet System is the most economical method for making bricks. White pine lumber is conceded to be the best and most economical material for pallets. We make them. A word to the wise is sufficient. Send postal card for circulars.

Mershon, Schuette, Parker & Co.,

Saginaw. East Side Mich.

Also Make a Special
CLAY PLOW.

Write us Now for
full particulars.

Do you want to save MONEY?
If so, use the

"Quincy" Improved Dry Clay Gatherer,

The best and most economical method of gathering Clay for Brick and Tile Manufacturers.

Will save at least 50 per cent. over any other method.

Manufactured by

Central Iron Works,

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ORIGINAL

GANDY STITCHED Cotton Duck **BELTING.**

Unequalled in strength and durability, especially adapted for heavy work, and for all places where belts are exposed to atmospheric changes, heat, steam, water, oils, alkalies, etc. Every belt bearing our trade-mark "ORIGINAL GANDY" absolutely guaranteed. BEWARE OF IMITATIONS. Manufactured solely by

The GANDY BELTING COMPANY,

Head Offices and Factory: BALTIMORE, Md.

Write for New Catalogue.

WANTED—A permanent position with a first-class company by a practical superintendent. Thorough knowledge of all grades of brick. References. Adress

C. W. F.,
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NO DRY PRESS BRICK PLANT complete without the Carmichael Clay Steamer.

T. W. CARMICHAEL,
Inventor and Manufacturer,
6 d tf Wellsburg, W. Va.

FOR SALE—An up-to-date Edison Mimeograph for duplicating letters, statements, etc. Used but little and guaranteed in perfect condition. A bargain for anyone desiring a machine of this sort. The equipment cost $16; will be sold for $10, cash on delivery. For full particulars, address

10 2 p COPYIST, care Clay-Worker.

WANTED—A practical, progressive brickmaker, who has had fifteen years' successful experience as superintendent and manager of large works and has special knowledge of face brick, fire brick and paving brick manufacture, desires permanent position where honesty, sobriety and competency will receive substantial appreciation. Conditions must be favorable for large, profitable business, and location suitable for family residence. Will invest in business if satisfactory. Address

ANYTHING,
9 1 L Care of Clay-Worker.

FOR SALE—Books for brickmakers. Inexperienced workmen will find them a source of valuable information. Brickmakers' Manual, $3.00—a practical treatise on the everyday details of brickmaking; Clay Glazes and Enamels, $5.00, tells how to glaze and enamel brick and gives valuable recipes; Vitrified Paving Brick, $1.00, tells all about the best materials for and methods of manufacturing paving brick; Tables of Analyses of Clays, $1.00, gives the analyses of many American and European clays. Any or all of these mailed, postage prepaid, on receipt of price. Write for lists of other valuable books for clayworkers.

Address T. A. RANDALL & CO.,
3 tf r Indianapolis, Ind.

See additional ads. under Table of Contents

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H. C. Perrine & Son,

MINERS AND SHIPPERS OF

ALL KINDS OF CLAYS,

Ball, Sagger, Fire, Light Buff, Deep Buff, Terra Cotta, Stoneware, Speckled Brick and Sewer Pipe Clays. Shipping points by rail and water to any part of United States or Canada.

Office: SOUTH AMBOY, N. J.

W. D. RICHARDSON.

Brickworks Engineer.

2717 Warner Road. Cleveland, Ohio.

Expert investigation of brickmakers' troubles. Mechanical devices and implements for special purposes.

Smokeless furnaces for boilers, dryers and kilns.

Plans and specifications for improved dryers and kilns to conform to special conditions and requirements.

Radiated heat, direct heat and waste heat dryers.

Up-draft, down-draft and continuous kilns.

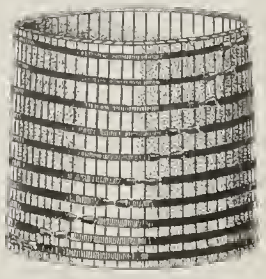
Clay properties examined and clays tested.

New plants planned and constructed.

Terms reasonable. Correspondence solicited.

ODD LENGTHS OF RUBBER AND GIANT RED STITCHED,
from 2 ft. to 80 ft. long, and from 1 in. to 16 in. wide; 3, 4, 5, 6 and 8 ply. FIRST-CLASS BELTING less than mfrs. cost prices. GET OUR PRICES on Rawhide, Paulins, Tank Pumps, Hose, Injectors, Steam Gages, Brass Fittings, Lard Oil, Cylinder Oil, Machine Oil, Emery Wheels, Files, Iron and Wood Split Pulleys, Mill Dogs, Weiler Jacks, Circular Saws, Sawing Machines, One-Man Log Saws, Asphalt Felt Roofing, Endless Thresher Belts. One Trial will make you a regular customer of the
MILLER OIL & SUPPLY CO., Indianapolis.

Trade is Never GOOD ENOUGH
to warrant spending money on poor equipment of any sort. The



Caldwell Red Cypress Tank
costs little more than the cheap kind and is incomparably more safe and durable. Hooping is so exact that bursting or collapse is out of the question. For catalogue and price-list address
W. E. CALDWELL CO.,
LOUISVILLE, KY.

DAVIS'S
Brick, Tiles and Terra Cotta.
Third Edition.
Revised, Improved and Enlarged.

A practical Treatise on the Manufacture of
Brick, Tiles and Terra Cotta:
Including Stiff Clay, Dry Clay, Hand-made, Pressed or Front, and Roadway Paving Brick, Enameled Brick, with Glazes and Colors, Fire Brick and Blocks, Silica Brick, Carbon Brick, Glass Pots, Retorts, Architectural Terra Cotta, Drain Tile, Glazed and Unglazed Roofing Tile, Art Tile, Mosaics, and Imitation of Intarsia or Inlaid Surfaces. Comprising every product of Clay employed in Architecture, Engineering and the Blast Furnace With a Detailed Description of the different clays employed, the most Modern Machinery, Tools and Kilns used, and the processes for Handling, Disintegrating, Tempering and Molding the Clay into Shape, Drying, Setting and Burning. By Charles Thomas Davis. Third Edition. Revised and in great part rewritten. Illustrated by 261 engravings. 662 pages, 8vo. Price, ...**$5.00**

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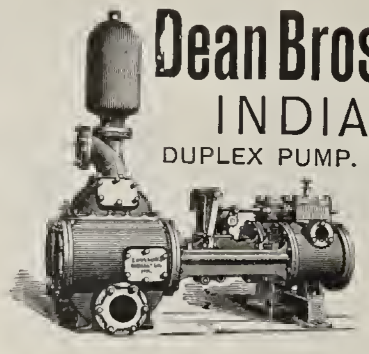
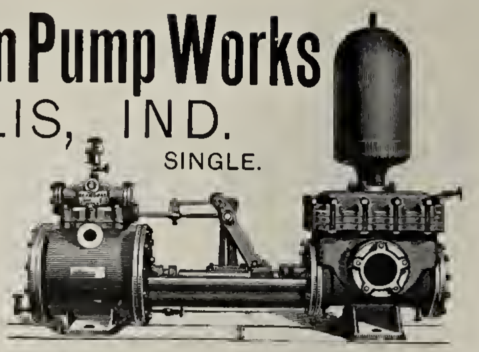
Industrial Publishers, Booksellers and Importers,
810 Walnut St. PHILADELPHIA, PA., U. S. A.

Dean Bros.' Steam Pump Works
INDIANAPOLIS, IND.


DUPLEX PUMP.

PUMPING MACHINERY
FOR ALL PURPOSES.
SEND FOR CATALOGUE
AND PRICES.



Leviathan Belting, Once!
Leviathan Belting Always!

LET US
SUBMIT
EVIDENCE.

Main Belting Company,
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120 Pearl St., Boston.
55-57 Market St., Chicago.
40 Pearl St., Buffalo.

WHY IS IT

That all the leading Paving Brick, Pressed Brick and Sewer Pipe factories are using **THE PERFECT CLAY SCREEN?** Because it is the **ONLY** screen. If you are in doubt investigate for yourself. **YOU** are thinking about getting one now.

WHY DON'T YOU DO IT

and make as good and uniform product as those who are using our screen? **WE GUARANTEE THEM.** Just allow us an opportunity, and we will show you how it is done. **DO NOT WAIT UNTIL NEXT YEAR** as there is no time like the present. We want to hear from you.

DUNLAP MFG. CO.,
Bloomington, Ill.

$2.00 *THE CLAY-WORKER, ONE YEAR, (IN ADVANCE)* **$2.00**

Conveying, Elevating and Power Transmitting Machinery. A complete line of the best.

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The ONLY PERFECT SPIRAL CONVEYOR with CONTINUOUS FLIGHT, NO LAPS, NO RIVETS.

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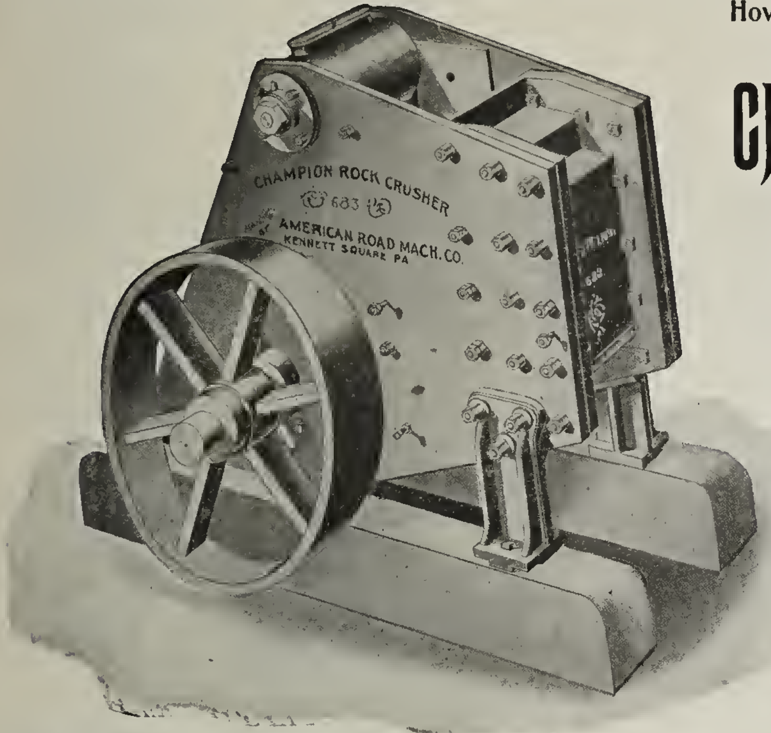

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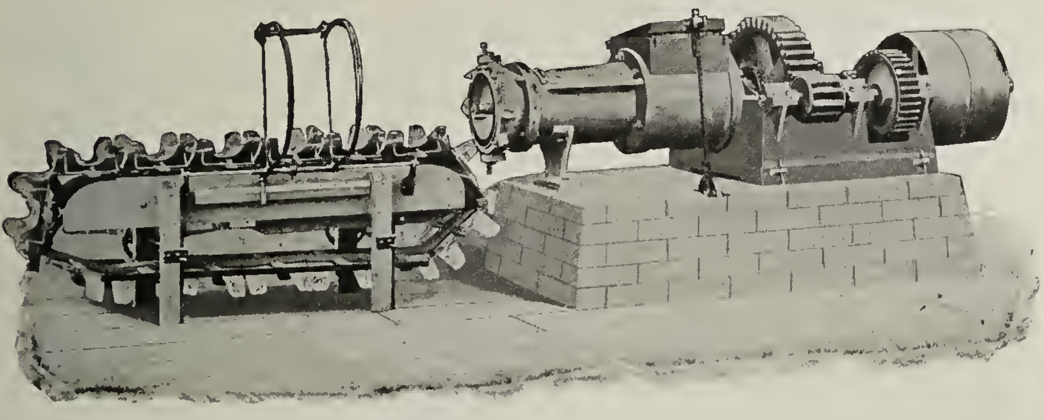

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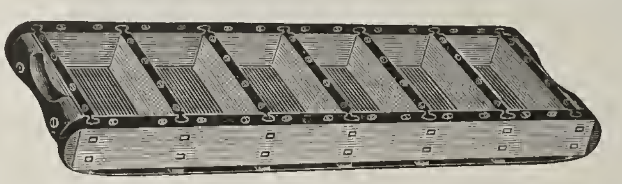

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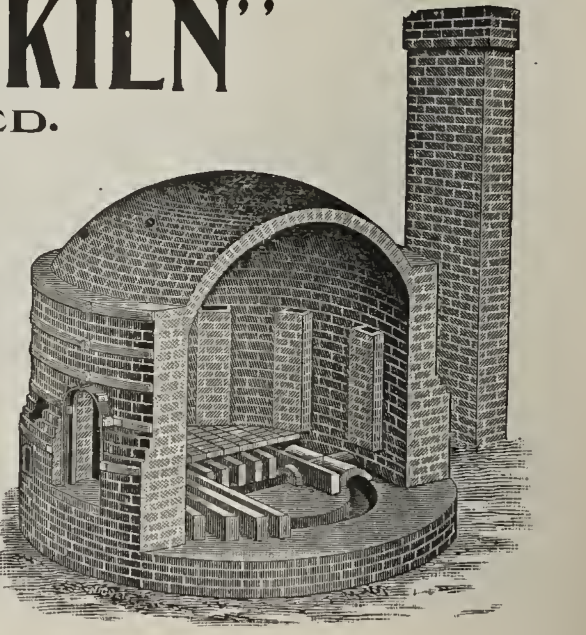

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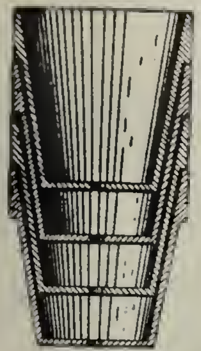

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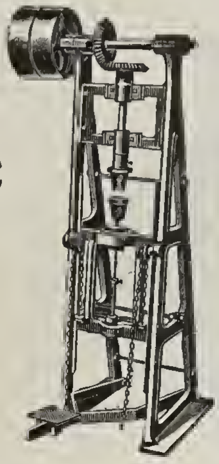

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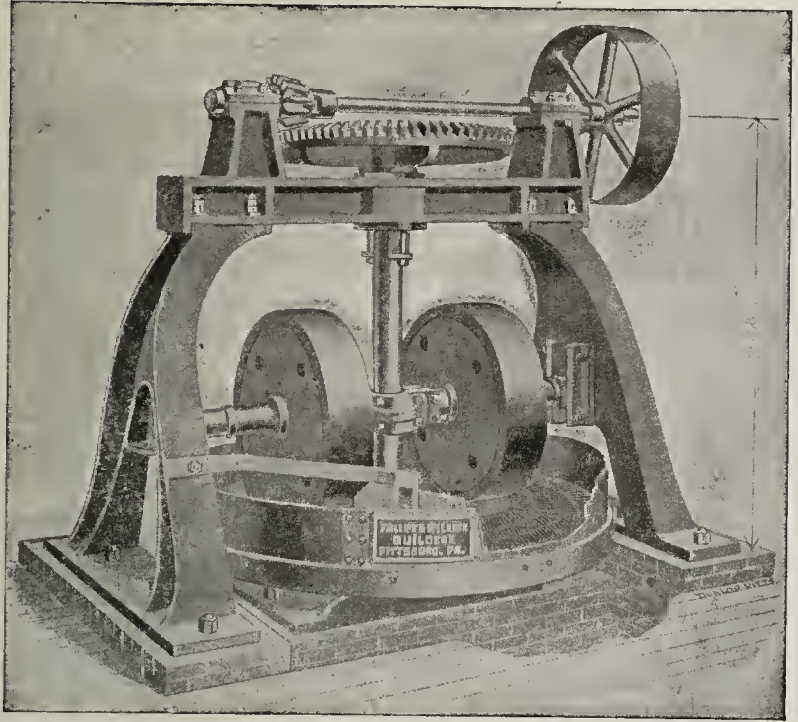

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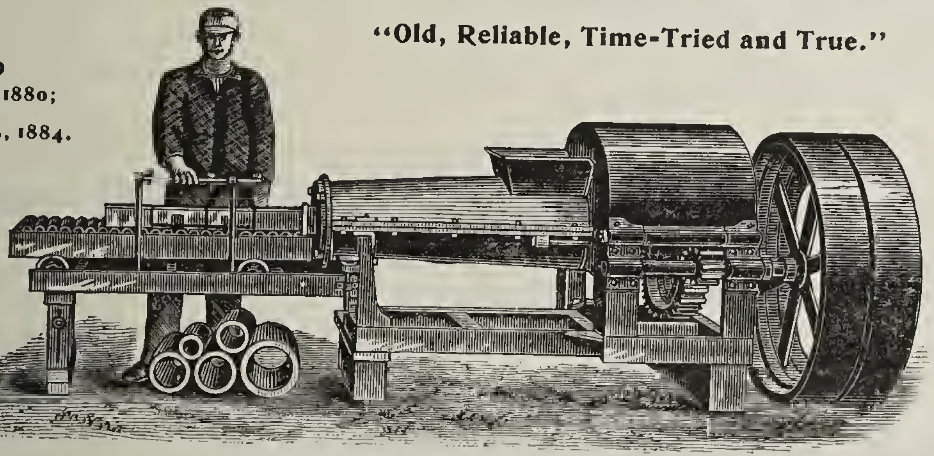

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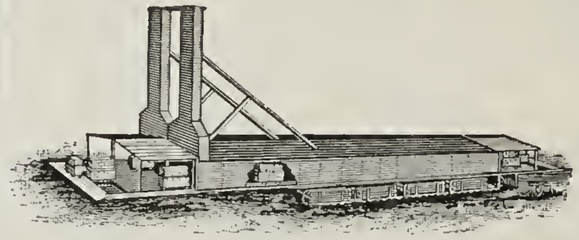

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These dryers are the results of a quarter century of experience in drying by steam heat, are more economical to install, and will dry brick at half the cost of any other known process. Results fully guaranteed.

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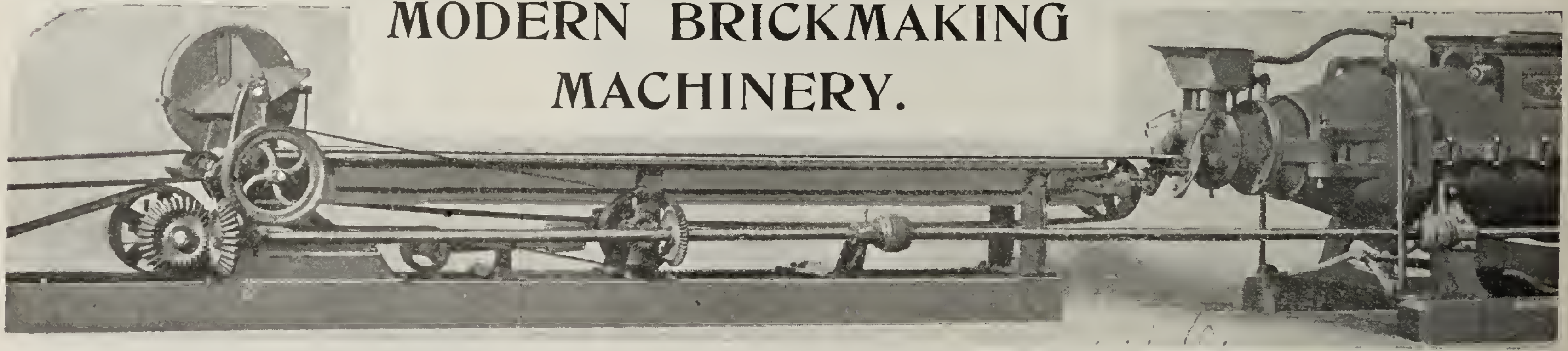

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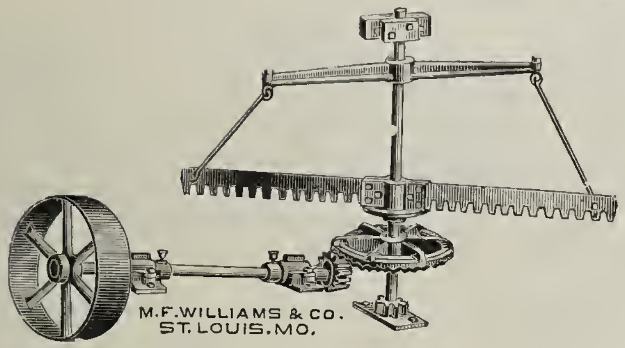

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IS HEADQUARTERS FOR

WILLIAMS Cyclone Clay Pulverizers.
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It is equally as efficient in large or small yards. It can be used either for open air or artificial drying. We guarantee that one man can take from 25,000 to 40,000 green brick from the machine and place them upon the hacks in one day of ten hours, and the same amount from the hacks to the kiln, and place them in easy position for the setters to handle them.

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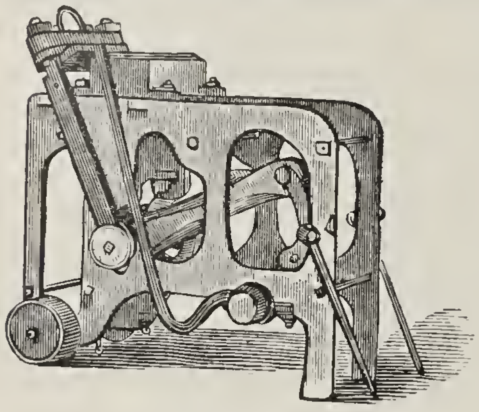
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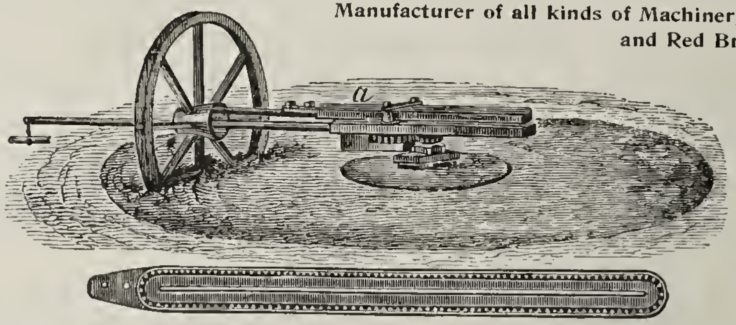

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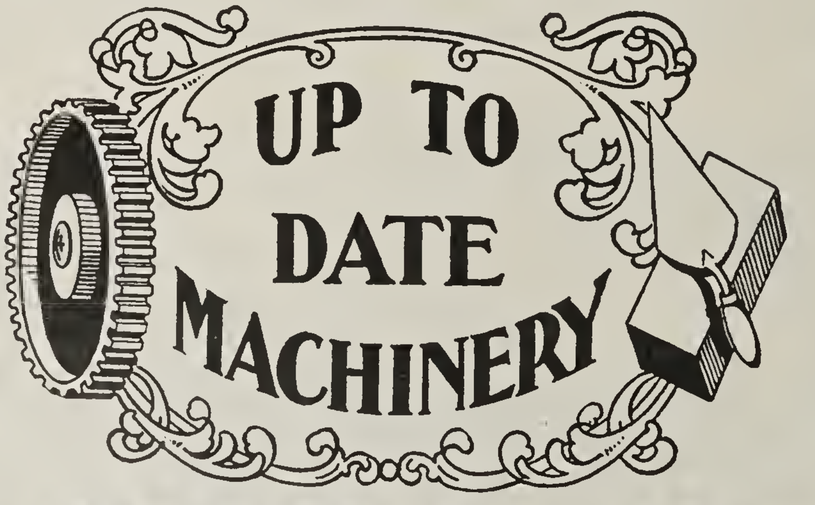

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THE DUNN CONTINUOUS BRICK KILN.

Burns 8000 brick with one ton of coal.
Requires only two men to operate it.
Is in full operation daily.
Absolutely the most successful kiln of its class ever offered American Brickmakers.

Write for Description and full Information.

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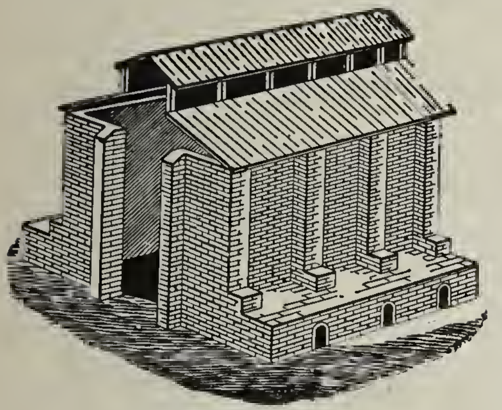

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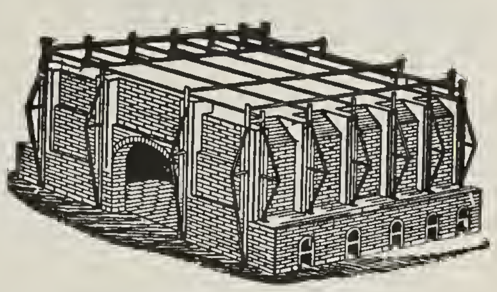
For Burning all Kinds of Wares.



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Having had years of practical experience in the management and actual burning of all kinds of kilns, claim it to be THE BEST Up-Draft KILN IN THE MARKET.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns.

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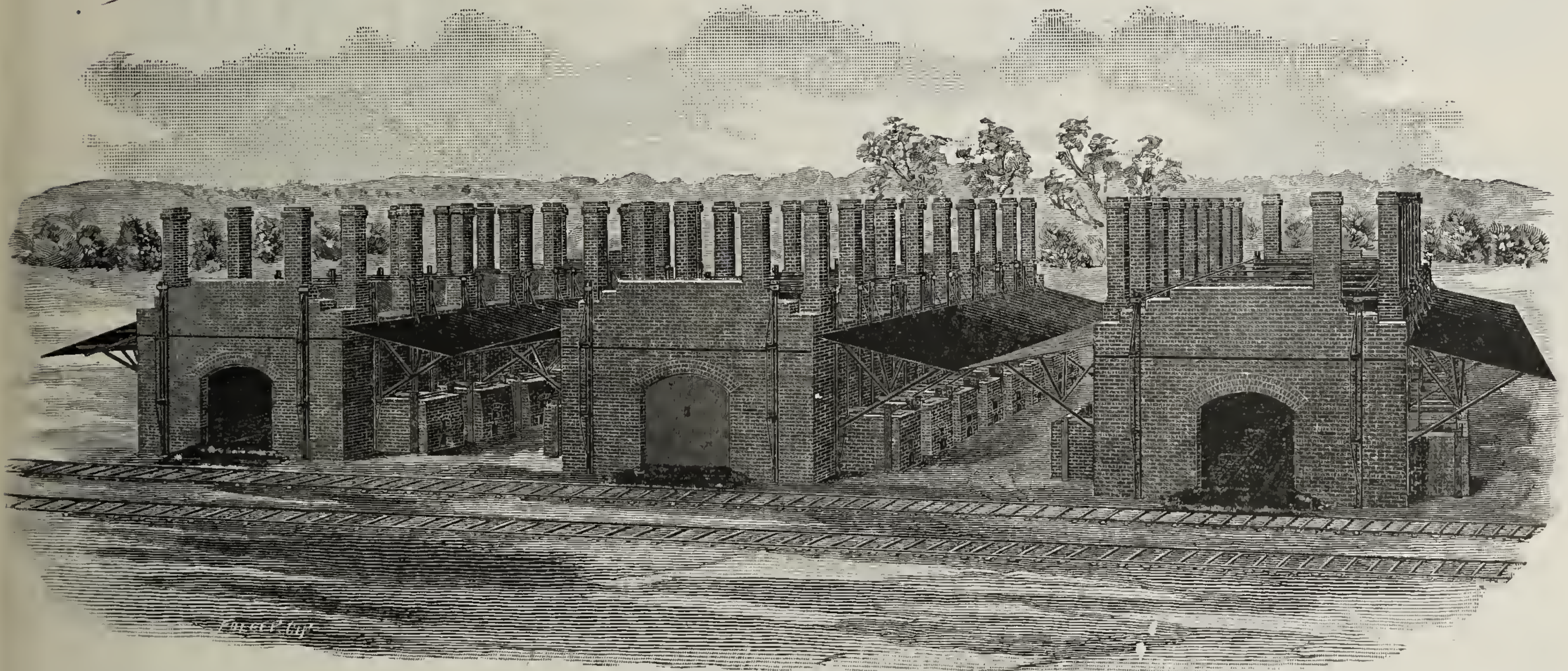
STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM.



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant, Burns uniform and all hard. Economical in construction and operation.

The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

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SHOULD BE ROUND

SAVING FIRST COST
REPAIR COST

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TO MAKE THE BEST WARE

SHOULD BE PLATT TRIPLE DRAFT

AND THEN YOU ARE IN THE BUSINESS TO STAY—AND TO MAKE MONEY.
"NOTHING SUCCEEDS LIKE SUCCESS"

Except a Clayworker With an Economical Kiln.

THIS KILN Removes all possible objection to the ROUND KILN of large diameter. It combines with the simplicity of the old types

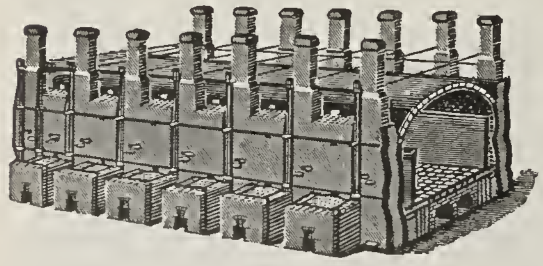
ABSOLUTE EVEN HEAT DISTRIBUTION REGARDLESS OF DIAMETER.

Its three positive floor outlets are distinctly independent, consequently the finest regulation is always obtainable, making the draft force in center area equal with the surrounding area, or giving any section all the draft, if desired. Accomplishing quick, even burns. Giving a kiln of unequalled heat power, and suited to general clayworking uses. Solid or perforated floors.

C. B. PLATT, INVENTOR.

PLATT TRIPLE DRAFT KILN CO., Van Meter, Iowa.

The Bushong Down Draft Kiln.



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BURNS any kind of fuel.
USES less fuel than any other Kiln.
RESULTS are uniform.
NO damaged wares.
SAVES time and labor.

USED by some of the largest plants.
NO experiment.
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FULL control of drafts.
ONLY Kiln built that has Double Draft.
REDUCES burning time 24 to 48 hours.
MOST economical in construction.

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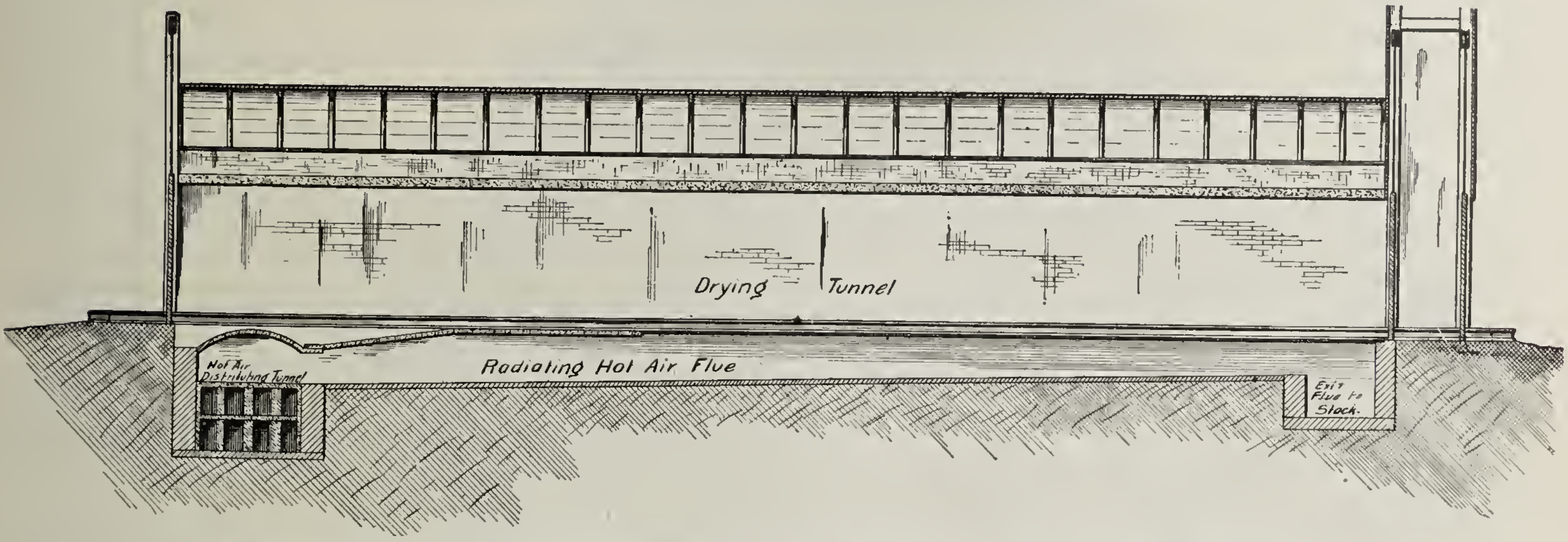
Economy Waste and Direct Heat, and Radiating Floor Dryers are Constructed on SCIENTIFIC and UP-TO-DATE Principles.

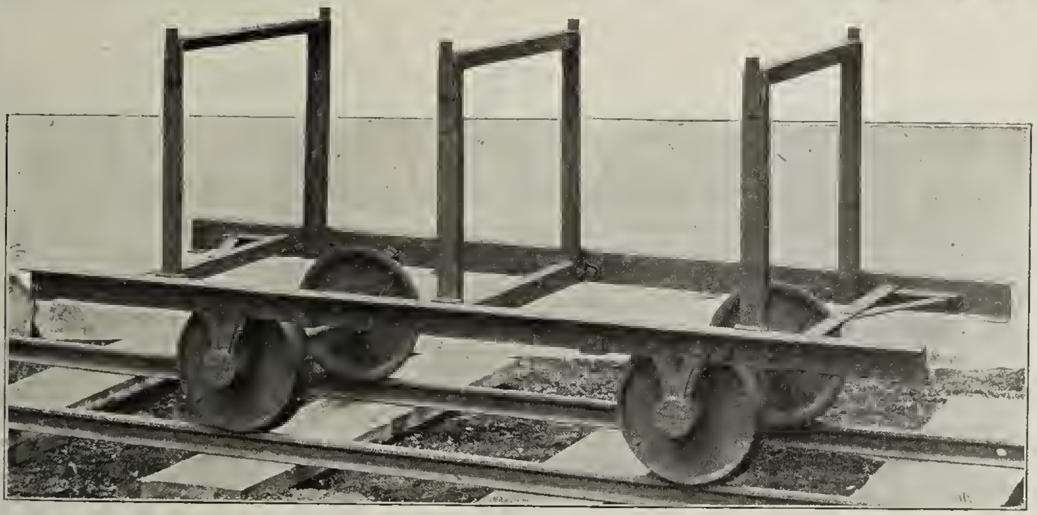


PRACTICAL CONSTRUCTING ENGINEERS OF CLAY PLANTS.

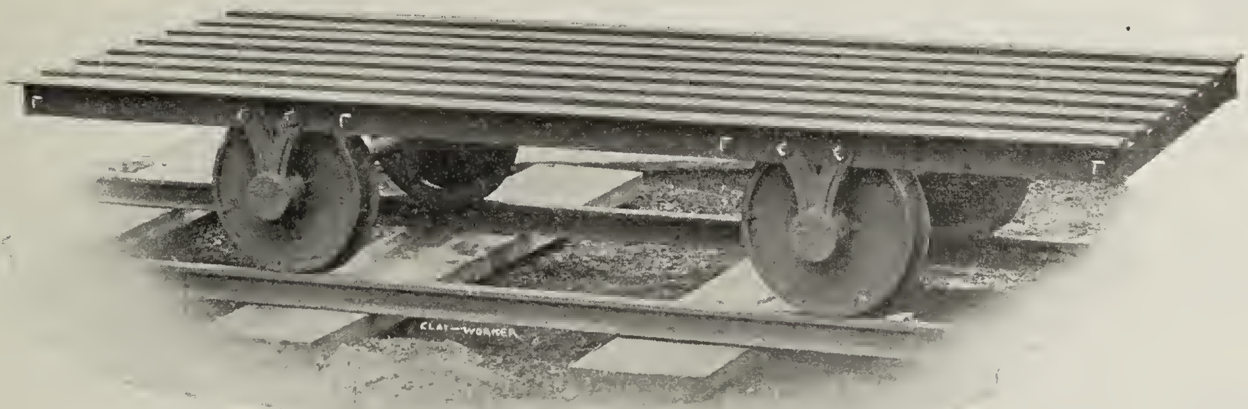
ECONOMY DRYER AND OIL BURNING COMPANY,

Write for Catalogue.

800 Columbia Bldg., ST. LOUIS, MO.



No. 245.
DOUBLE DECK CAR.
FOR WOODEN DECKS.
Angle Frame.



No. 222,
STIFF MUD
FLAT CAR.
Steel Deck,
Angle Frame.

The Cleveland Car Company,

148-152 Scranton Ave.,
CLEVELAND, OHIO.

The NATIONAL DRIER

Is One of the Best Investments Ever Made at Our Plant.

CHRISTY FIRE CLAY CO.
ST. LOUIS.

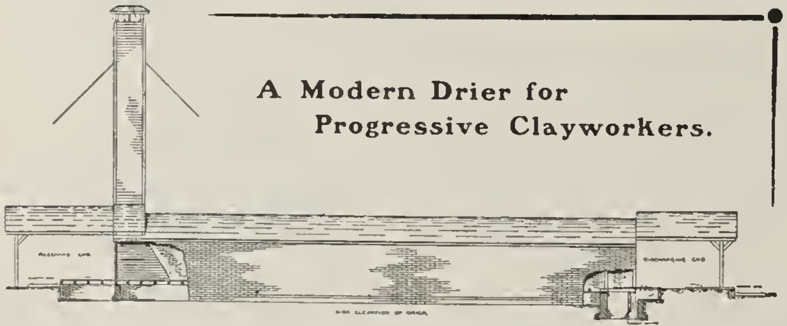
THE NATIONAL DRY KILN CO.,
33 West South St.,
Indianapolis, Ind.

May 14th, 1902.

GENTLEMEN—We take pleasure in giving you the result of our experience with the Tunnel Drier System recently purchased from you. We find that the use of exhaust steam during the day time with about 40 lbs. pressure of live steam at night, dries our product thoroughly in 48 hours, and in view of the fact that our former system required an average of 120 hours, you can readily imagine that we are very much gratified. The economy of labor, saving of fuel, and increase of capacity resulting from the installation of your system, make the expenditure one of the best investments we have ever made at our plant. Yours truly,

W. C. MORRIS, V. P. & G. M.

A Modern Drier for
Progressive Clayworkers.



Is free from complicated Features. If you want IMPROVED METHODS, put in the modern up-to-date

NATIONAL DRIER

Our Steel Roller Bearing Cars are Unequalled.
Let us send you a circular, it will interest you.
Our guarantee protects from all chances.

The National Dry Kiln Co.,
1118 East Maryland St., INDIANAPOLIS, IND.

C. H. BEALE, Mangr. Southern States, MONTGOMERY, ALA.
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Form No. 168.

THE WESTERN UNION TELEGRAPH COMPANY.

INCORPORATED

21,000 OFFICES IN AMERICA. CABLE SERVICE TO ALL THE WORLD.

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This is an UNREPEATED MESSAGE, and is delivered by request of the sender, under the conditions named above.

THOS. T. ECKERT, President and General Manager.

RECEIVED at Auditorium Annex, Chicago.

16 CH EY EM 21 Collect Tis Ans

Matawan N.J. Aug. 21

J. W. Hornsey
Auditorium Annex, Chicago.

We are drying seventy five thousand wire cut brick per day with two tons soft coal.

The Cliffwood Brick Co.

1 P.M.

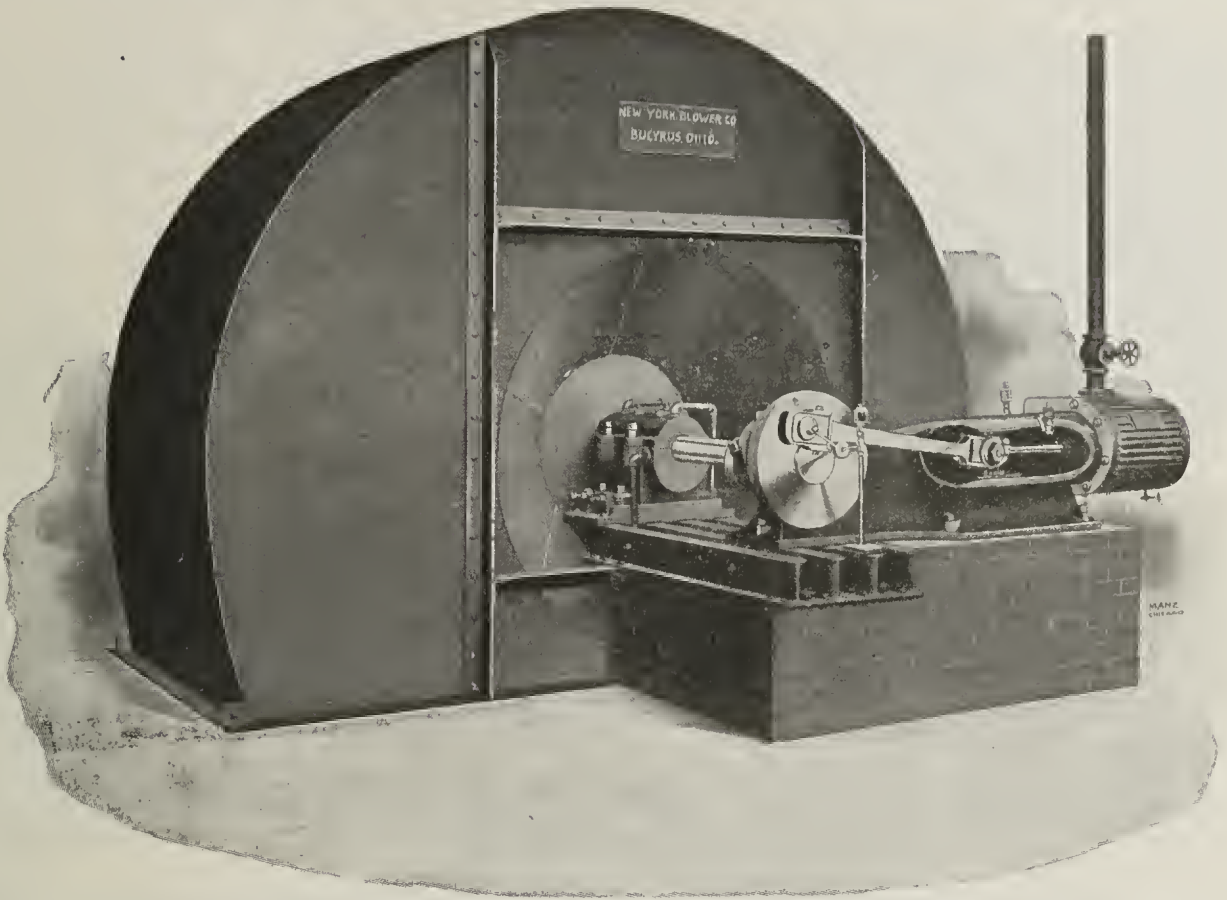
Does this suggest anything to you?
If so, address——

The Crown Dryer Co.,
New England Bldg. CLEVELAND, OHIO.

DRYING ECONOMY.

Our Dryer is superior to others by reason of improved methods, low cost of construction and economy of operation. If you're interested in dryers write for particulars. Ours will prove a good investment.

We also manufacture Conveyors, Exhausters, Heaters, Fans, Engines and Mechanical Draft Apparatus.

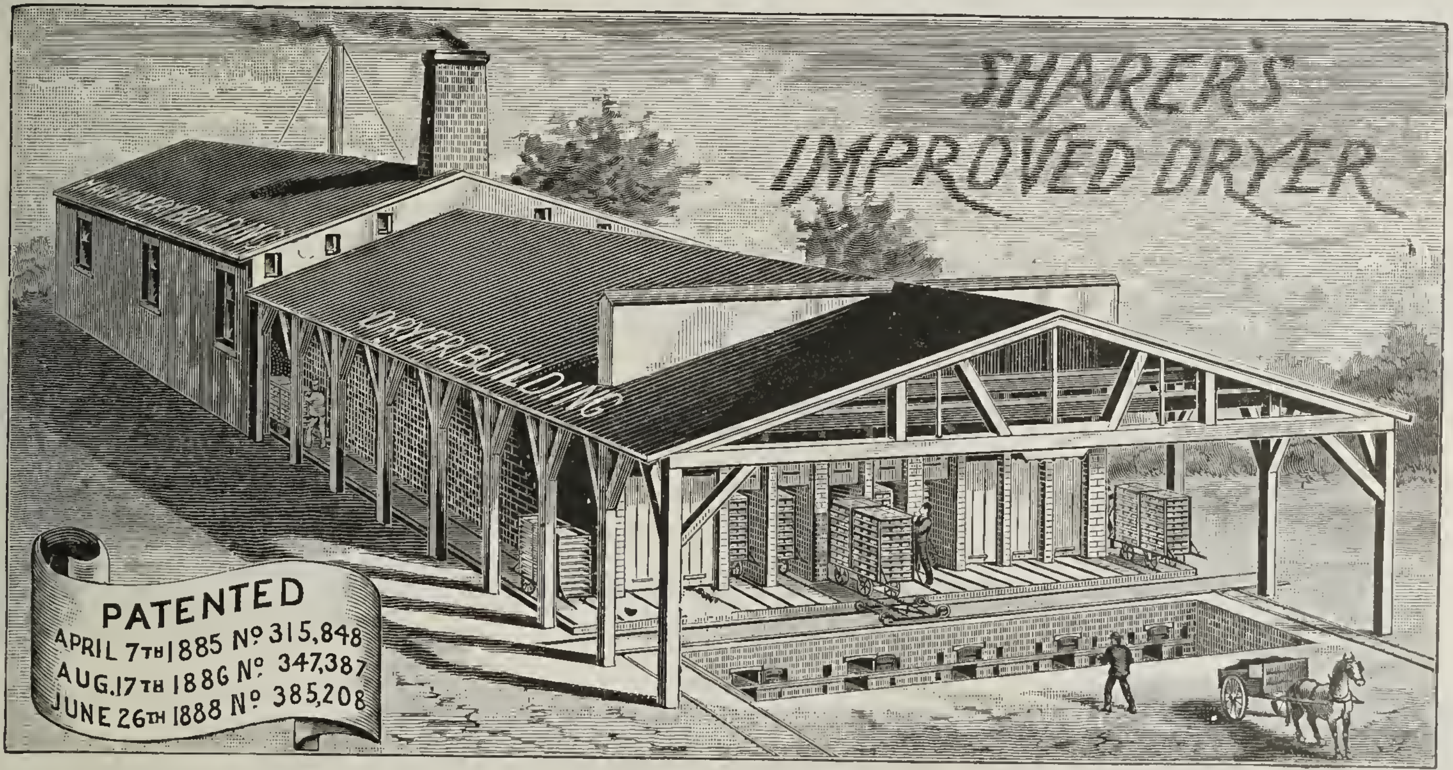


The New York Blower Co., Bucyrus, Ohio.

New York Office, 39-41 Cortlandt Street, New York.
Boston Office, 185 Sumner Street, Boston, Mass.
Chicago Office, Merchants' Loan and Trust Building.
European Office, Cathedral Corner, Fennel Street, Manchester, England.

Geo. W. Sharer,

**Brick Manufacturing Expert,
Constructing Engineer,
Contractor and Builder.**


SHARER'S IMPROVED DRYER
DRYER BUILDING
PATENTED
APRIL 7TH 1885 Nº 315,848
AUG. 17TH 1886 Nº 347,387
JUNE 26TH 1888 Nº 385,208

COMPLETE Dryer and Kiln outfits, and Complete Plants a specialty. Address

Geo. W. Sharer, 2228 Tioga St., **Philadelphia, Pa.**

Mention The Clay-Worker.

A STEAM SHOVEL

MODEL "G," 2½ YD

Is the most economical appliance for excavating clay.

Never strikes, and is therefore more reliable than hand labor.

Will work in all kinds of weather, insuring regular supply of material.

More thoroughly mixes the different stratas than is possible to do by hand.

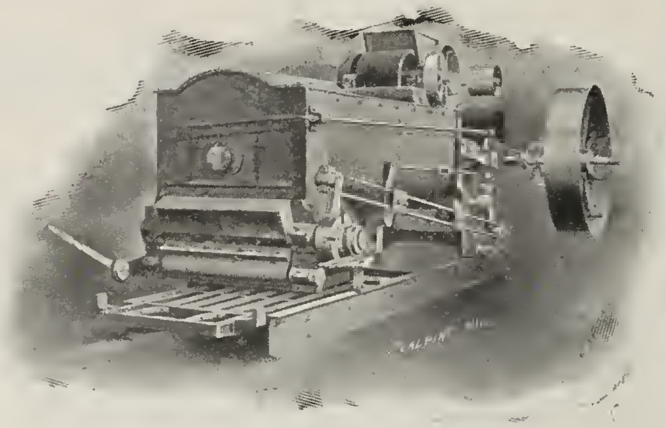
Will prove a paying investment in any yard where the material is taken from a face.

For many years we have supplied Steam Shovels for Brick Yards, and our machines are in successful use in the yards of many of the largest and most successful brick manufacturers of the country. We build machines having dipper capacities from ¾ cubic yard up to 4½ cubic yards, and can supply them with friction feed on boom or with independent engine feed.

If interested write us for illustrated catalog.

STYLE "C," ¾ YD.

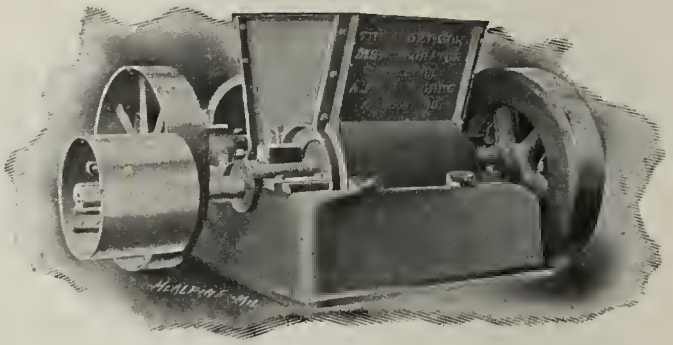
THE MARION STEAM SHOVEL CO., 610 West Center Street,
MARION, OHIO.



Horizontal Anderson Brick Machine.

DON'T PURCHASE UNTIL YOU WRITE US.

We can save you money.



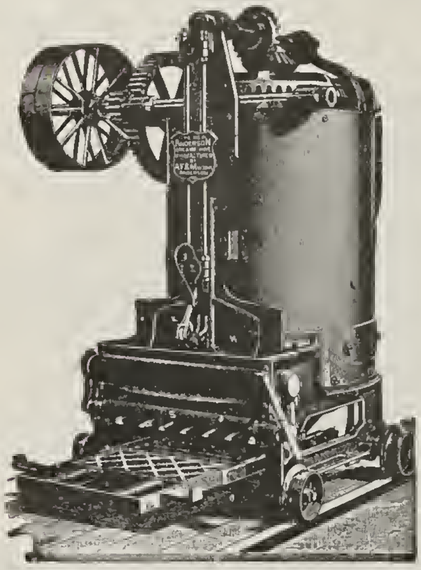
Best Disintegrator on the Market.

MANUFACTURERS OF . . .

New Departure Tile Machine,

The only machine for making Tile from 3 to 24-inch Diameter.

Pug Mills, Molds, Trucks and Barrows,
And all Brickyard Supplies.

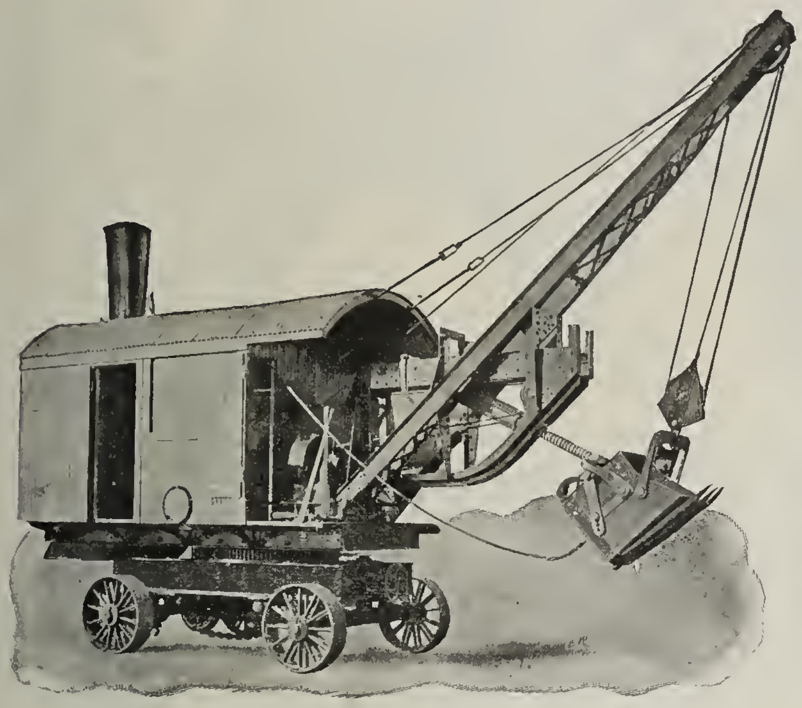


Steel and Iron Upright Stock Brick Machine.

1899 Horse Power Machine.

The Anderson Foundry and Machine Works,
Anderson, Ind.

Handle Your Clay With One Man and The Thew Steam Shovel.



The Thew Improved No. 1 Shovel.

* * *

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

* * *

Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

* * *

Made in all sizes.
Mounted on Car Wheels
or Traction Wheels.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 150,000 brick per day.

WRITE US FOR CATALOGUES OR INFORMATION.

The THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.

HAS GIVEN BETTER SATISFACTION THAN YOU CLAIMED IT WOULD.

THE ST. MARY STEAM BRICK WORKS.

Franklin, La., Sept. 20, 1902.

MESSRS. LEADER MANUFACTURING COMPANY, DECATUR, ILL.:

Gentlemen—The Leader No. 25 which you sold me last spring has done even more work, and has given me better satisfaction than you had claimed it would, and in justice to you, and as evidence of my appreciation, I take pleasure in attesting its merits.

Very truly yours, EUG. BODIN, per Thos. Bodin.

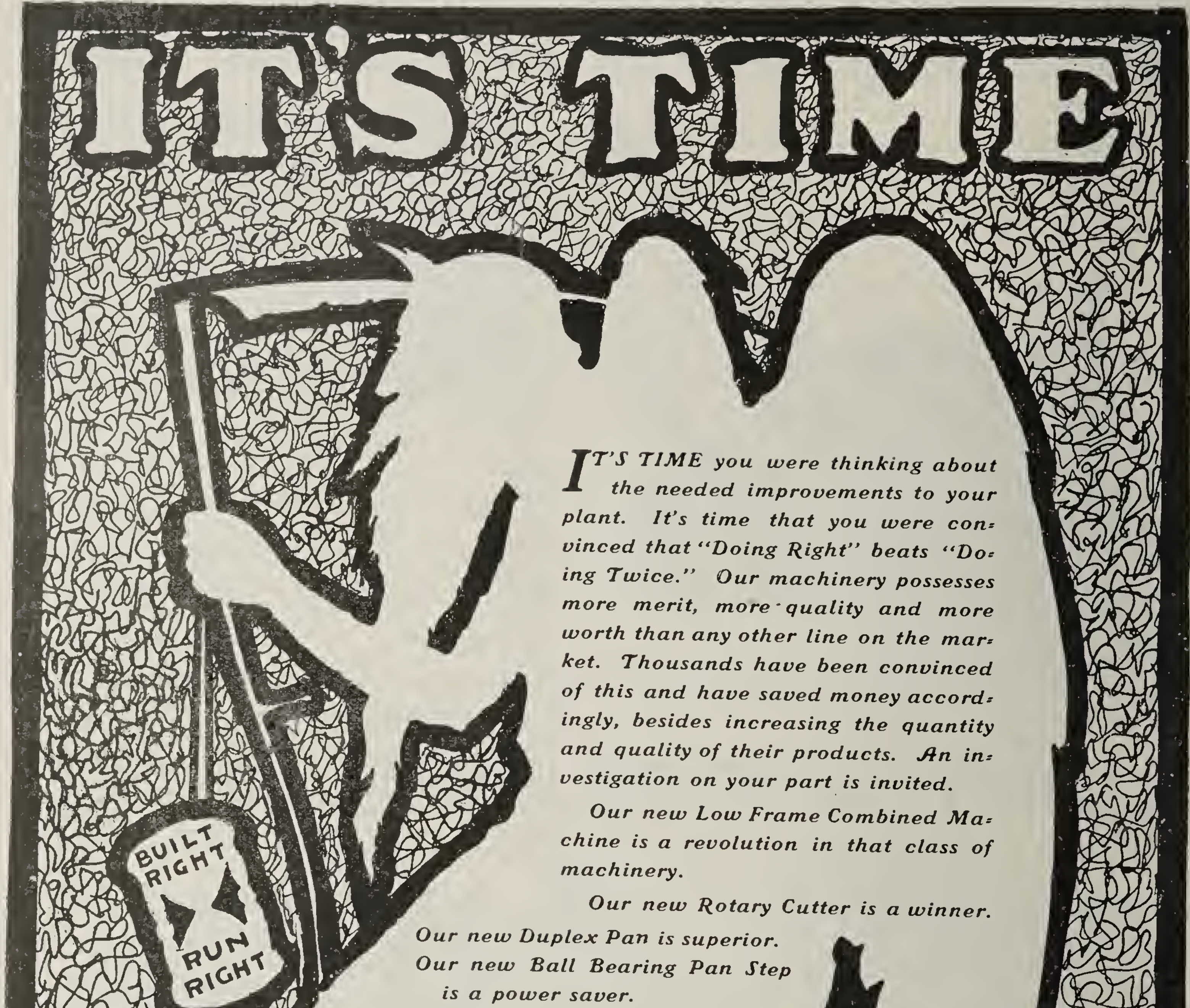
Leader Machines Are Not Better Than the BEST

BUT BETTER THAN THE REST,

And the Price is Right!

For further words of praise and little book of "opinions," write to

LEADER MANUFACTURING COMPANY, = Decatur, Ill.



IT'S TIME

IT'S TIME you were thinking about the needed improvements to your plant. It's time that you were convinced that "Doing Right" beats "Doing Twice." Our machinery possesses more merit, more quality and more worth than any other line on the market. Thousands have been convinced of this and have saved money accordingly, besides increasing the quantity and quality of their products. An investigation on your part is invited.

Our new Low Frame Combined Machine is a revolution in that class of machinery.

Our new Rotary Cutter is a winner.

Our new Duplex Pan is superior.

Our new Ball Bearing Pan Step is a power saver.

Write and state your needs.

Complete catalogue for the asking.

The American Clay-Working Machinery Co.,

New York Office,
39-41 Cortlandt St.
Rooms 101 to 106.

BUCYRUS,
OHIO, U. S. A.

Chicago Office,
Merchants' Loan and Trust Bldg.

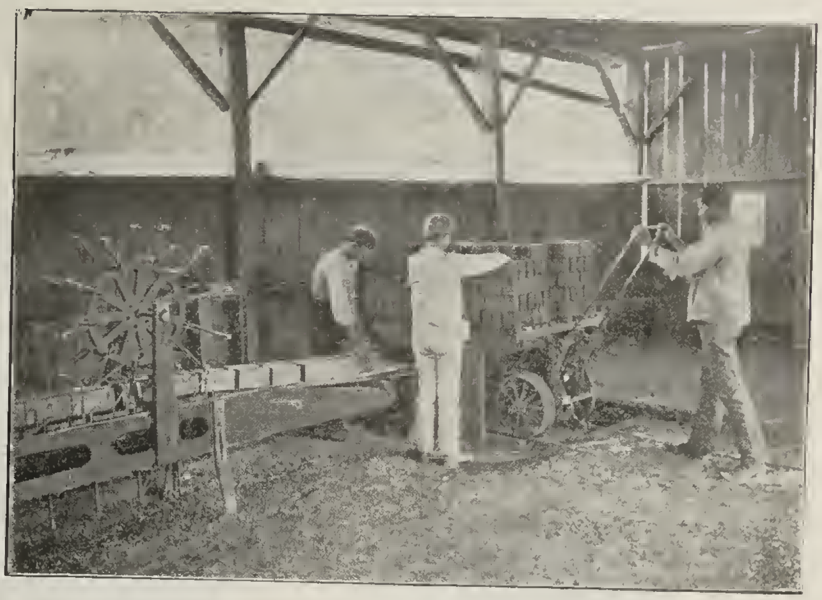
A PERFECT CAR SYSTEM

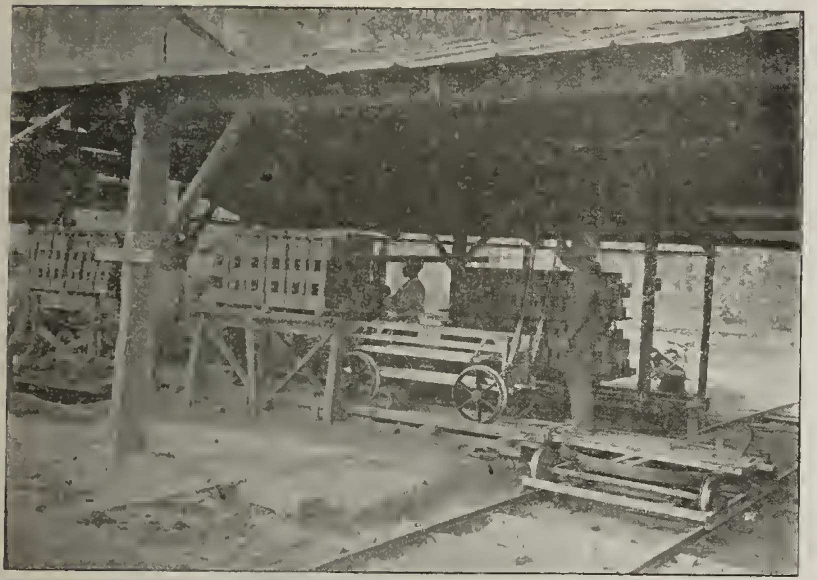
For Either Soft or Stiff Mud.

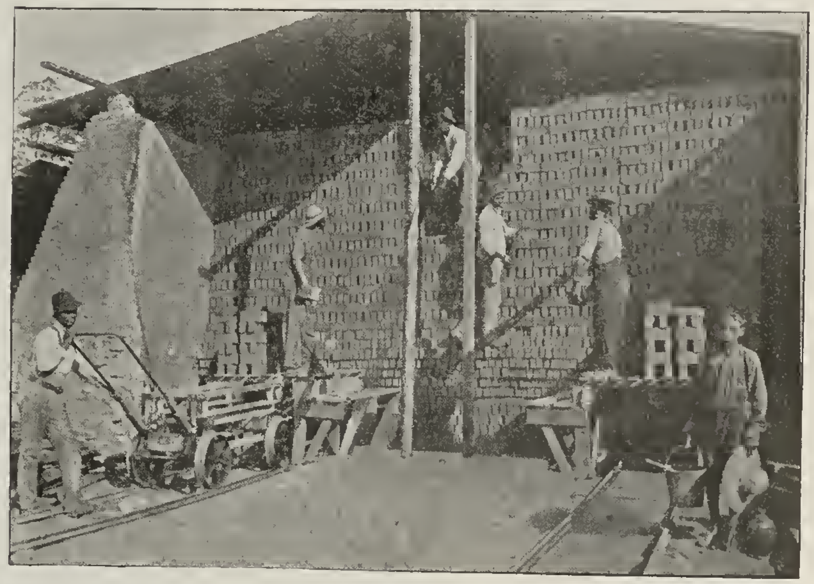
With only TWO CARS

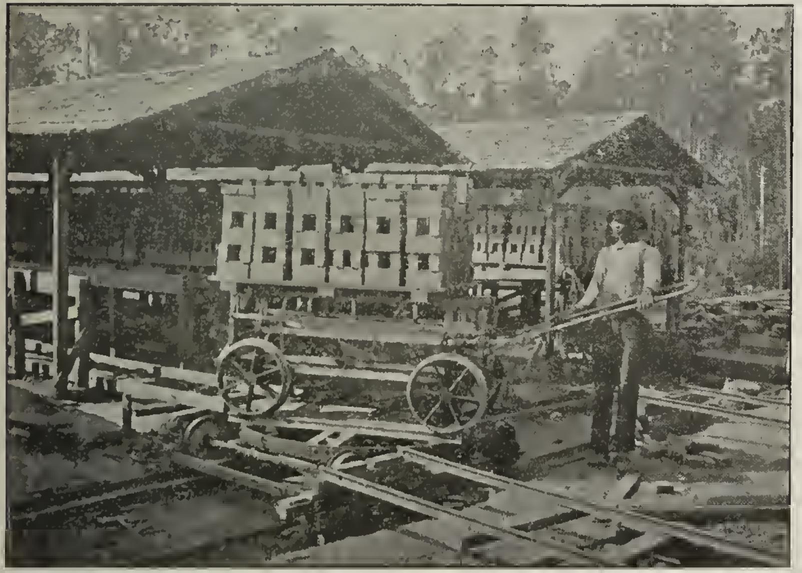
One man will handle 40 M brick per day.

No Fan to Run. No Boiler to Steam.
No Pipes to Burst. No Fireman to Pay.
No Dryer. No Fuel.









We Guarantee This to be the cheapest, best and only out-door car system ever offered the brick manufacturer. We guarantee to handle from the machine and put on the yard in good condition, from thirty to forty thousand green brick per day, with one man, and same amount to kiln. We guarantee our patent car and system to perform the work for which they are built, and all the workmanship and quality of material to be first class. Our Covers and Storm Curtains give absolute protection from rain and storms and also protects tender clays.

THIS SYSTEM consists of two elevating and lowering brick cars for a thirty to forty thousand capacity brick plant; these take the place of several hundred common cars. The car is made of channel steel, with movable deck, which is raised and lowered by a compound lever. From two to five hundred brick are taken from the machine and placed on a pallet, the lever lowered, raising pallet off the rests. The load is then on car, which is run on the yard to the rests along each track; the lever is again raised, thus lowering deck of car which places load on the rests.

Scotts Patent Brick Car Co.,

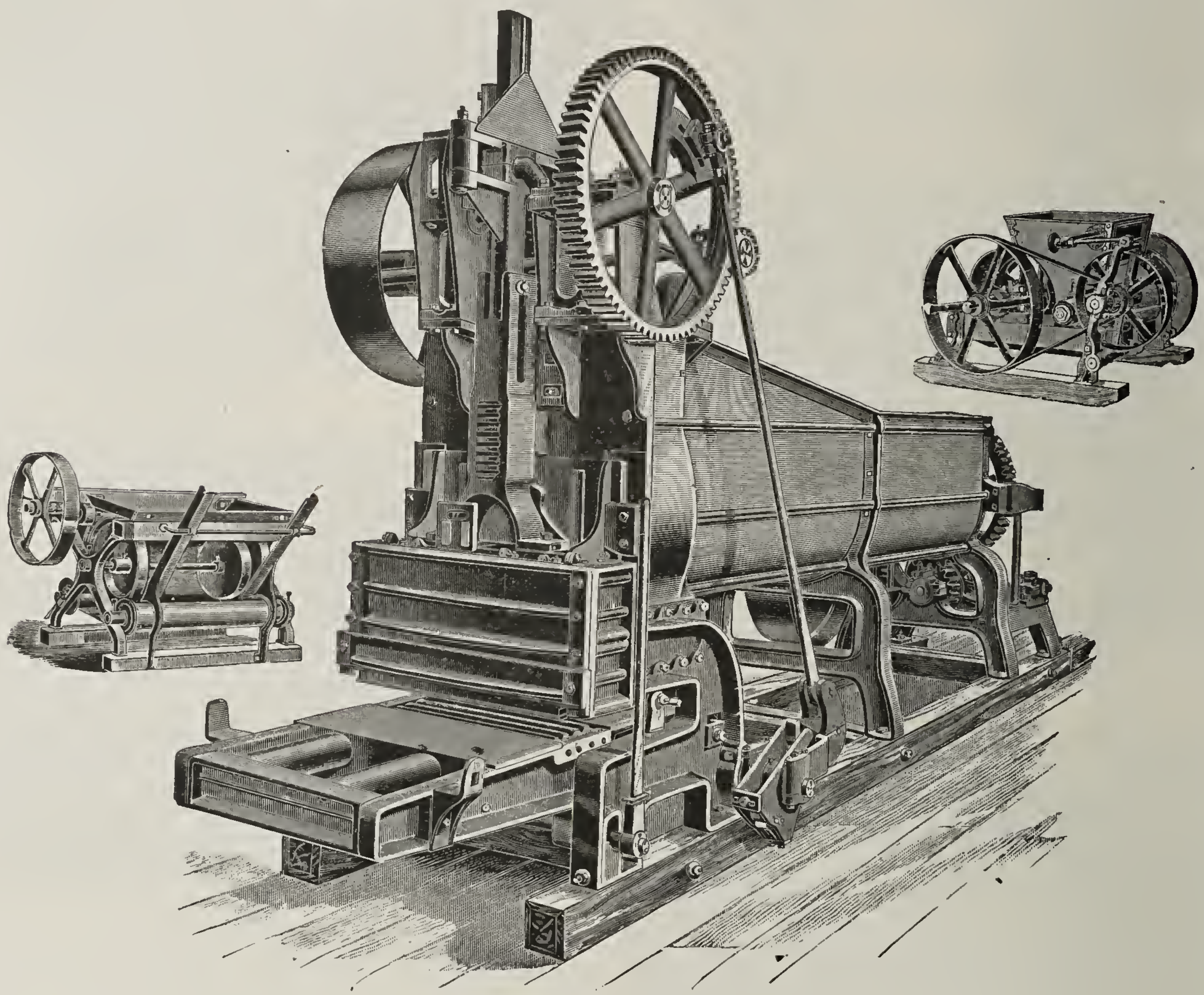
Knoxville, Tenn.

Write for catalogue and plan showing method of handling soft mud brick, also the nearest point you can see our system in practical operation.

Mention The Clay-Worker.

THE POTTS Horizontal Brick Machine

With a Potts Disintegrator on the rear end and a Potts Mould Sander along the side



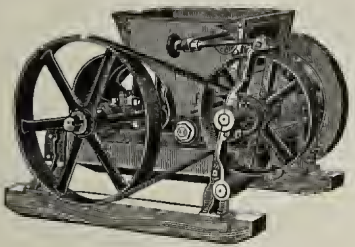
makes an outfit which will give pleasure to every brickmaker using them. With the above outfit the clay can be worked direct from the bank, and brick made which will have no equal for **CLEAN**, sharp corners and smooth surfaces. For **STENGTH, DURABILITY, SIMPLICITY, QUALITY** and **QUANTITY** of **MATERIAL** used in their construction and **WORKMANSHIP** they have no equal.

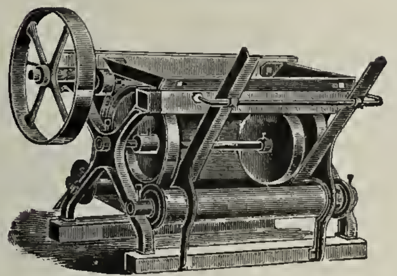
Don't be mislead by claims made by competitors that their machine is just as good as the Potts. That machine is yet to be made.

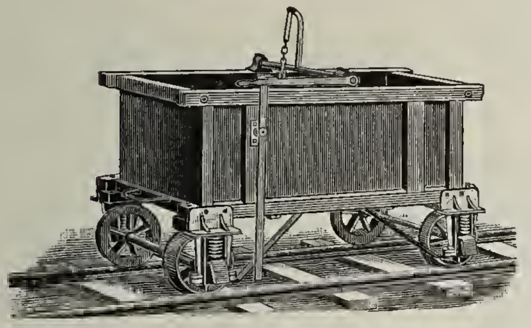
Write for Prices.

C. & A. POTTS & CO., - Indianapolis, Ind.

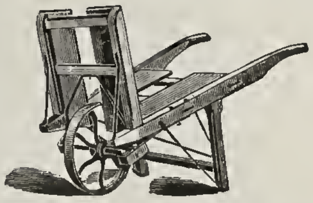
BRICKMAKING MACHINERY.

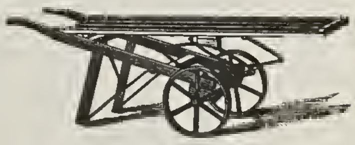


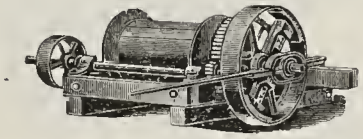


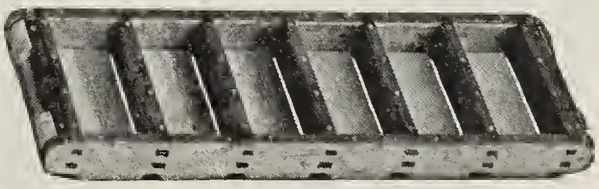


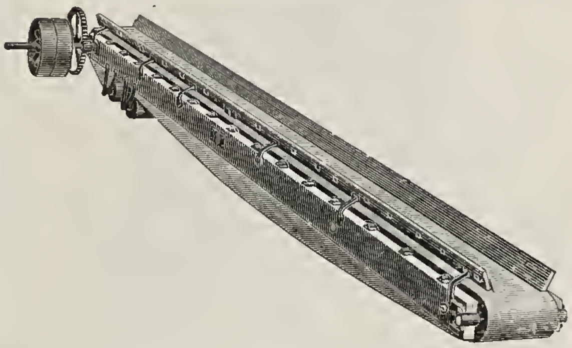
Pug Mills,
Disintegrators,
Mould Sanders,
Trucks and Barrows,
Winding Drums,
Clay Cars (any style)
Cherry Brick Moulds,
Elevators,
Granulators,
Pulleys,
Shafting,
Hangers,
Belting,
Kiln Castings.











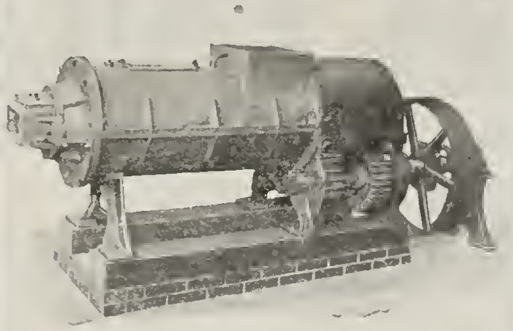
WE MANUFACTURE ALL OF THE ABOVE, SO CAN GUARANTEE QUALITY OF MATERIAL AND WORKMANSHIP. WITH OUR IMPROVED AND MODERN TOOLS WE ARE IN POSITION TO FURNISH THE BEST AT LOWEST POSSIBLE PRICES.

IF IN NEED OF SUPPLIES OF ANY KIND, WRITE FOR PRICES.

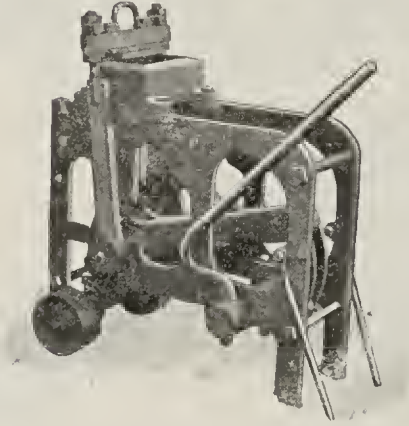
C. & A. POTTS & CO.,

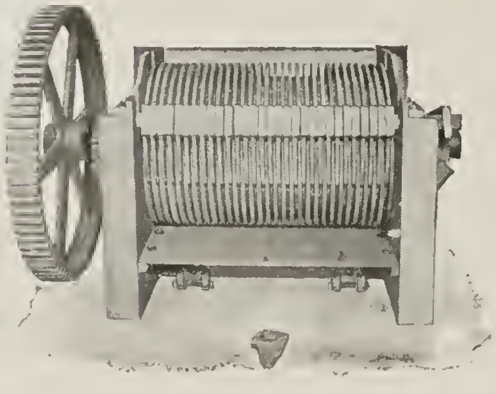
Mention the CLAY-WORKER

Indianapolis, Ind.


No. 1 Auger Machine
(Capacity 20,000 brick daily.)

Double Deck Spring Truck
(For Pallet Yards.)


Hand Represses
(Made Single or Double Lever)


Soft Mud Clay Screen
(Renders Clay Fine as Silk.)

BRICK Machinery

OF
ALL
KINDS.

**SOFT MUD,
WIRE CUT,
DRY PRESS.**

❧

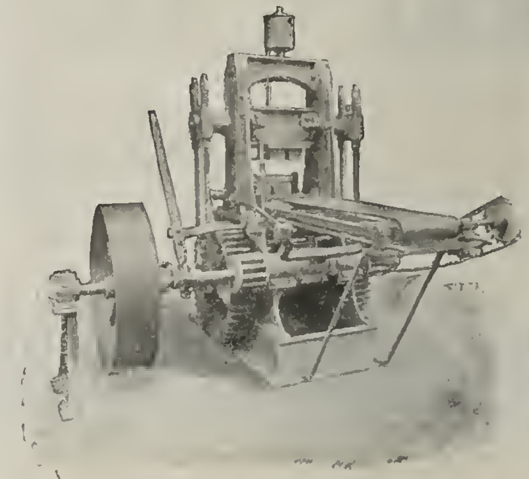
**WE
EQUIP
PLANTS
COMPLETE,**

Including
Brick Machines,
Disintegrators,
Tempering Mills,
Elevators,
Dryers,
Engines,
Boilers, etc., etc.

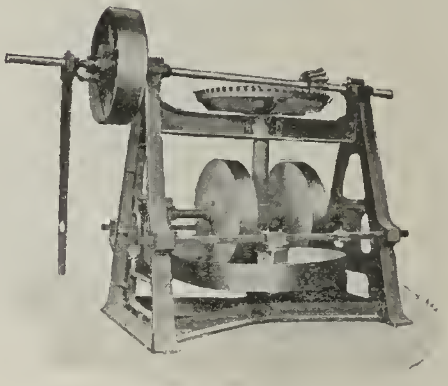
In fact,
EVERYTHING
A
BRICKMAKER
NEEDS.

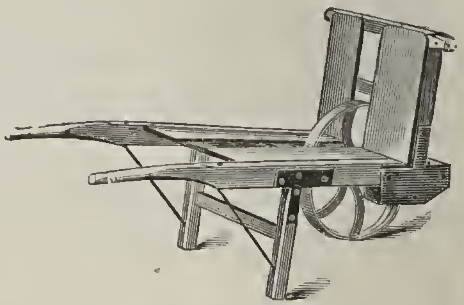
❧

SEND
FOR
CATALOG.


Steam Repress
(A Splendid Machine.)

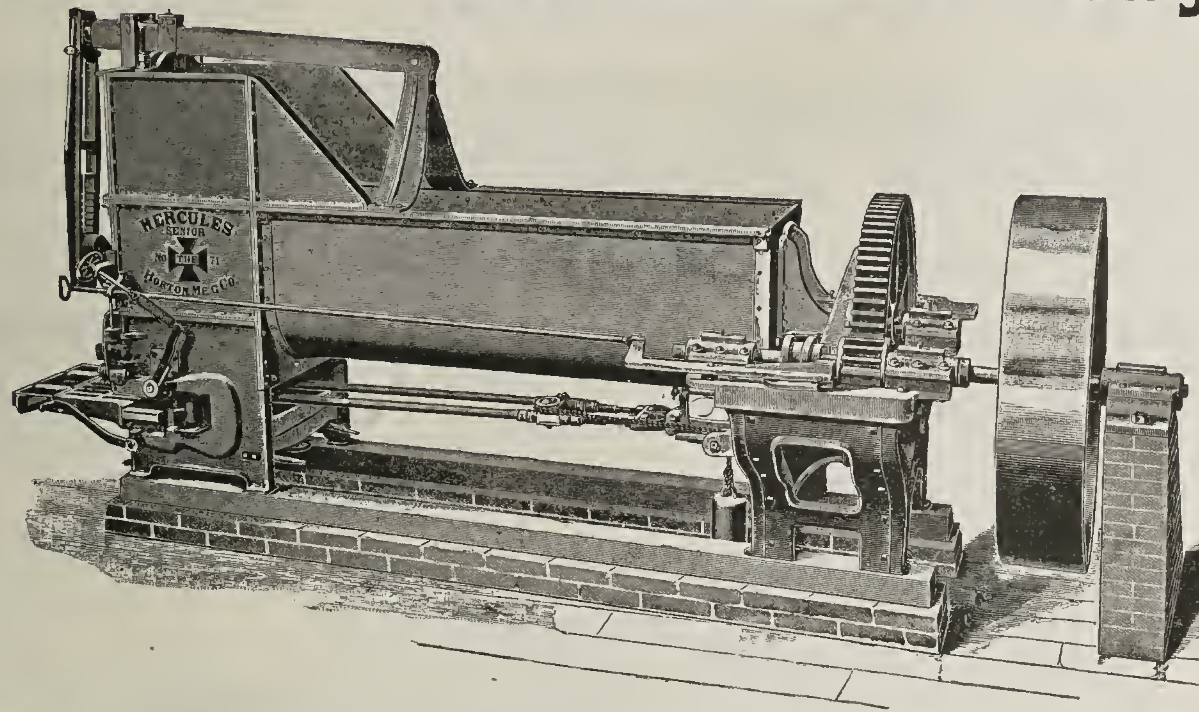
Single Deck Barrow
(A Great Favorite).


Dry and Wet Pans
(5, 7 and 9 Ft.)


Green Brick Barrows
(Hundreds in Use.)

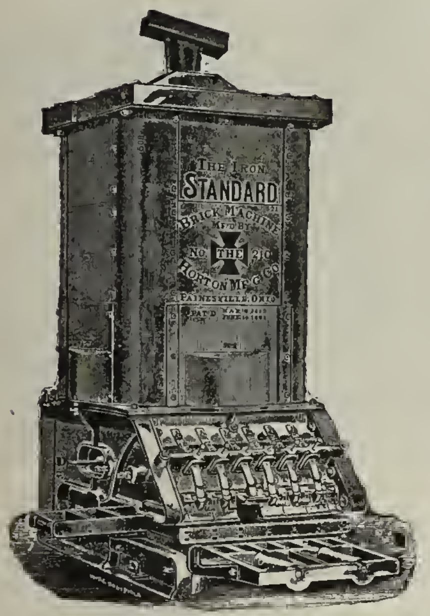
THE HENRY MARTIN BRICK MACHINE MFG. CO., Inc.
LANCASTER, PA., U. S. A.

The HERCULES Works the Clay Stiff.

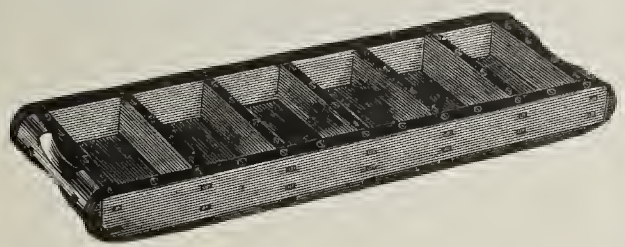


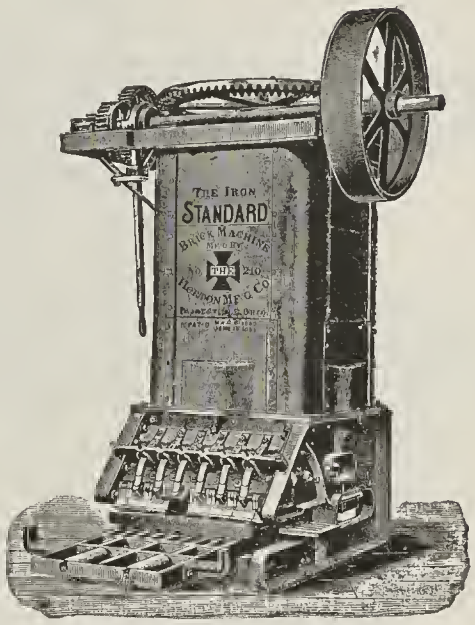
MOLDS.

Is one of our Specialties. Either Hand, Machine or Shapes. We have a shop full of Special Machinery for the Manufacture of these as well as Trucks of all kinds, Wheelbarrows. Dump Cars, and Carts. In fact everything used on a Brickyard.



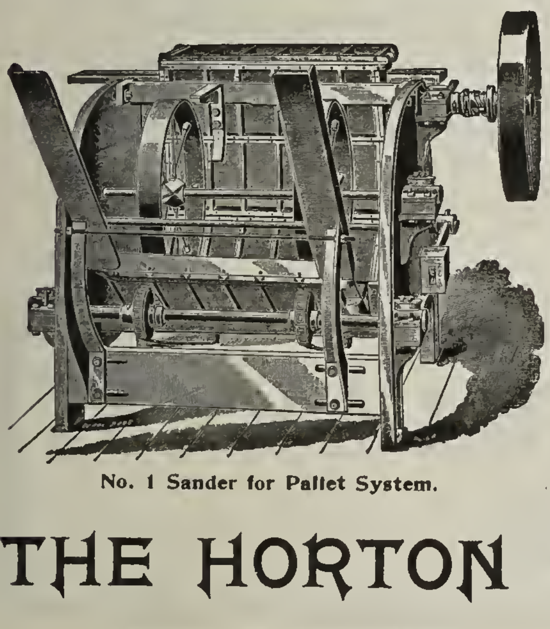
Iron Standard Horse Power Brick Machine—The Leader of all Horse Power.





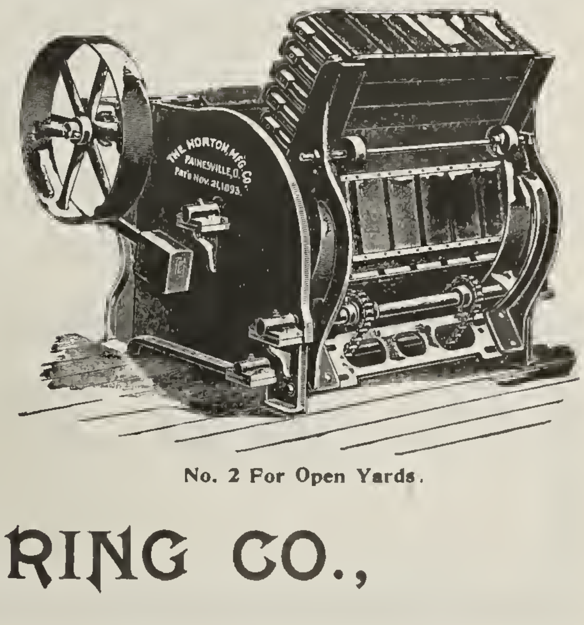
Standard Steam Power Brick Machine—Just the Machine for Medium Sized Yards.

The Mold Sanders That "Sand"



No. 1 Sander for Pallet System.

TWO STYLES.


THE HORTON MFG. CO.
PAINESVILLE, O.
PAT'D NOV. 21, 1893.

No. 2 For Open Yards.

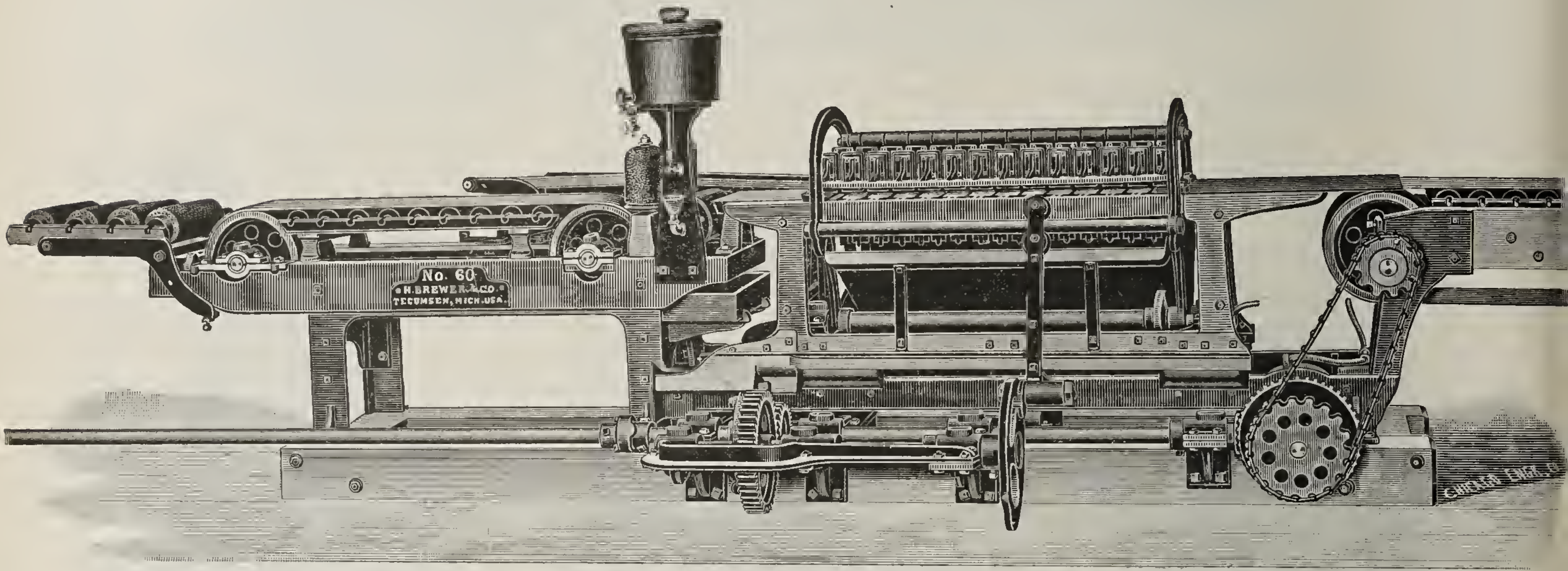
THE HORTON MANUFACTURING CO.,

Mention The Clay-Worker.

Painesville, Ohio, U. S. A.

IT DOES THE WORK

And does it well. It cuts no stub, but makes all the columns into brick. It is simple in construction, efficient and economical in operation.



THE BREWER NO. 60 AUTOMATIC BRICK CUTTER.

It is built on honor and sold on merit. A long list of users testify to its efficiency, but every purchaser is given a guarantee of satisfaction or no sale.

Get catalogs and references.

H. BREWER & COMPANY,

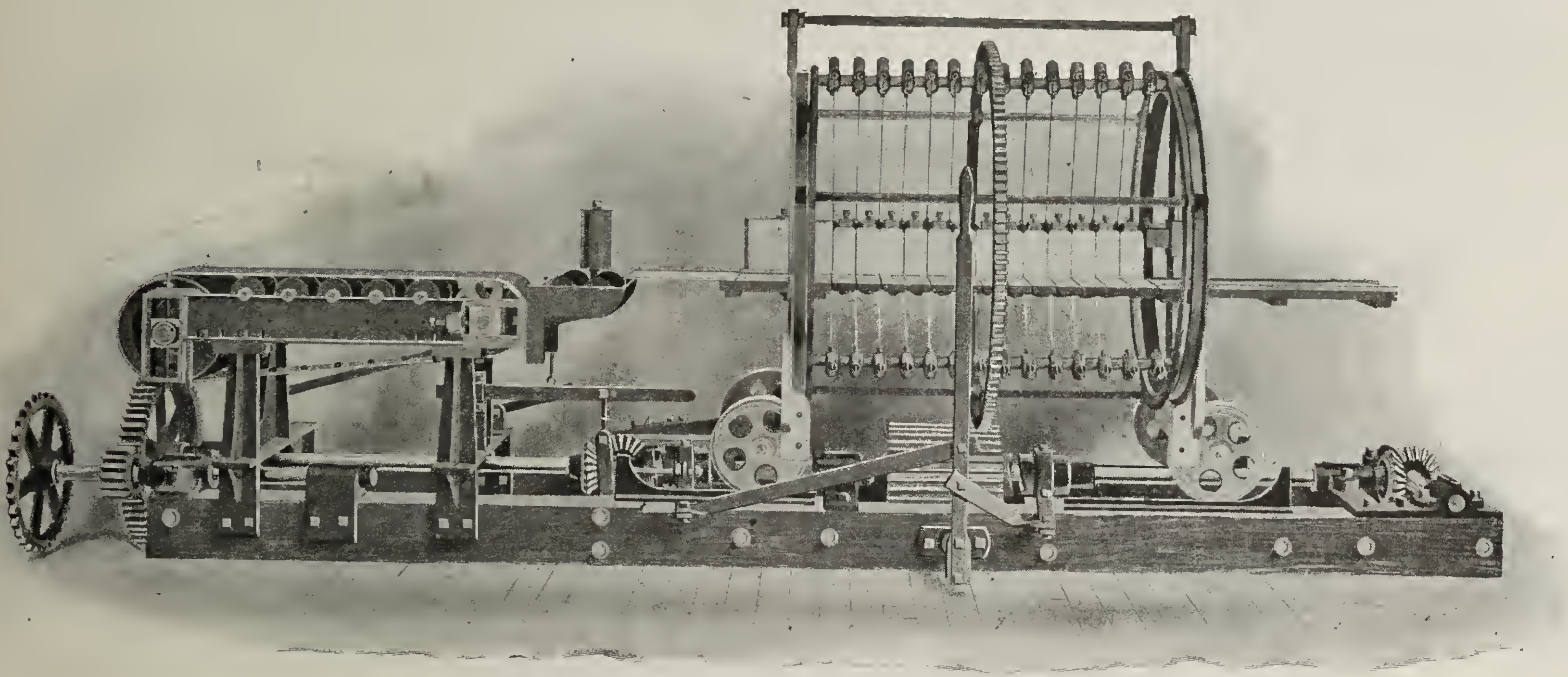
Tecumseh, Michigan.

THE CUTTER THAT EXCELS

IS THE

Wonder Semi-Automatic Side Cut Brick Cutter.

Works Clay Where Others Fail.
Makes Brick Equal to Dry Press Brick.



SEMI-AUTOMATIC SIDE CUT BRICK CUTTER.

This Cutter is simplicity itself, and is a success in every particular.
Is operated with one-half the expense of an Automatic.
No feathered edges—no cracked or crooked brick.
Absolute down cut. Nothing on the market like it.
Detailed information cheerfully given. Write us.

The Wallace Mfg. Co.,

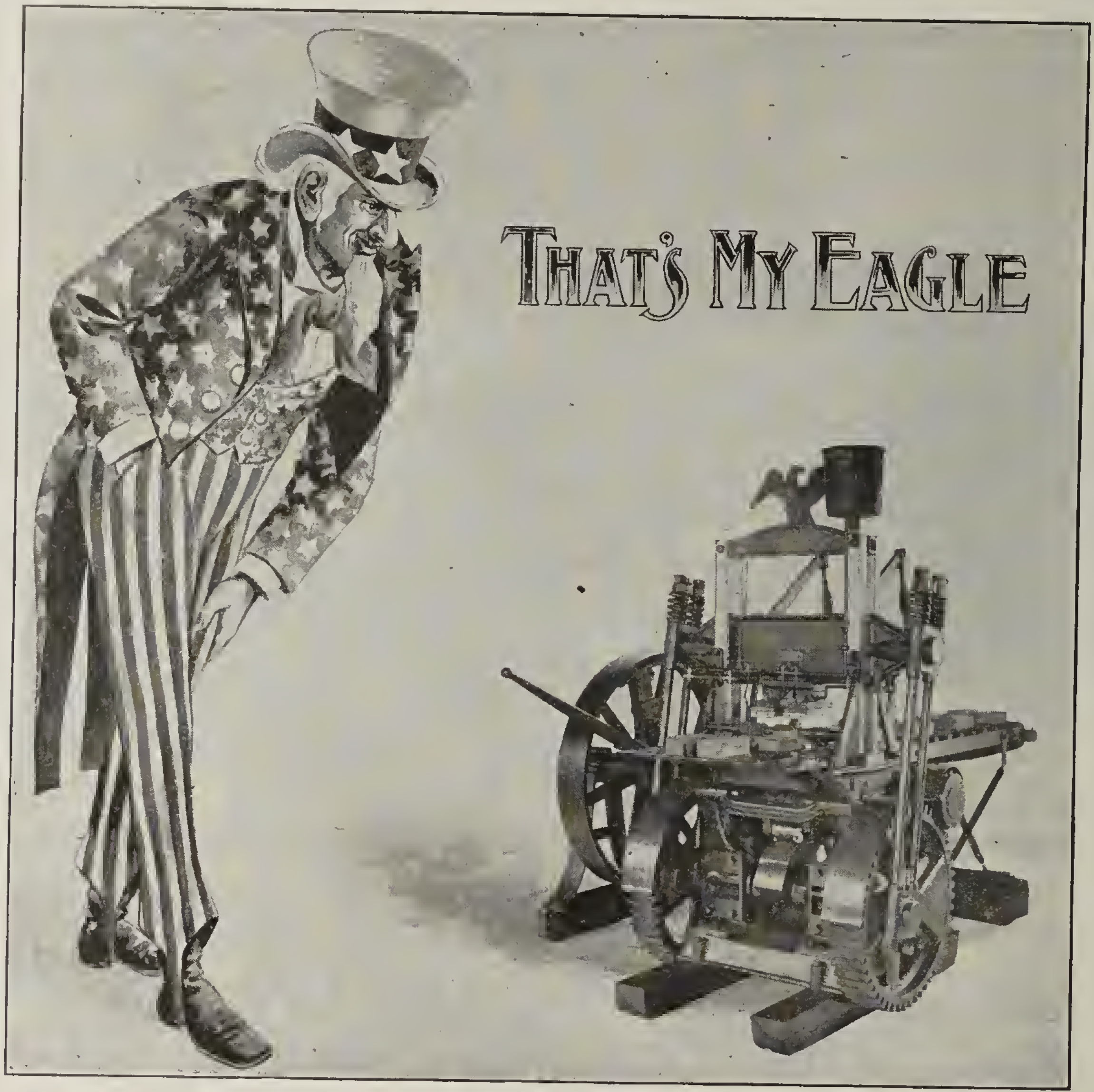
FRANKFORT, IND., U. S. A.

SOUTHERN AGENTS:
Atlanta Brick Machinery Co.,
403 Prudential Building, ATLANTA, GA.

WESTERN AGENTS:
Chicago Brick Machinery Co.,
225 Dearborn Street, CHICAGO, ILL.

Mention The Clay-Worker.

UNCLE SAM is proud of the Eagle. So are we. So are all the clayworkers who have bought Eagles. Why is it? People are never proud of a poor thing or a disappointing investment. They all like the Eagle because it is a fulfiller of guarantees, because it stands for quality, because it's a willing worker, because it saves its cost in repair bills, because when the whistle blows it's ready and able to run, and is willing and able to run overtime, or all the time, without complaint. If you're going to buy a repress and are willing to buy on a business basis of economy, you'll be safe in investigating the record of the Eagle. We'll send you facts and figures for the asking, and a list of users. Wire or write.



We also build the only complete line of clayworking machinery in the various processes. Every machine a winner because it's "**Built Right and Runs Right.**"

The American Clay=Working Machinery Company,

Bucyrus, Ohio, U. S. A.

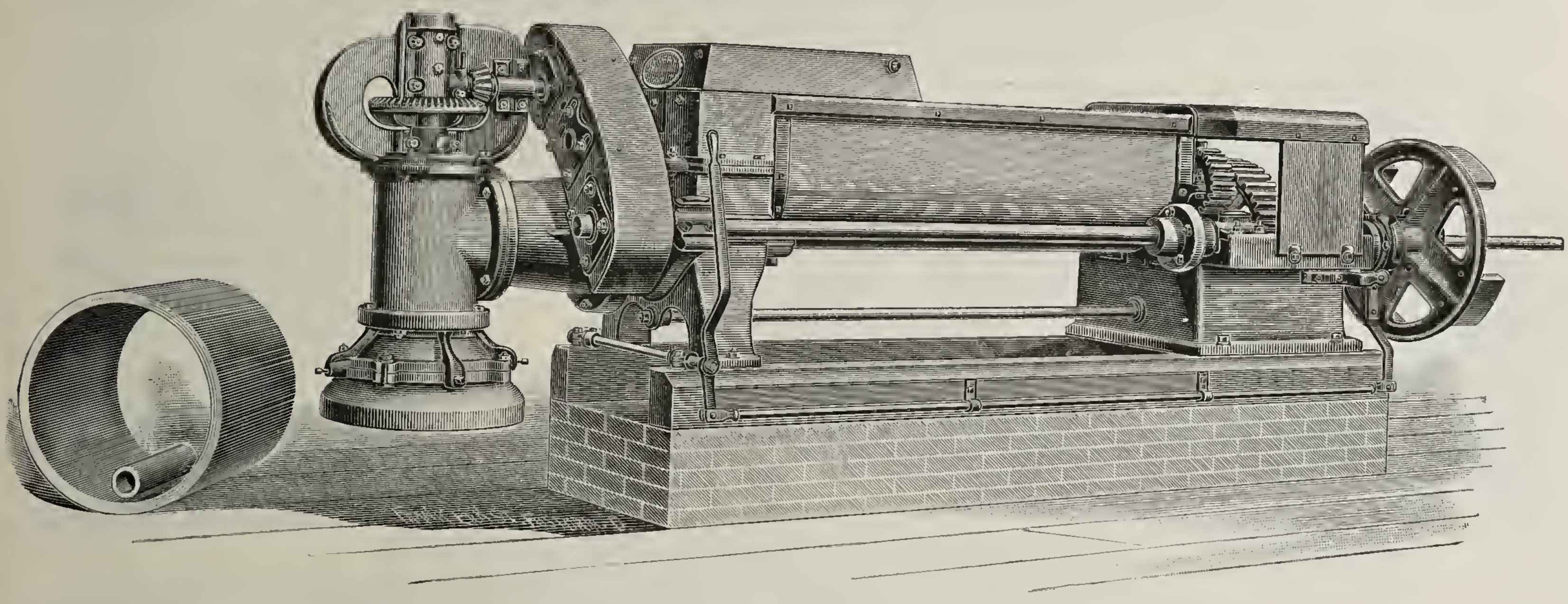
New York Office,
39-41 Cortlandt St.
Chicago Office,
Merchants' Loan and Trust Bldg.
European Office,
3 Gore St., Picadilly, Manchester, Eng.

See Ad. on Page 386.

A NEW COMBINATION.

◆◆◆◆◆◆◆◆◆◆◆◆◆

INVESTIGATE IT THOROUGHLY.



Recognizing the fact that the average tilemaker does not sufficiently pug the clay he uses we have arranged our famous "Hummer Combined" Brick Machine so as to make all sizes of drain tile from 2½ inches to 24 inches.

Sizes 2½ inches to 8 inches, delivered horizontally and the larger sizes vertically. This machine, with a "Bensing" Automatic Tile Cutting Table, makes the most complete outfit for the manufacture of drain tile and hollow building blocks on the market.

We would like an opportunity to make you thoroughly acquainted with the good qualities of this Machine. A postal card from you will bring the information.

The J. D. FATE CO.,

B. E. LaDOW, Western Agent,
1210 Chamber of Commerce, Chicago, Ill.

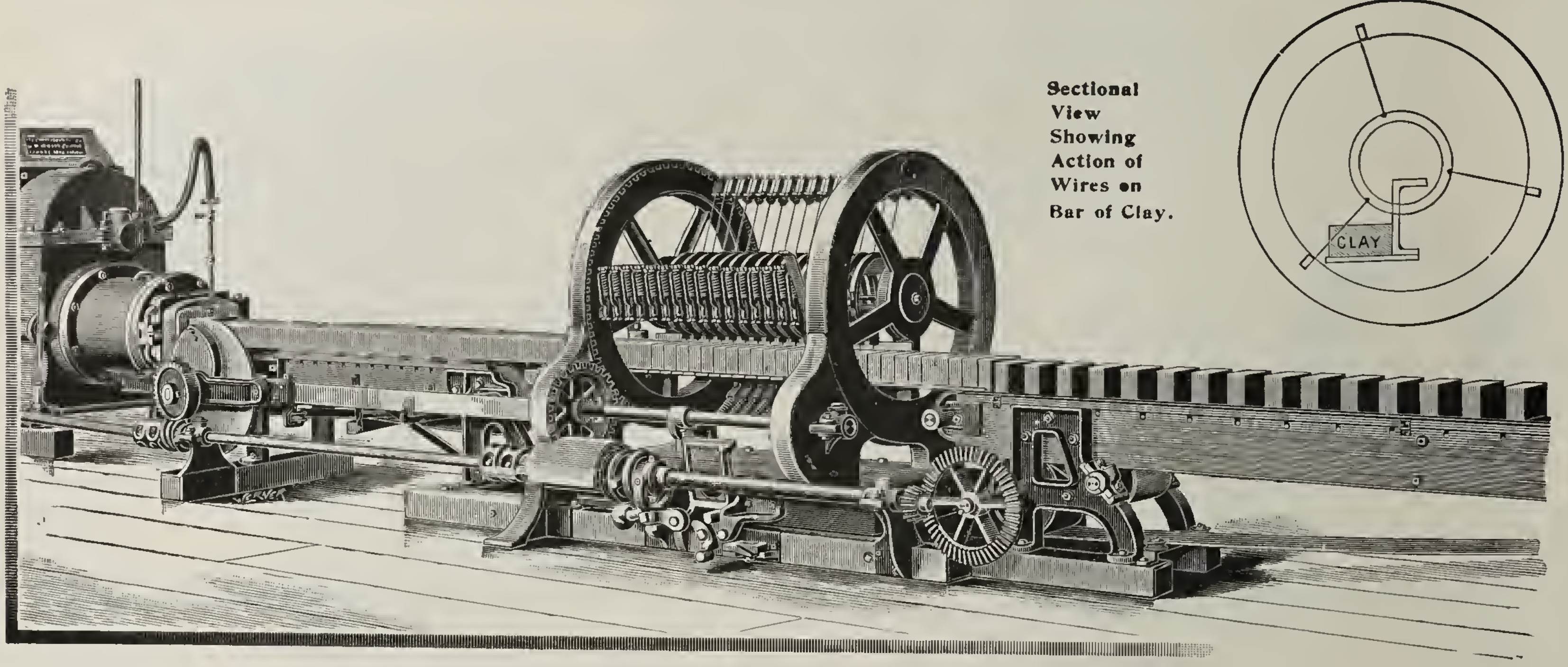
Plymouth, Ohio.

Mention The Clay-Worker.

NO OTHER

AUTOMATIC CUTTER

Is "Just as Good" as This.



ROTATING AUTOMATIC CUTTER. Patented.

Why waste time and money using Cutters which are frequently out of order and cannot be depended upon to do good work?

Why not produce brick of **finest quality** when it can be done with less expense?

A multitude of others have found it profitable to use this Apparatus.

Why should you not use it also?

You will be satisfied with it.

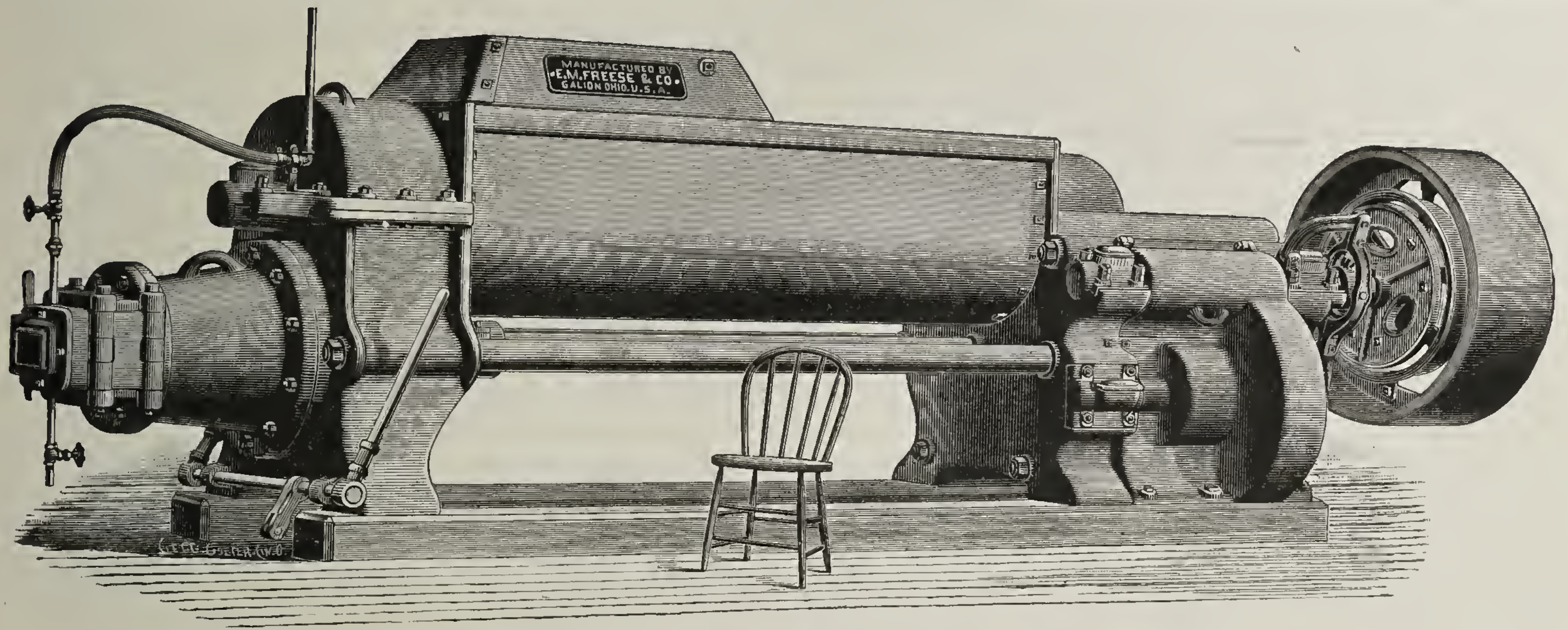
We will prove this statement if you will give us opportunity.

E. M. FREESE & CO.,
Galion, Ohio.

Mention The Clay-Worker.

Union Brick Machines

With Pug Mill Combined.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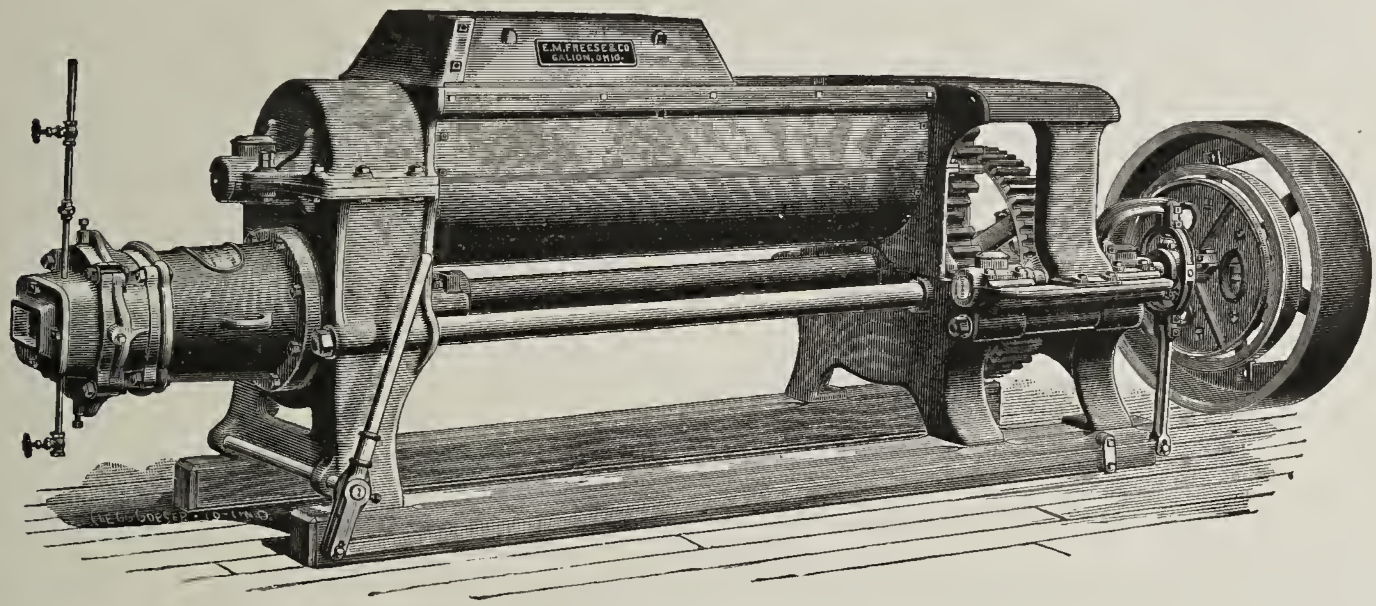
E.M.FREESE & CO.
GALION, OHIO. U.S.A.

UNION BRICK MACHINE. (SPECIAL SIZE.)


E.M.FREESE & CO.
GALION, OHIO.

UNION BRICK MACHINE. (No. 1 SIZE.)

We build these Machines in five (5) sizes.

Their reputation for convenience, enconomy and satisfactory service generally is established by their use in scores of the best Brick Plants.

E. M. FREESE & CO.,

Galion, Ohio.

Mention The Clay-Worker.

SOME OF THE ARTICLES WE MAKE

Horizontal & Vertical Brick Machines

Clay Granulators,
Clay Elevators,
Clay Cars, Pug Mills,
Revolving Dump Tables,
Tempered Steel Brick Strikes,
Kiln Castings,
And other castings.

◆ ◆ ◆

Friction Winding Machines,
Friction Clutches,
Friction Clutch Pulleys,
Friction Cut-off Couplings.

◆ ◆ ◆

Power Freight Elevators,
Hoisting Machines,
And Some Other Things.

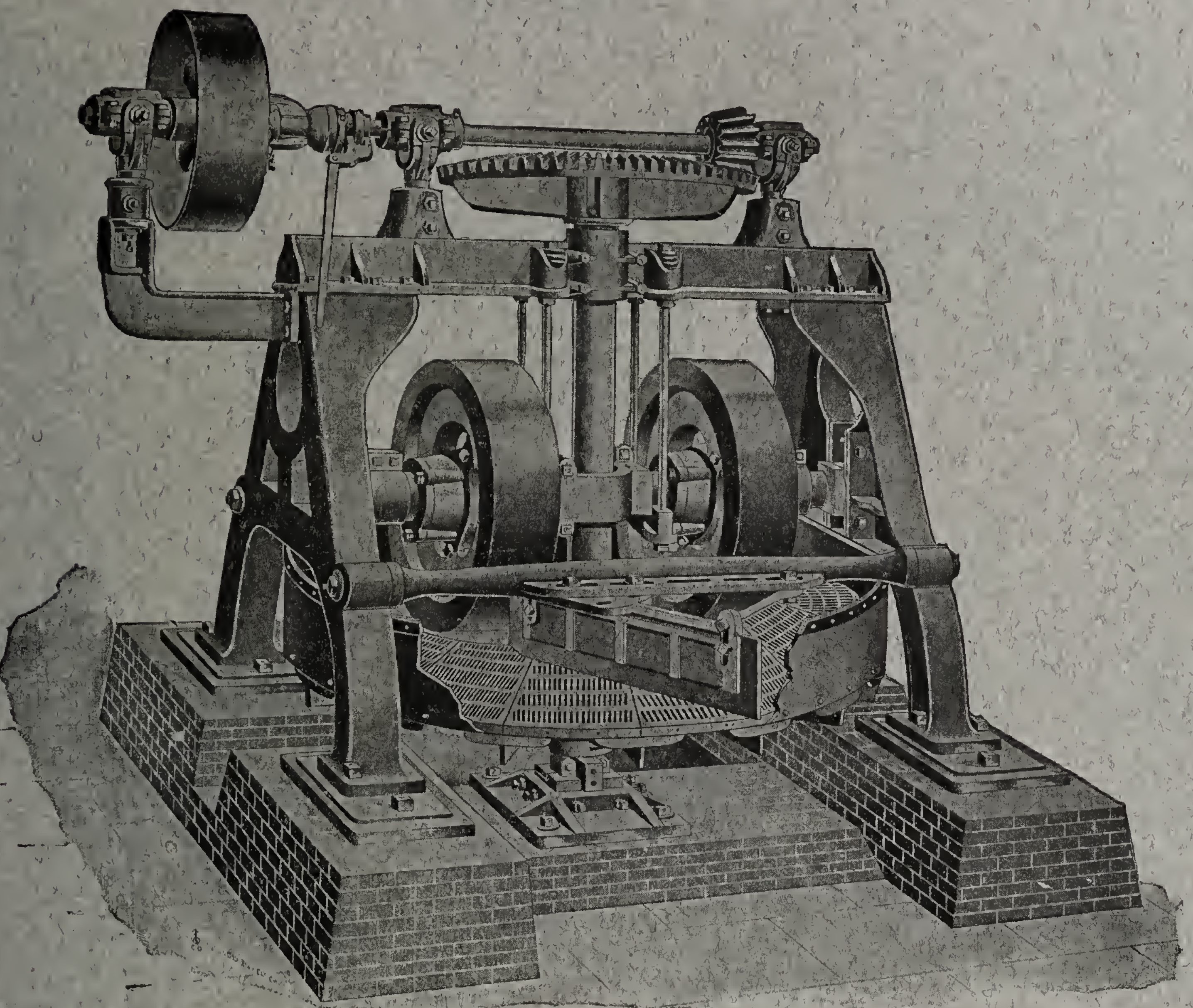
Have printed descriptive sheets describing many of these articles, which we will be happy to furnish, with prices on application.

It's not our aim to build the cheapest but we do try to build the best. Better Investigate Them.

The Eastern Machinery Co.,

Mention The Clay-Worker.

NEW HAVEN, CONN.



The FROST DRY PAN.

The ORIGINAL and BEST Dry Pan in the market. More of these Dry Pans in use to-day than all others combined. All sizes: both Wood and Iron Frames. Used by every Prominent Brick Manufacturer. ☙ Less repairs are required for the Frost Dry Pan than any other make. This is a very important fact. High Grade Automatic and Throttling Steam Engines, Horizontal Tubular Boilers and Plain and Submerged Tube Vertical Boilers. ☙ Send for Illustrated Catalogue.

The Frost Manufacturing Co.,

WORKS:
GALESBURG, ILL.

SALES DEPARTMENT:
135 Adams St., CHICAGO, Ill.

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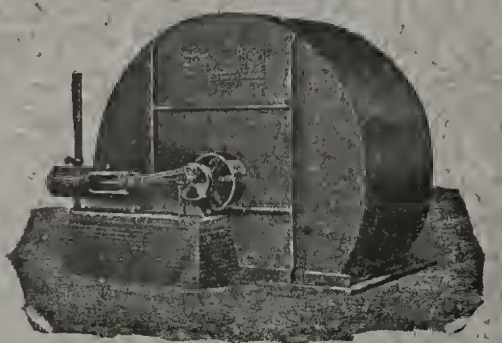
A Corner on Economy.



"A B C" Waste Heat Brick Dryers

have cornered the money market so far as profits in Scientific Brick Drying are involved.

They insure a perfect product at a great reduction in the cost and time required for its preparation.

Their great advantages over other methods are—fuel saving and a high percentage production of A No. 1 "Burns."

Let us send you a few Brick Drying pointers.

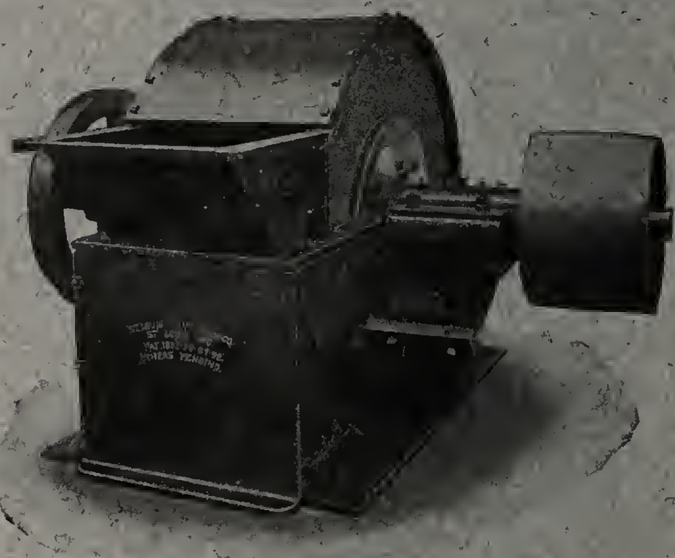
New York,
Chicago,
London.

AMERICAN BLOWER CO.
DETROIT, MICH.

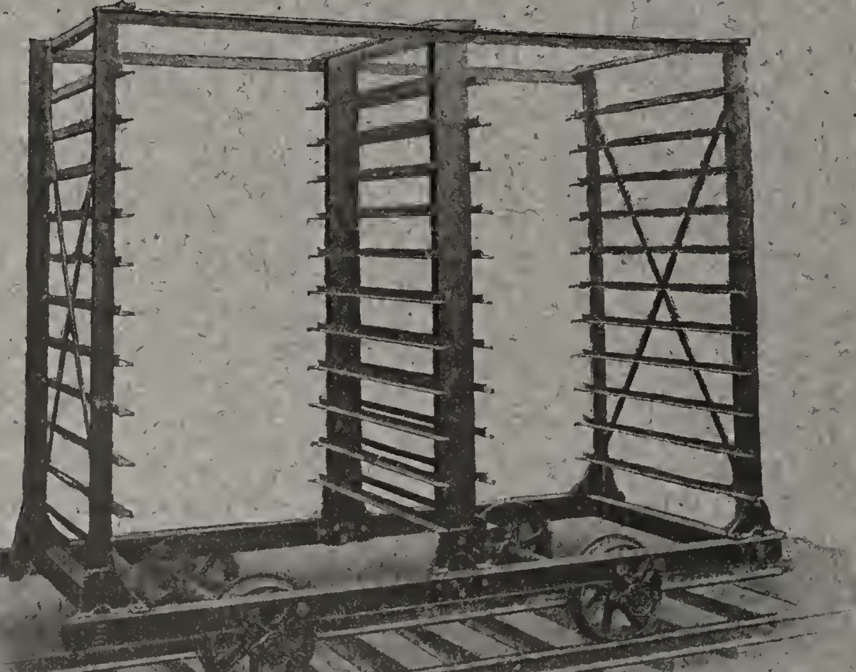
Schoellhorn and Albrechts'

PATENT

Pulverizers, Breakers and Disintegrators



St. Louis Pulverizer Company,
416 N. Main St.,
ST. LOUIS, MO., U. S. A.



STEEL RACK CAR FOR SOFT-MUD BRICK.

WE ARE PREPARED to make steel dryer cars of any design. We would be pleased to have you examine our cars, for experience convinces us that you will find them to be just what you want.

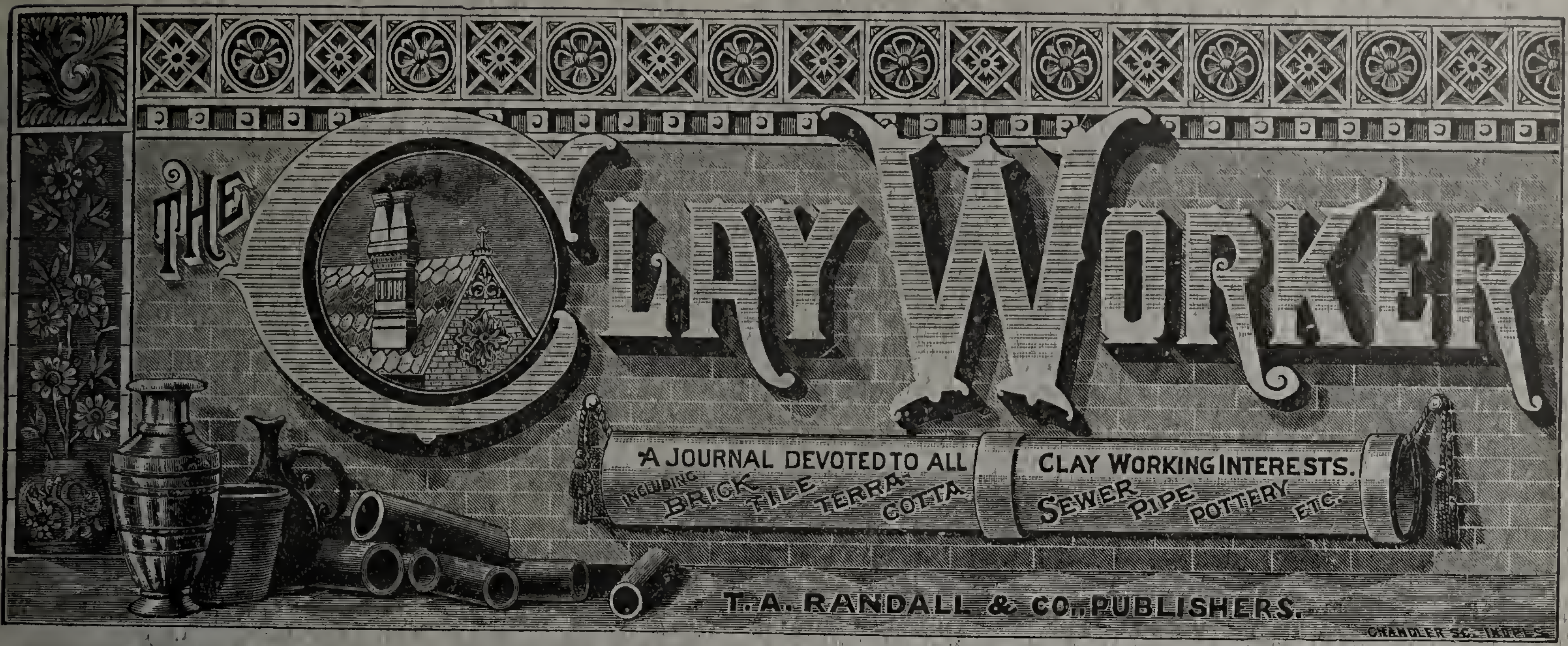
The large number of duplicate orders we are receiving must mean something.

Also hand and steam represses, Steam dry presses (two mould), Sword Brick Machines.

The Ohio Ceramic Engineering Co.,

CLEVELAND, OHIO.

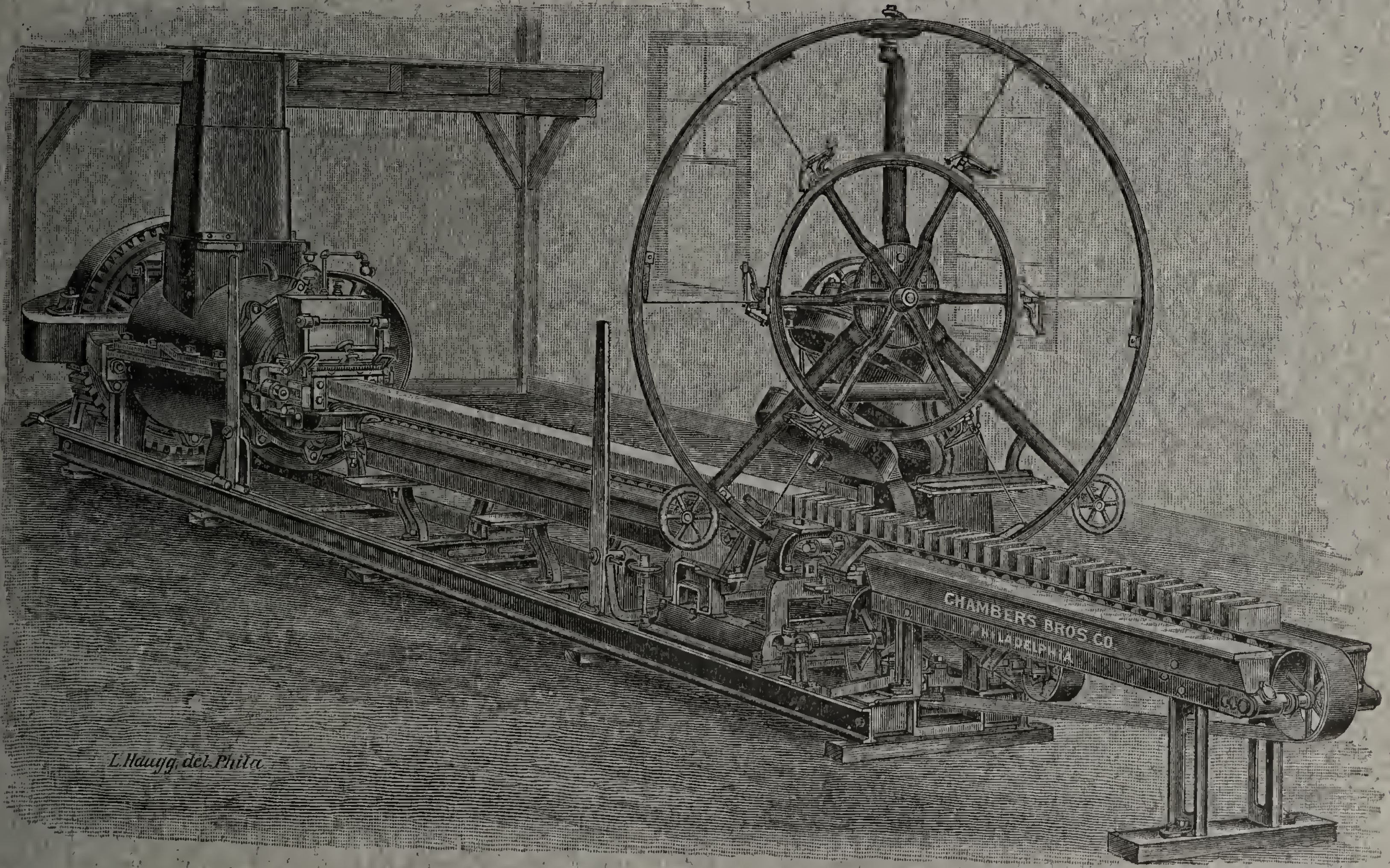
Table of Contents, Page 462.


THE
CLAY WORKER
A JOURNAL DEVOTED TO ALL CLAY WORKING INTERESTS.
INCLUDING BRICK TILE TERRA-COTTA SEWER PIPE POTTERY ETC.
T. A. RANDALL & CO., PUBLISHERS.
CHANDLER SC. INDPLS.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXXVIII, No. 5. INDIANAPOLIS, IND., NOVEMBER, 1902. $2.00 a Year in Advance.

Automatic Side-Cut and End-Cut Brick Machines.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CHAMBERS BROTHERS COMPANY,

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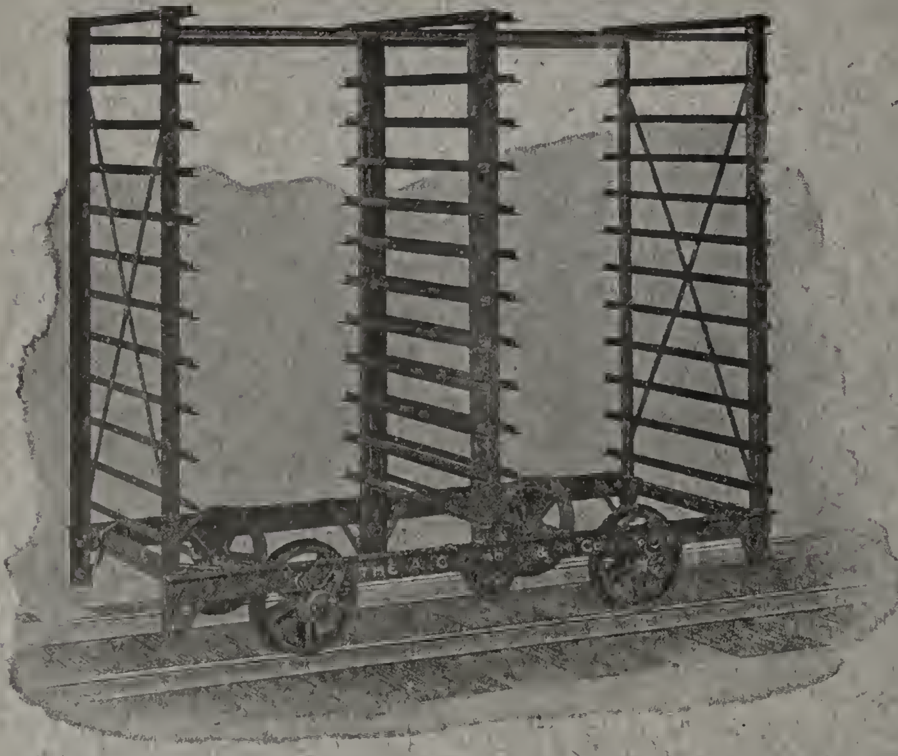
DAVIS BROWN, Chicago Agent,
59 West Jackson Blvd.



No. 137 Rack Car with Wright's Patent Malleable Corner and Center Upright Brackets.

We also make a full line of

Dump Cars, Turn Tables, Transfer Cars, Track Switches, Etc.

Write for Circular.

The ATLAS CAR AND MFG. CO.,

(THE ATLAS BOLT & SCREW CO. PROPRIETORS.)

Cleveland, Ohio.

CARS!

WE ARE THE LARGEST MANUFACTURERS OF

Dryer Cars

Of every description in the World.

We do not confine ourselves to standard styles and sizes, but build anything in the way of cars to suit the requirements of our Clients. Our long experience in the manufacture of cars, enables us to design and build the strongest, lightest and easiest running car on the market.

Don't Buy until you see What we have to offer.

INDEX TO ADVERTISERS.

Brick Machinery—Dry Press Process.

Name. Page.
Anderson Foundry and Mach. Works 410
Chicago Brick Macninery Co.. 477
Chisholm, Boyd & White Co. 404, 405, 406, 407
Name. Page.
Fernholtz Brick Machinery Co. The 409
Ill. Supply & Construction Co. 411
Ross-Keller Brick Machine Co 408

Brick and Tile Machinery.

American Clay-Working Mach Co., The 486, 494
Anderson Foundry and Mach. Works 410, 484
Brewer, H. & Co 492
Chambers Brothers Co 401
Chicago Brick Machinery Co 477
Eastern Machinery Co, The 498
Fate & Co., The J. D 495
Freese, E. M. & Co 467, 496, 497
Henry Martin Brick Mach. Mfg Co., The 490
Hensley, J. W 403
Horton Mfg. Co., The 491
Ill. Supply & Construction Co. 411
Kells Foundry and Machine Co 471
Leader Mfg. Co, The 485
Madden & Co 475
Ohio Ceramic Engineering Co., The 500
Potts & Co., C. & A. 488, 489
Raymond Co., The C. W 463
Stedman Foundry and Machine Works 413
Steele & Sons, J. C 480
Wallace Mfg. Co, The 493
Wellington Machine Co, The 465
Wiles Co., A. M. & W. H 477

Brick Kilns and Dryers.

American Blower Co, The 400
Boss, John C 464
Barron Dryer Co 483
Bushong, M. M 479
Crown Dryer Co., The 469
Economy Dryer and Oil Burning Co 481
Eudaly, W. A 478
Haigh, H 474
Illinois Supply and Construction Co, The 411
Justice, I. M 478
Morrison & Co., R. B 474
New York Blower Co., The 482
National Dry Kiln Co, The 481
Phillips, S. G 470
Pike, E. M 474
Platt Triple Draft Kiln Co 479
Reppell, L. H 478
Sharer, Geo. W 482
Standard Dry Kiln Co, The 416

Brick Yard Supplies.

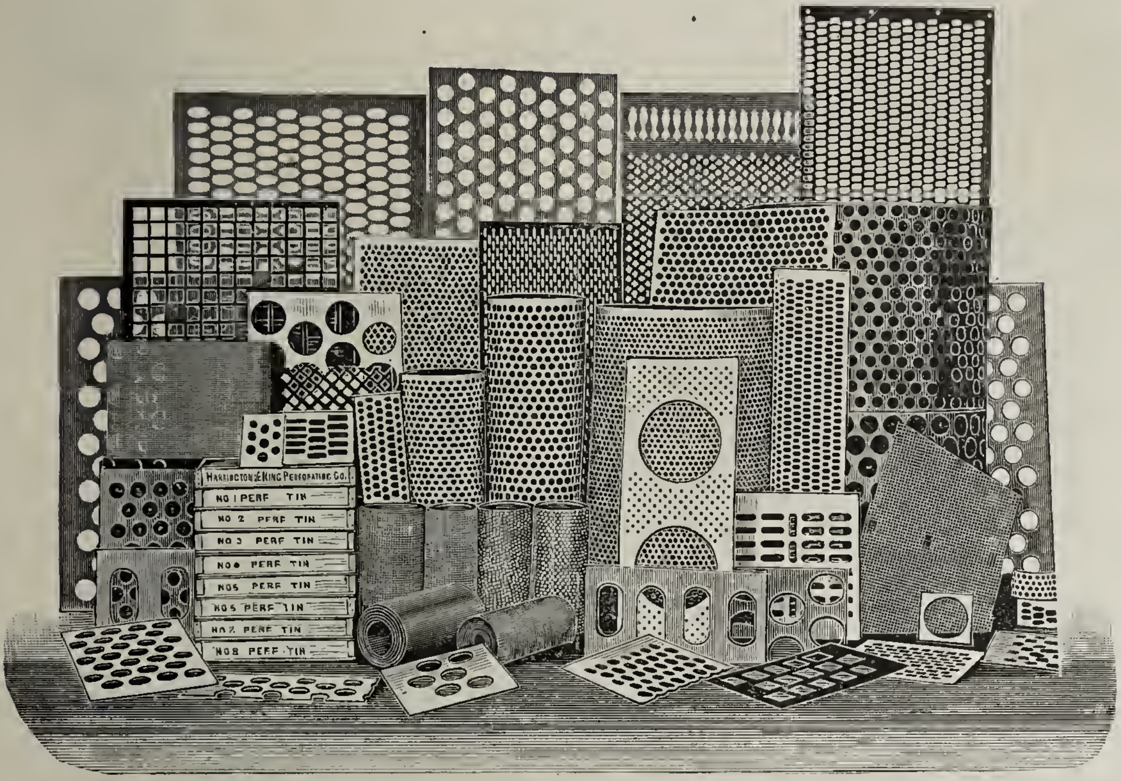
Arnold-Creager Co., The 413
Atlas Car & Mfg. Co. 402
Bechtel Bros 476
Cleveland Car Co 480
Caldwell & Son Co., H. W 475
Carnell, Geo 480
Central Iron Works 474
Cox, Geo. S 474
Dunlap Mfg. Co 500
Fernholtz Brick Machinery Co., The 409
Frost Manufacturing Co 499
Gandy Belting Co., The 473
Gray, S. B 474
Harrington & King Perforating Co, The 403
Henry Martin Brick Machine Mfg. Co., The 490
Horton Mfg. Co, The 491
Jeffrey Manufacturing Co, The. 472
Kendall & Flick 473
Marion Steam Shovel Co 484
Main Belting Co 472
Henry Martin Brick Machine Mfg. Co., The 490
Mershon, Schuette, Parker & Co 473
National Musical String Co 477
Phillips & McLaren 471
Rockwood Mfg. Co, The 471
Scotts Patent Brick Car Co 487
Thew Automatic Shovel Co, The 485
Williams & Co., M. F 476
Williams Patent Crusher and Pulverizer Co 412

Miscellaneous.

American Ceramic Society 414
American Brick and Clay Mfg Co 414
American Road Machine Co 475
Audel, Theo. & Co 471
Avery Stamping Co 466
Baird & Co., Henry Carey 472
Big Four Route 474
Bloomfield Clay Co 414
Boss, John C. 464
Caldwell Co., W. E 472
Clinton Paving and Building Brick Co., The 415
Crown Fire Clay Co., The 470
Dean Bros. Steam Pump Works 472
Evens & Howard 470
Gabriel & Schall 473
Indianapolis Engraving and Electro Co 473, 475
Indiana, Decatur & Western 474
Johnsonburg Vitrified Brick Co 414
Lake Erie & Western 474
McAvoy Vitrified Brick Co 415
Miller Oil and Supply Co 472
Munn & Co 475
New York Brick and Paving Co 414
Ohio State University 473
Pennsylvania Line 475
Purington Paving Brick Co, The 415
Perrine & Son, H. C 471
Reese-Hammond Fire Brick Co 470
Richardson, W. D 469
Roessler-Hasslacher Chemical Company, The 476
Sangamo Brick Co 415
Savage Fire Brick Co 469
Southern Railway and Mobile & Ohio R. R 471
Terre Haute Brick and Pipe Co. 415
Vandalia Line 475
Wabash Clay Co., The 415
Ads., Small Wanted, For Sale, etc.

PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.



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For —

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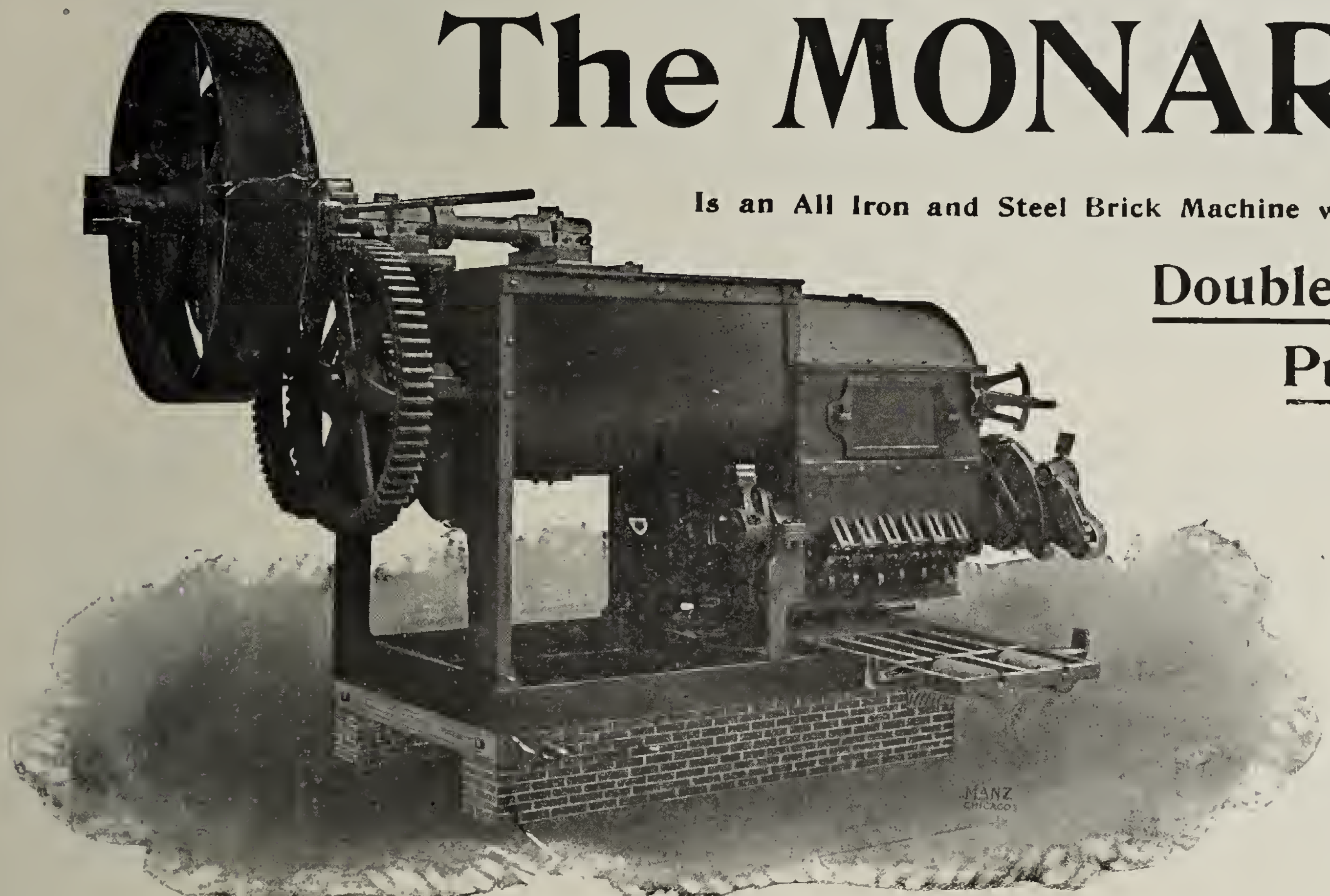
The Harrington & King Perforating Co., No. 231 North Union Street,
CHICAGO, ILL., U. S. A.

The MONARCH



Is an All Iron and Steel Brick Machine with

Double— Pug Mill.

• • •

SIMPLE IN CONSTRUCTION, DURABLE AND . . . POWERFUL.

• • •

Every working part stands open to view both front and rear. It is a World Beater when it comes to quantity and quality of brick. We carry in stock a full line of first-class Brickyard supplies at a very reasonable price. Also the new **IRON QUAKER**. Engines and boilers. Send for new 1901 Catalogue.

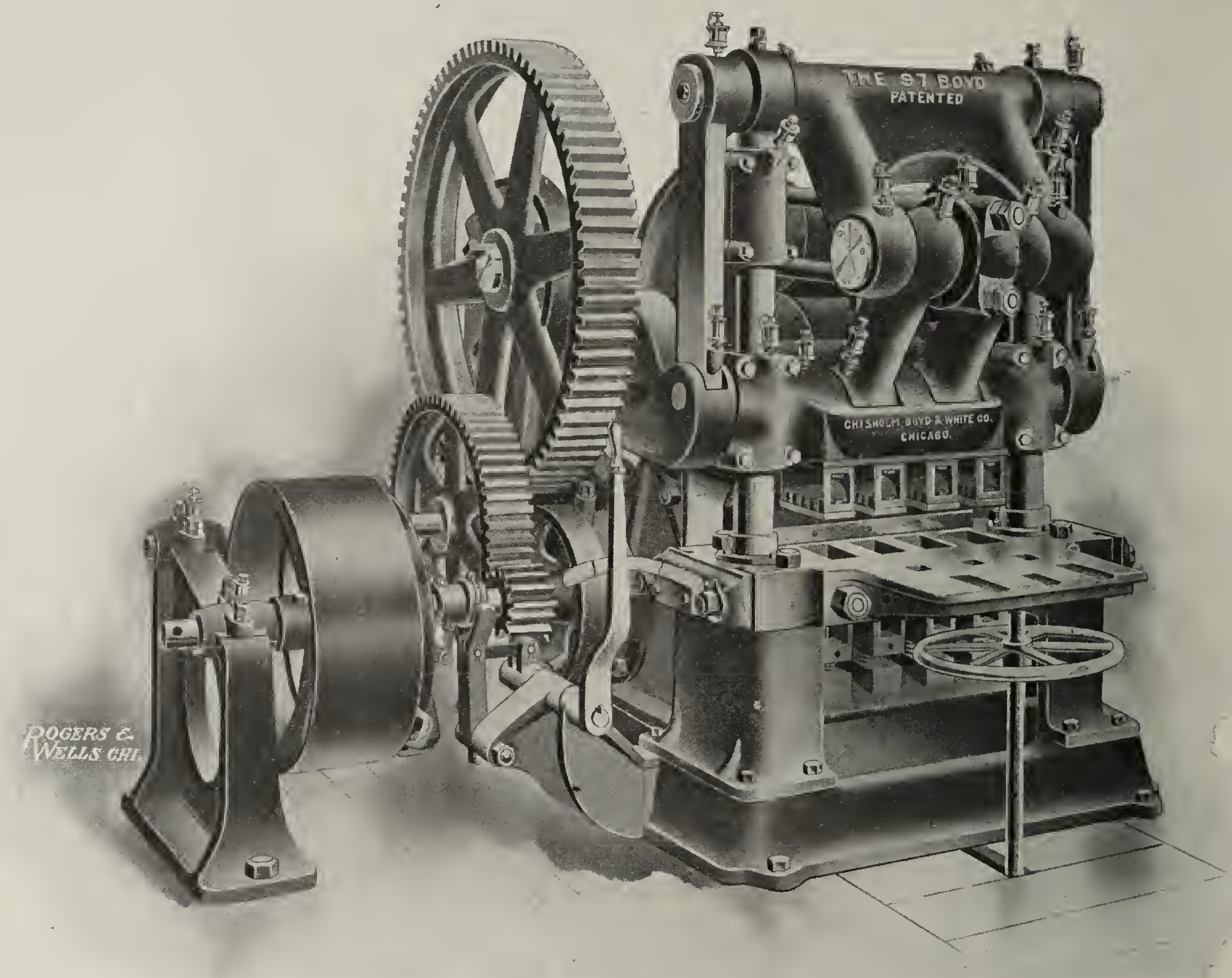
JAMES W. HENSLEY, Successor to S. K. FLETCHER, **Indianapolis, Ind.**

W. L. KIDNEY, Sales Agent, Capetown, South Africa.

The Improved Boyd Brick Press.

The '97 Model.

IT'S NAME A GUARANTEE.



The '97 Boyd Brick Press has Enormous Strength and Great Durability: It is Compact; The Adjustments are Convenient; It Operates Quietly and Smoothly; The Workmanship and Material are of the best; The Design Ingenious, and shows the most Perfect Application of Scientific and Mechanical Principles to the Art of Brickmaking.

Sent on trial and subject to purchase after the making and burning of one or more Kilns of Brick.

Sixty Presses of this Pattern Now in Use.

Can not be broken in pressing brick. Fully Guaranteed.

Write for Descriptive Catalogue, No. 9.

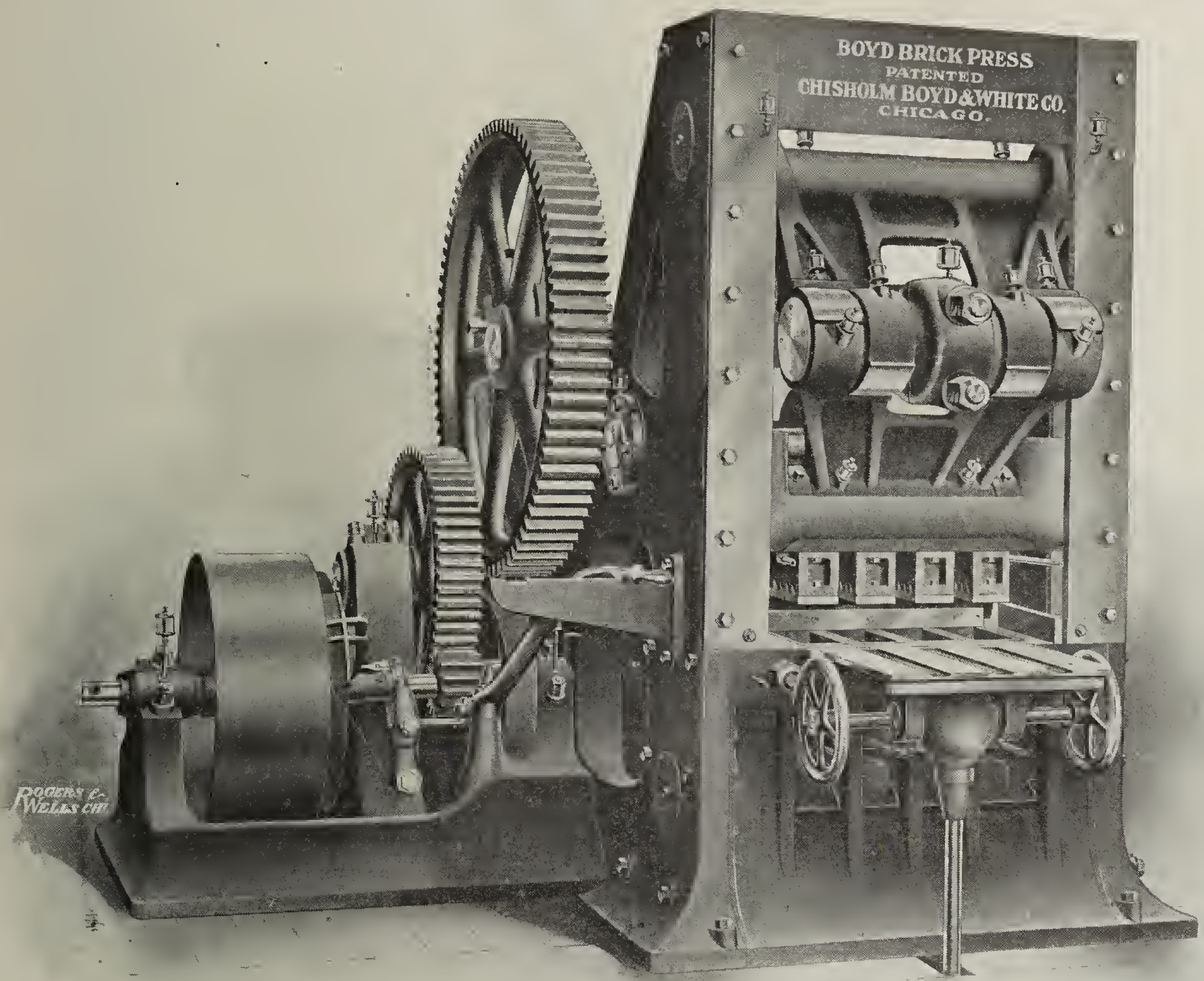
CHISHOLM, BOYD & WHITE CO.
CHICAGO, U. S. A.

OFFICE AND WORKS:
57th and Wallace Streets.

Cable Address; CHISHOLM, CHICAGO.
A. B. C. and Liebers Code.

Mention The Clay-Worker.

The BOYD BRICK PRESS.



The Boyd Brick Press will make Better Brick from Clay or Shale than can be made from the same material by any other press.

Especially adapted for Working Shales; and is the only Successful Machine for Making Fire Brick.

Its Record: More Boyd Presses in Actual Operation than of all other Press Brick Machines Combined.

Brick Plants of any desired capacity designed and constructed complete, Under Guarantee of Producing Satisfactory Burned Brick.

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CHISHOLM, BOYD & WHITE CO.,

CHICAGO, U. S. A.

OFFICE AND WORKS:
57th and Wallace Streets.

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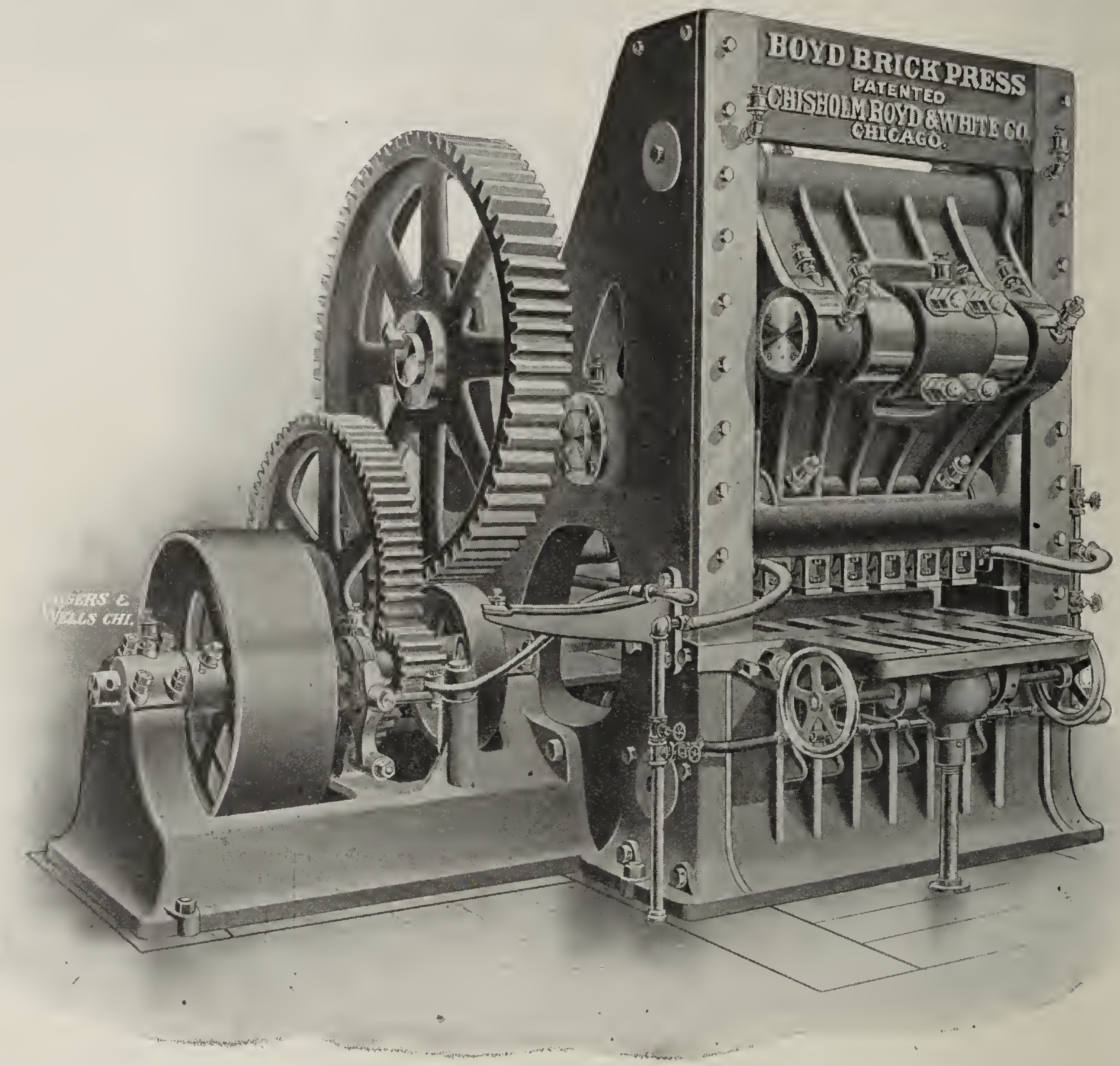
A. B. C. and Liebers Code.

America's Greatest Brick Press.



Another Record for the Boyd Press! Six of our Six-Mold Presses in use **on one yard** since 1892. Average cost of repairs for each machine $1.00 per year.

The Boyd Press exerts greater pressure than any other machine made. It is the only Press in which the lower plungers are independent of the lower crosshead. This feature positively ensures equal pressure and finish on both sides of the brick, and no granulated or soft centers.

The mold liners are made of the hardest and toughest known metal. The movement of the Boyd Press is noiseless and without jar or shock; no rubber or air cushions, hooks, latches or other uncertain and unmechanical devices are employed. Guaranteed for two years. Write for General Catalogue No. 10.

CHISHOLM, BOYD & WHITE CO.,

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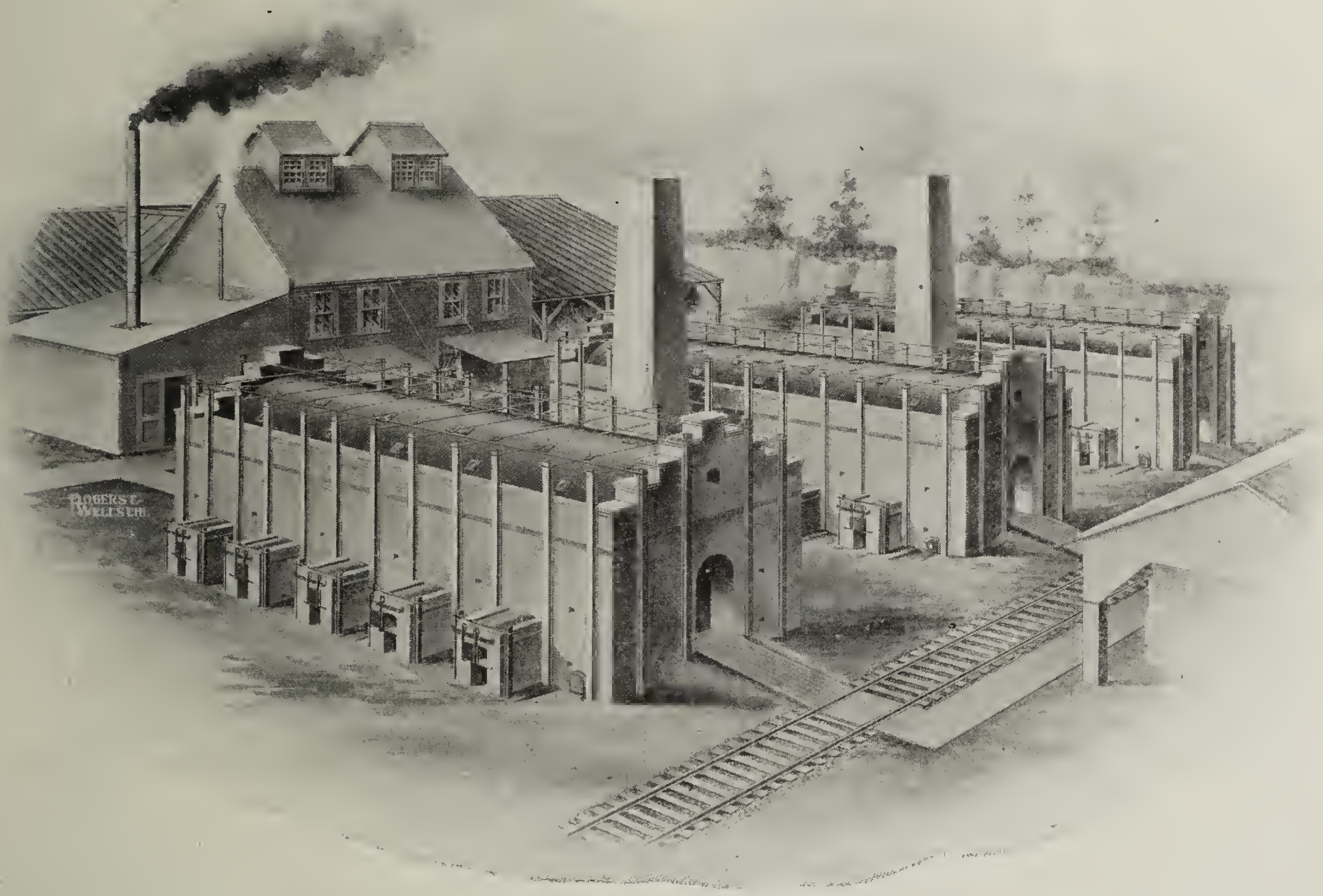
Chisholm, Boyd & White Company,

ENGINEERS AND CONTRACTORS FOR BRICK PLANTS.

MANUFACTURERS OF

The Boyd Brick Press.



A MODERN BRICK PLANT—As Equipped by Us.

A Sure Thing—We are prepared to construct and equip a Brick Plant of any desired capacity, furnishing the brickmaking machinery and power plant, erect the necessary buildings and kilns, and turn the plant over to the purchaser in proper working order, under guarantee of satisfactory results.

Brick Plants designed and equipped by us have the highest reputation for efficiency. They are modern, up-to-date, compact, convenient in arrangement, and are not encumbered with unnecessary or useless machinery or appliances.

CORRESPONDENCE SOLICITED.

CHISHOLM, BOYD & WHITE CO.,
CHICAGO, U. S. A.

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57th and Wallace Streets.

Cable Address; CHISHOLM, CHICAGO.
A. B. C. and Lieber's Code.

THE LATEST IMPROVED

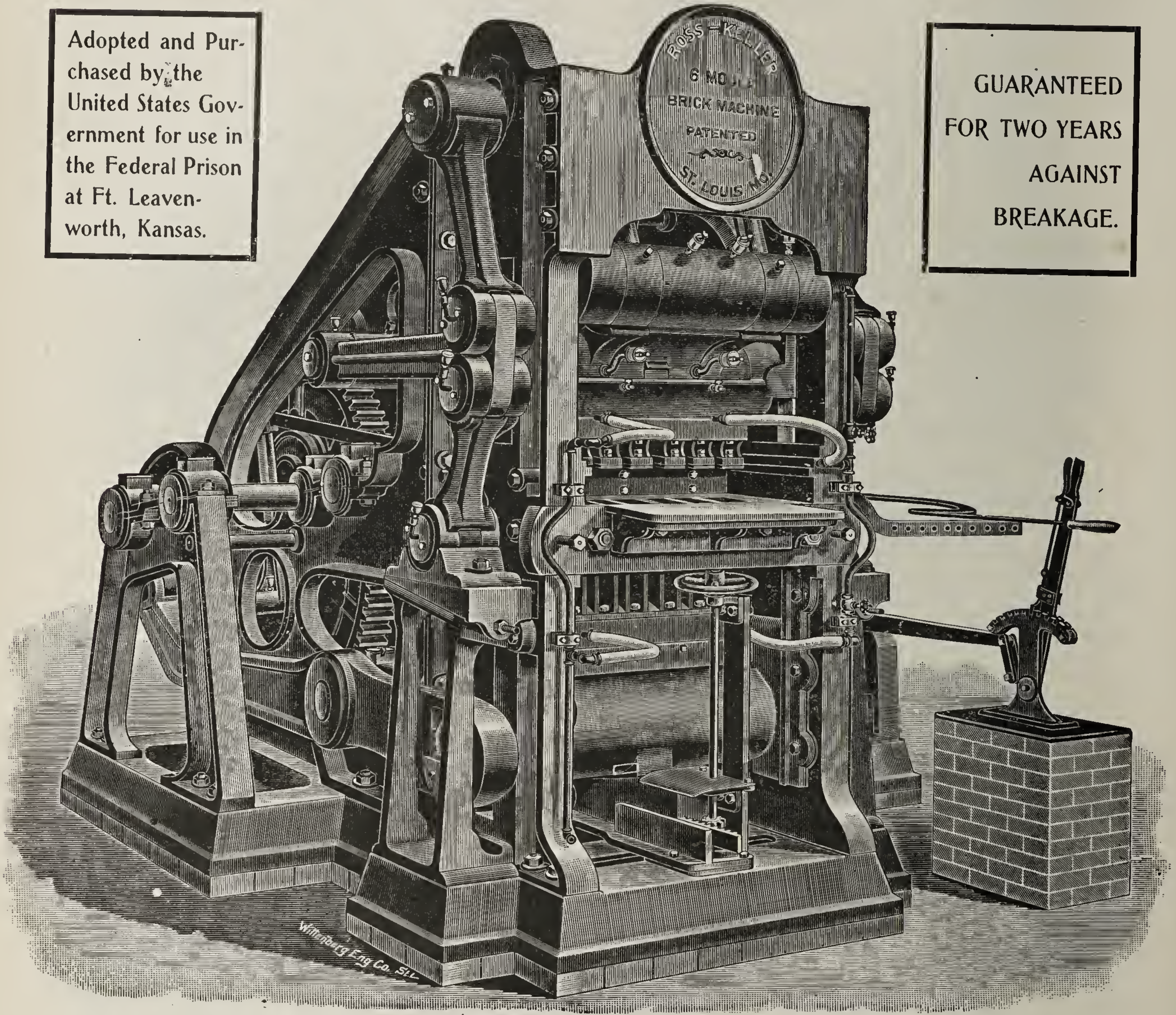
Ross-Keller TRIPLE PRESSURE Brick Machine.

Manufactured in four and and six-mould sizes. Weight of four-mould machine 58,000 pounds; capacity 24,000 brick per day. Weight of six-mould machine 75,000 pounds; capacity 35,000 to 40,000 brick per day.

BRICK SET IN KILN DIRECT FROM MACHINE.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

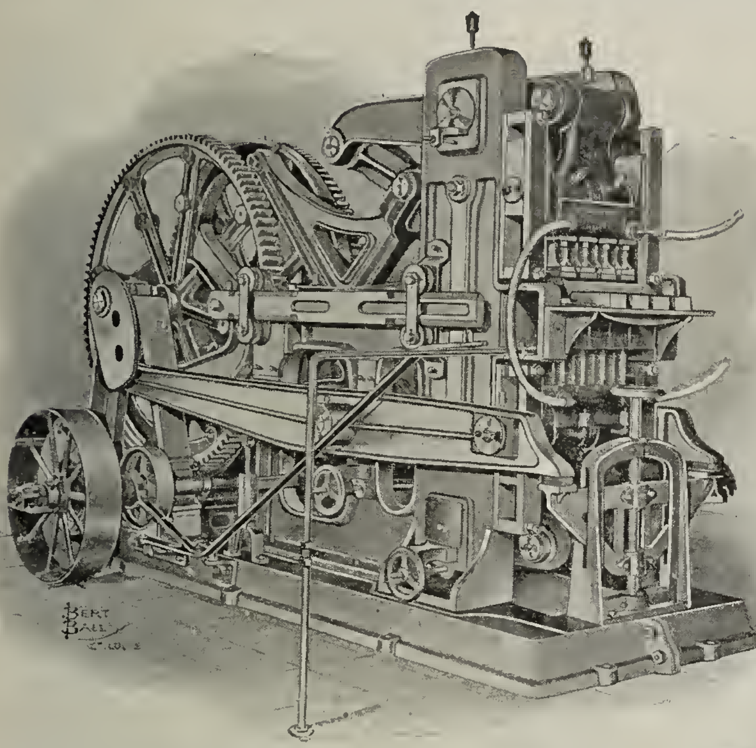
GUARANTEED FOR TWO YEARS AGAINST BREAKAGE.



THIS machine has an unbroken record of success. It is used on a number of the best equipped brick plants in the United States. It has never failed to give entire satisfaction and we are perfectly safe in guaranteeing that it will work any clay of which pressed brick can be made, and make them better and cheaper than any other press. It makes better brick because the pressure is greater and is applied in a way most effective. It makes brick cheaper because it is unbreakable and hence there are no repair bills or expensive delays and stopping of work which brickmakers know are more costly than the repair bills themselves. If you want to make the best brick at the least expense the season through don't fail to investigate this machine, with it you can "put money in your purse." Let us tell you more about it and give the address of those now using it. Remember "the proof of the pudding is in the eating of it."

For prices and full particulars address **ROSS-KELLER BRICK MACHINE CO.,** Fullerton Bldg., St. Louis. Mo., U. S. A.

The New Fernholtz Brick Press.



WONDERFULLY
IMPROVED.

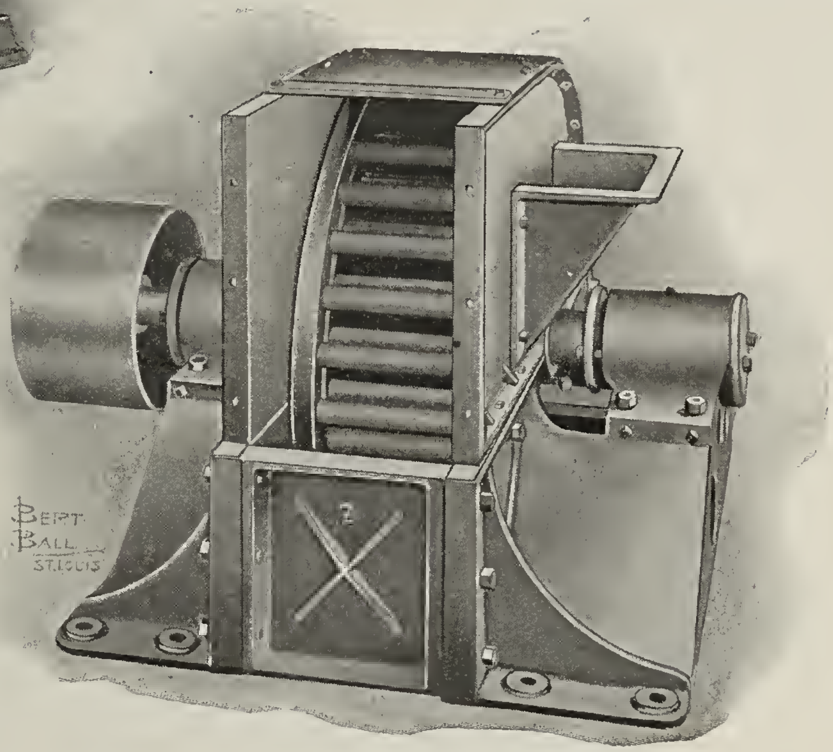
Fitted with the Celebrated

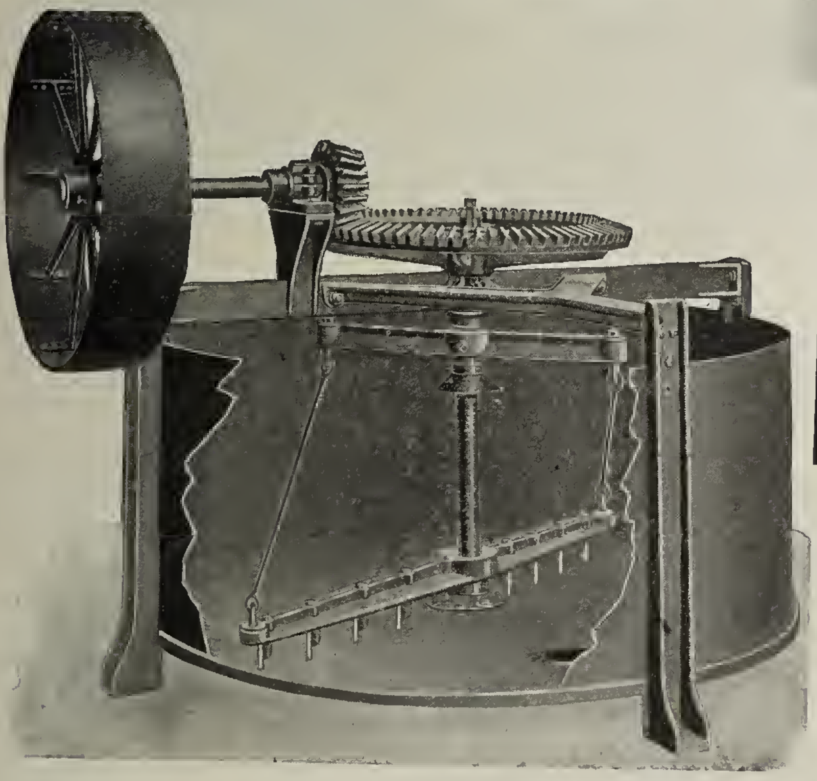
FERNHOLTZ MOLD BOX

Which is used by leading Brick Manufacturers in other Dry Presses.

The Fernholtz PATENT Clay Pulverizer.

No more rivetting Pins in Cage.
Any one can put them in. Most economical Clay Grinder ever made.





The Fernholtz Iron Frame Clay Mixer.

"The Mixer that Mixes."

WE HAVE a first class repair department and can repair all kinds of Brick Machines and Machinery. We make a specialty of Molds for Fancy Shape brick at reasonable prices.

Dealers in BRICKYARD SUPPLIES.

If you don't see what you want ask for it. No trouble to answer questions.

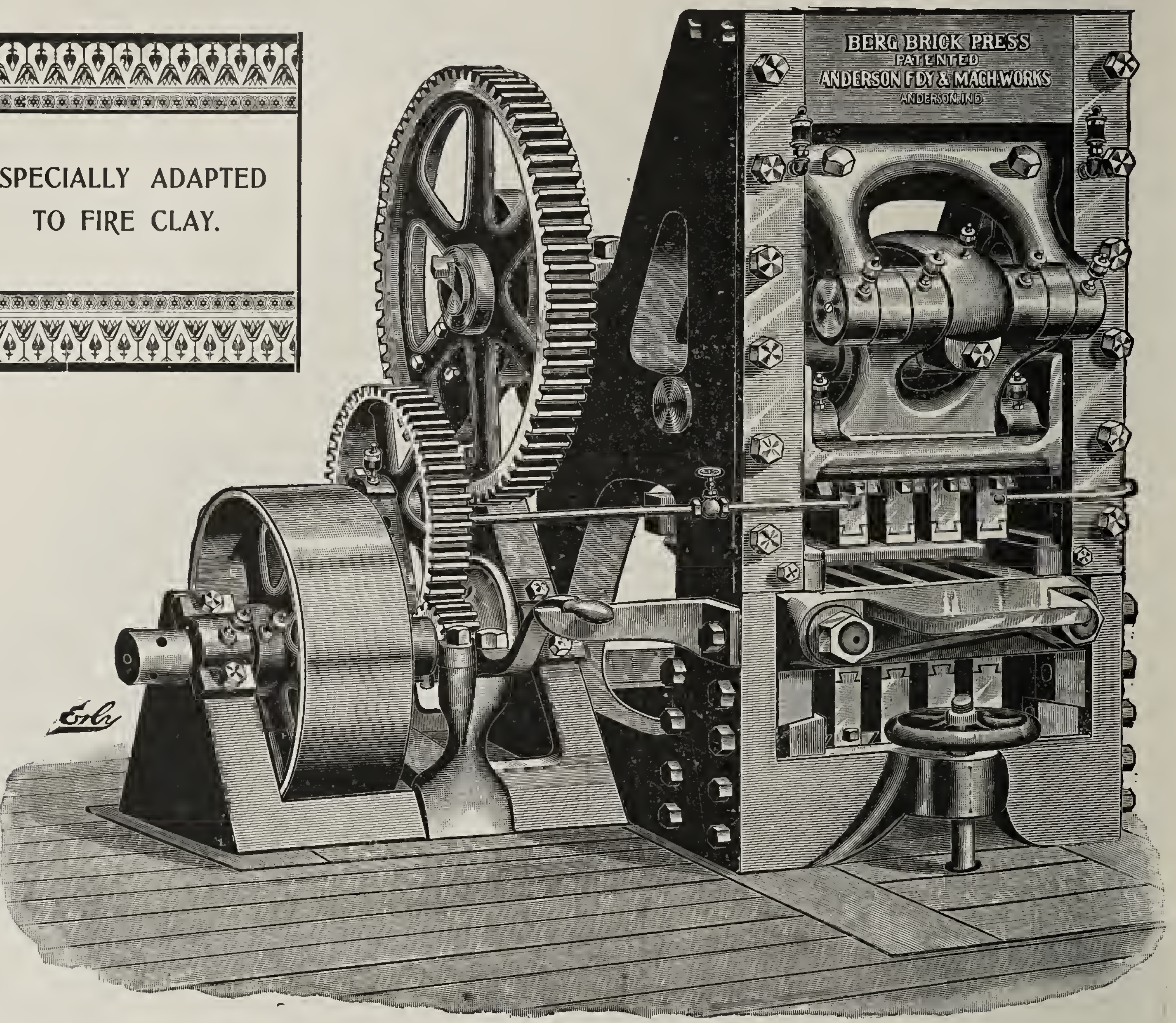
The Fernholtz Brick Machinery Co.,

CABLE ADDRESS "FERNBRICK."
WESTERN UNION CODE.

Boyle Ave. and Old Manchester Road, ST. LOUIS, U. S. A.

The BERG BRICK PRESS.

ESPECIALLY ADAPTED
TO FIRE CLAY.



The Highest Development of the Art of Brickmaking—so Pronounced by the U. S. Government.

Three distinct pressures.
Greater Pressure than any other machine.
Greater Strength than any other machine.
Will put more clay into given space than any other machine
Less working parts than any other machine.
No Plunger Stems, eye rods or Springs.

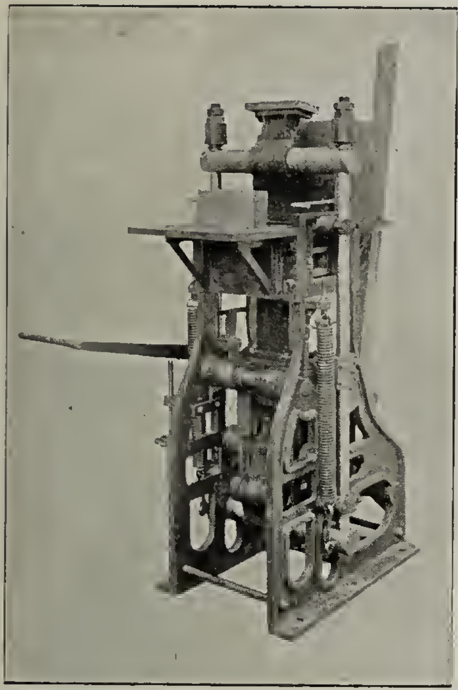
Mold Liners Made of Tempered Tool Steel.

Makes all size Brick and Tile from 2 to 24-inch.

SOLD BY
Chicago Brick Machinery Co.,
225 Dearborn St., CHICAGO.

MANUFACTURED AND SOLD BY
The Anderson Foundry & Machine Works,
Anderson, Indiana.

Mention The Clay-Worker.



The New Grath Hand-Power Brick Press.

FOR MAKING PLAIN AND ORNAMENTAL PRESS
BRICK FROM SEMI-DRY CLAY.

The accompanying cut shows the only successful **HAND POWER PRESS** for pressing brick direct from the clay. The brick made on same are equal to those made on any steam power or hydraulic press. They have a polished face and perfect edges and corners. As will be seen, the press is equipped with charger and feed box. Two men can easily make 2,000 best quality press brick per day. By simply changing the liners and die plates, brick of any size up to 12½ inches long, 8½ inches wide and from 1 to 4¼ inches in depth can be pressed. In making brick on edge the mould is 9 inches deep. No brickyard is complete without a press of this sort. It is also recognized as the only successful press for making plain press or front brick for small yards that are making brick by the plastic process.

The Coffeyville (Kansas) Vitrified Brick & Tile Co. were the first one to order one of these presses, and to show what they think of same, they have only recently placed an order for two more of them.

FOUR HAND POWER PRESSES SOLD IN OCTOBER.

The Grath One and Two Mould Steam Power Press.

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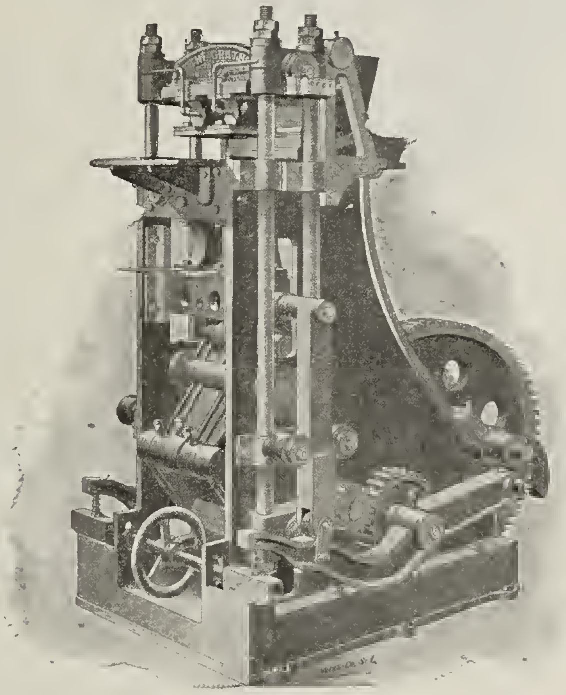

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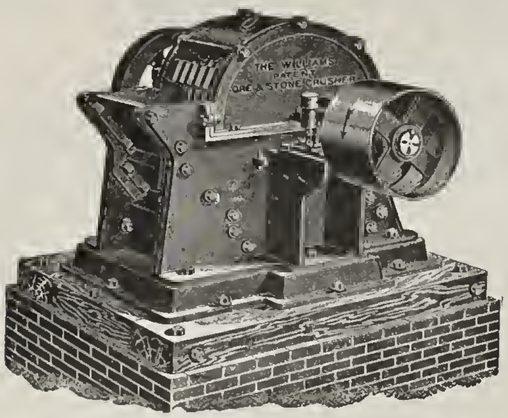
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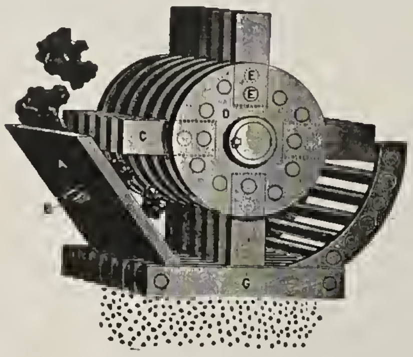

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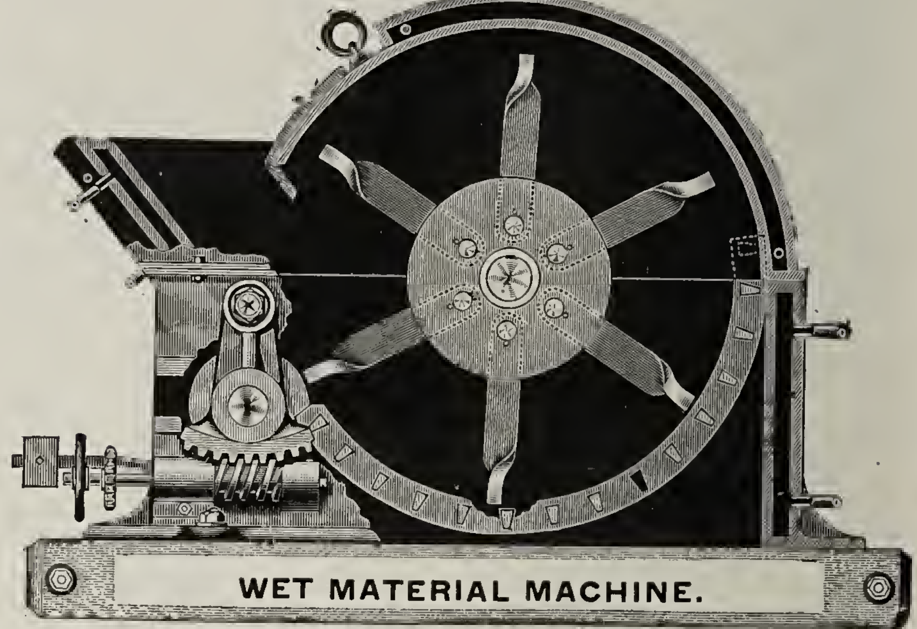
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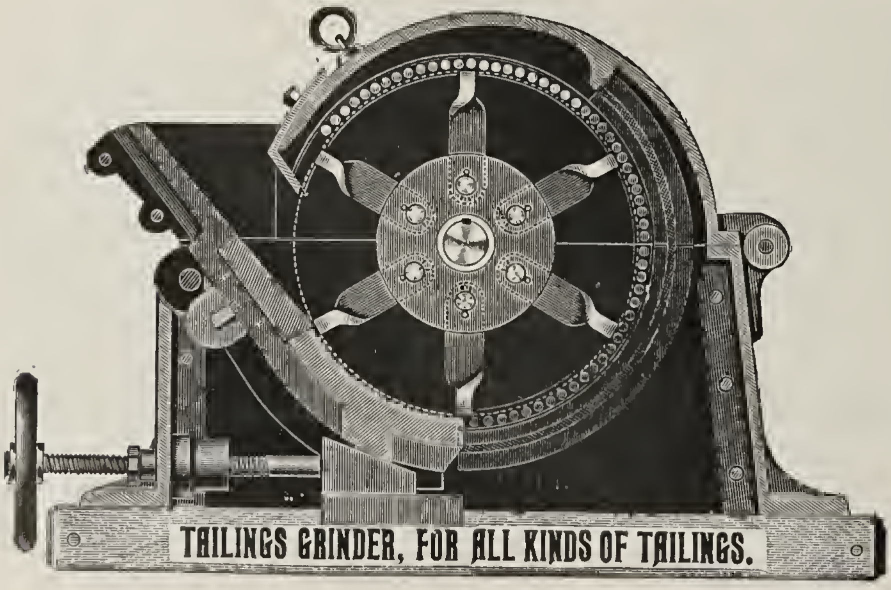
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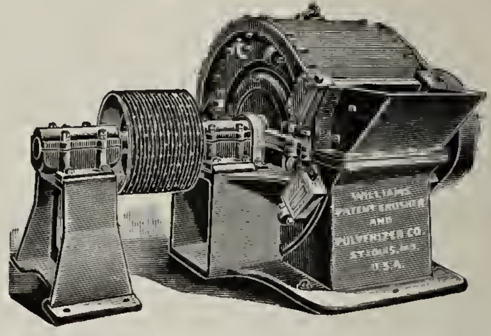
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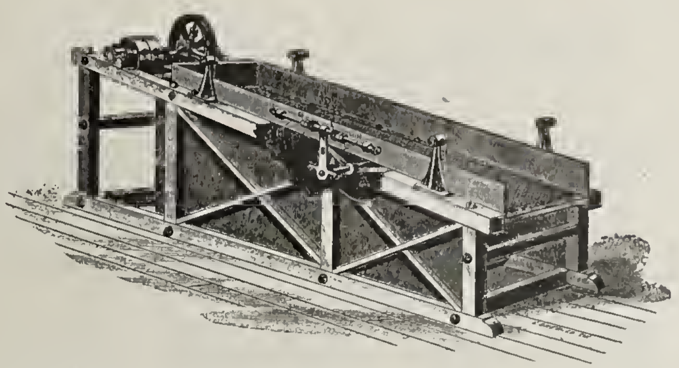

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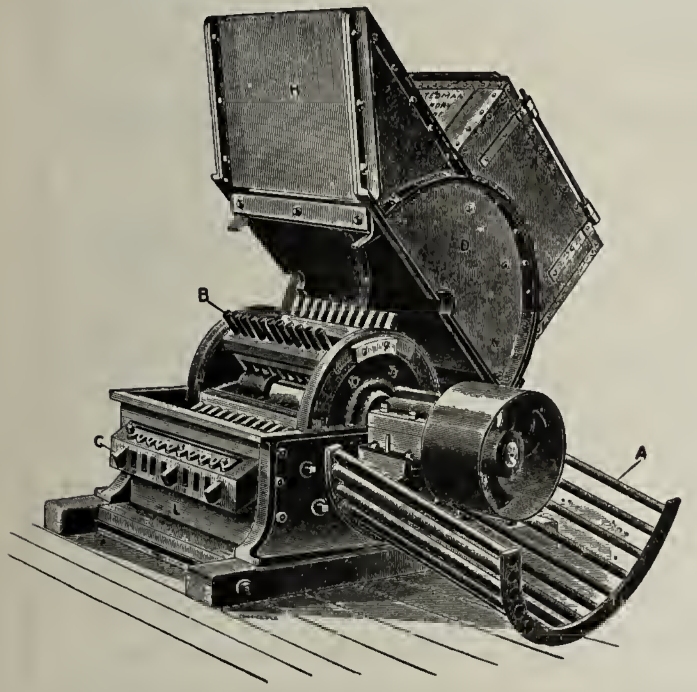

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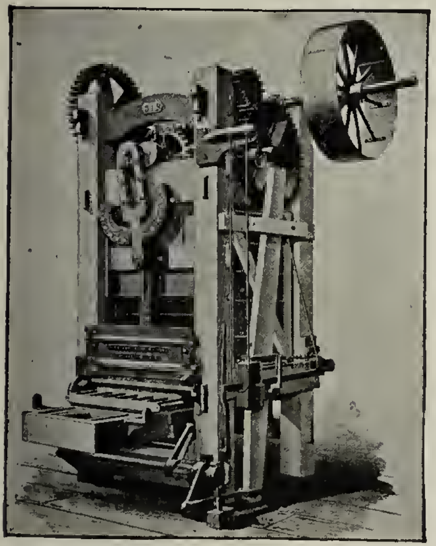

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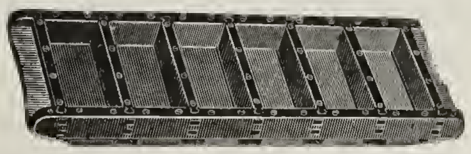

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of the economical genius who reduced his horse's rations until he actually got him down to one single wisp of hay a day? Then the obstinate beast went and died of starvation.

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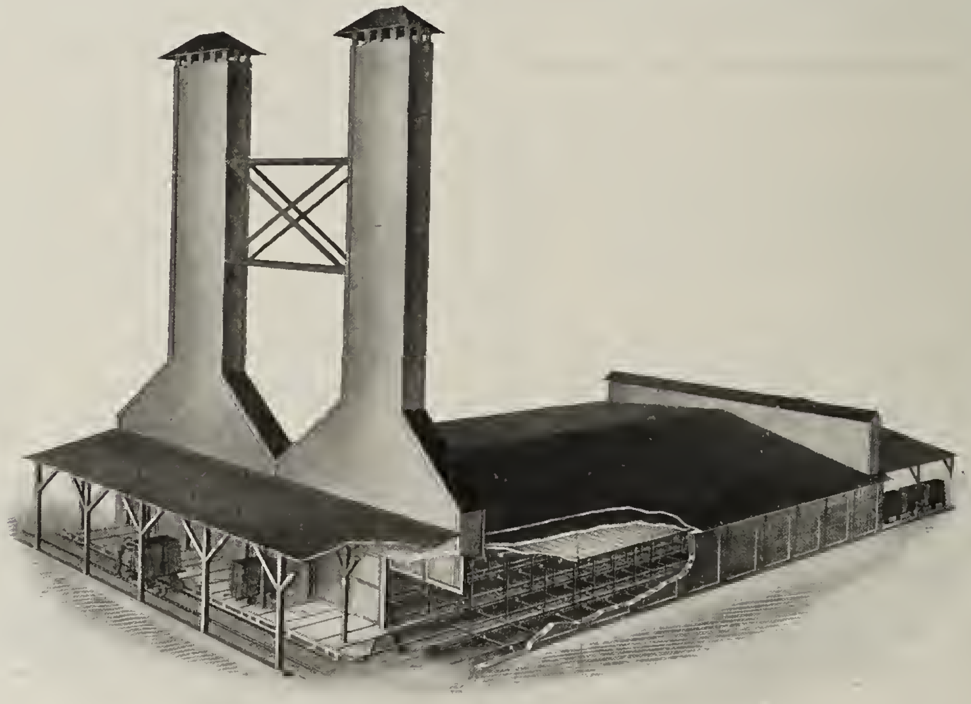

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THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXXVIII. INDIANAPOLIS, IND., NOVEMBER, 1902. No. 5

WRITTEN FOR THE CLAY-WORKER.

BRICKMAKING ON THE HUDSON.

One of the Great Plants Which Furnish Brick for the Metropolis.

ABOUT THIRTY-FIVE MILES from New York, on one of the most picturesque points along the Hudson, on a neck of land nearly two miles long, known as Croton Point, is located the works of the W. A. Underhill Brick Company. The river is nearly four miles wide here, which is the widest point on the Hudson. A few miles farther north, on the opposite side of the river, is Haverstraw—a name synonymous with Hudson river brick.

This is all historic ground, and reference is still made to the King's highway, which takes us back to pre-revolutionary times. In speaking of the revolution, at Haverstraw one is reminded that here it was that Andre and Arnold met, and the tree on a hillside nearby, which marks their meeting place, is still standing. Many of the manor houses over 200 years old are still occupied by family descendants, and the fact that much of this property is still in the family is noteworthy; and even though the present generation be in financial straits and land poor, so to speak, they cherish their holdings most reverently, and would no sooner convert them into money than they would change their distinguished names.

Brick Apartment House, Corner Amsterdam Avenue and 120th Street, New York City.

The Clay-Worker's correspondent has had the pleasure of seeing some of these renowned residences, and was carried back to other times when visiting the home where Washington made his stopping place while in this section. This house has been tenanted by the same family, bearing the same old Dutch name, for more than 240 years. The buildings are in a good state of preservation and we regret that we are not able to say that they are made of Croton brick. Undoubtedly this would have been the case had they recognized the value of the Croton Point clays at that time. But it is only about sixty-four years since brick were first made at the Point, and borings show that at the present rate of manufacture brick will likely continue to be made here for equally as long a period, before exhausting the clays on the property; and after the clays above high water mark have been exhausted, it is reasonable to suppose that the example of some of their co-workers across the river will be followed, and dykes constructed and cofferdams built and the clays taken from the river bottom.

While most Hudson river manufacturers make their brick in much the same manner, owing to certain characteristics of the clays on the Point, the writer will confine his remarks to the Croton Point works, known as the W. A. Underhill Brick Company. Their holdings comprise about 400 acres. While thousands of tons of clay on this property have been transformed into a new and permanent building material, and the greater bulk of the outfit transported to New York and Brooklyn, where it has entered into the construction of thousands of buildings, and while the Croton brick have been a potent factor in general construction and continually adding beauty and strength as a finished product to the upbuilding of a great city, yet the excavations have affected equally as great a change at the other end, and the topography of the Point has been materially affected and portions of the property have been turned into valleys and level tracts which were once adorned by hills and wooded lands. That portion of the property where the clay has been extracted has suffered a gradual but complete change during this period, and even the younger generation speak of the hills and banks and trees that were and note the steady changes.

Willis B. Richards, Treas. and Gen'l Mgr. W. A. Underhill Brick Co.

One's attention is also drawn to the changes in the natural appearance of the Palisade, on the opposite side of the river, where the stone is blasted, then crushed and screened to marketable sizes, but it is gratifying to note that the States of New York and New Jersey have reserved much of this property for park purposes, and the disfigurement of the bank for many miles out of New York city has ceased, and only the action of weathering and of natural agencies will henceforth affect the face of the river bank at these points.

The works at Croton Point virtually consist of two yards, each operated by its own foreman, and both under the personal supervision of Mr. Charles E. Anderson, whose identity with the Hudson river brick industry covers many years of practical experience. Until about three years ago only one plant had been in operation, but the increased demand for Croton Point brick, together with the fact that most of the other Croton yards were forced out of business because of their clay becoming exhausted, resulted in the establishment of a second yard—a duplicate of the first, which was constructed under the direction of Mr. Anderson; and his ability to successfully superintend a works of this size after its construction is evidenced by the uniformity of the burned product and the apparent economy in manufacture. At the main office of the company, 25 Pine street, New York, one can usually find the treasurer and general manager, Mr. Willis B. Richards, whose likeness appears herewith. Much of the success of this company is directly attributed to his efforts, and while he disclaims possessing highly technical knowledge in the ceramic line, yet he knows a good brick and how it should be made; and what, perhaps, is more to the point, he is thoroughly familiar with the cost of the various steps of manufacture, and when this exceeds certain limits for any given month the reason why must always be forthcoming.

Each plant is fitted with a 150-horse-power Corliss engine and an equipment of tubular boilers. The other machinery consists of the usual type of soft-mud brick machines much in vogue along the Hudson. Each plant is supplied with eight machines and a like number of tempering pits. The raw material is dumped into the latter, each of which holds enough clay to make about 40,000 brick. The tempering wheels as well as the other machinery are driven by steam power. Both white and colored labor are employed, and about 260 names are on the pay-roll. Most of the men live at the Point, and with their families make up a small colony; but aside from the dwellings the schoolhouse nestled among the trees is the only further evidence that such a colony exists. No stores or commissary are on the Point, but the grocers', butchers' and other tradesmen's delivery wagons from Croton Landing are of frequent occurrence.

Getting in the Clay.

Upon reaching the plant a visit was first made to the clay banks. Two banks are being worked simultaneously, and the clay is hauled on cars about 2,000 feet to the works. Mules are the motive power, and are coupled together, one head of the other. The leader is the only one in the string that need necessarily have horse sense, so to speak. The others when hitched to the five loaded cars have no alternative, and need only a little persuasion to draw the car on a comparatively level track. The cars hold about a yard and run on a two-foot track, which encircles each pit, and affords access of dumping the clay in any desired place.

The clay bank at this plant differs very materially from the average clay bank along the Hudson, in which respect we note the exceedingly heavy stripping of fine sand overlying the clay. The blue, or bottom clay, is very tough and requires admixture with sand, but too much of the latter is present in the bank to permit of its use in the proportion that it occurs naturally. The removal of a part of this sand adds to the cost of delivering the raw material, but while this is the case here still on most yards on the Hudson and particularly on the west side of the river a deficiency occurs, and many manufacturers are obliged to buy the sand that is used to control the shrinkage of the brick. The Croton Point clays as a whole are very fat, but they contain various stratifications of quicksand as they occur in the bank, and there is scarcely a clay bank on the river that does not contain some. There are two distinct kinds of of clays found here—blue and yellow—the blue underlying the yellow, and overlying the whole clay bank we find a deposit of sand of varying degrees of fineness ranging in depth from ten to thirty feet. The yellow clay runs higher in iron and for that reason when burned produces a better colored brick than the blue alone.

The best results, however, both as to color and shrinkage, are obtained by using mixtures of both, together with a proper proportion of sand. One noteworthy point in regard to the burning of this material which the average brick manufacturer would regard skeptically lies in the fact that practically no shrinkage of the brick takes place during the burning; and any shrinkage that does occur does so after the kiln has been burned and begins to cool, and should the total shrinkage of brick, which are set fifty-two high, not exceed three-quarters of an inch a good burn is at once predicted. This peculiarity is doubtless due to the presence of the high percentage of quicksand, which in itself would not be altered much in size unless subjected to sufficient heat to cause the sand-like particles to become fused and vitrified and form a new chemical compound—a silicate of alumina and the bases present. But this kind of treatment would fail absolutely here.

The kilns seen differ materially from the common method usually adopted on the river. They are a patented kiln, known as the "Underhill kiln," and hold from 600,000 to 800,000 brick each. There are no side walls and the usual scoving and platting of each kiln is necessary. The difference lies in the furnace construction and lower part of the kiln generally, which is but vaguely represented by the accompanying photograph. In this kiln the arches are below the floor level upon which the brick are set. Not only is time saved in setting in these kilns, but there is also an absence of arch brick with blackened headers accompanied by a greater or less percentage of bats. These kilns were constructed mainly for the use of hard coal, but the high price the present season has precluded its use altogether, and soft coal has been used to a limited extent at the end of the burn.

View of the Clay Bank of the W. A. Underhill Brick Co.

Front Brick from Common Stock.

Two machines a day are run on each yard, affording a daily output of about 150,000 per day. Of the eight machines on the north yard six are run, making their W. A. U. brick, or as the brick are commonly known, the "Collabaugh" brick. Few there are, if any, architects and contractors in New York city that are not familiar with W. A. U. front brick. These are more carefully made than the common brick. Fewer are made on each machine to constitute a day's work; greater care is taken in the handling and setting; they are given the choice position in the kilns and more pains taken in the sorting and shading after they are burned. Their popularity is not altogether due to the low price at which they are put on the market. They have a distinctive red color much in their favor, the same as brick made from the red Bedford shale in northern Ohio have over most brick made from other deposits of different geological formation. So much in popular favor is this brick growing that orders are being shipped as far West as Syracuse, and the company has found it necessary to put on more machines, making front brick at the expense of the common.

It is really a remarkable coincidence that a rough textured sand molded brick, not repressed, and made by the same process that they were sixty years ago, should still hold their prestige in the metropolitan market and elsewhere. The dry press and stiff mud repressed brick are in good demand, and of almost daily occurrence, but few decidedly marked improvements in the manufacture of soft mud brick have appeared, at least their development has not been so marked nor so rapid as in the manufacture of dry press and stiff mud. The causes doubtless are obvious, but space will not permit a discussion on this point.

As an example of the harmonious effect produced by the use of the medium shade of W. A. U. red brick with limestone trimmings we reproduce a photograph of an apartment building at the corner of Amsterdam avenue and One Hundred and Twentieth street, New York city, of which Mr. Bruce Price was the architect. Similar examples in almost every kind of a building are to be found in almost any part of the city.

W. A. Underhill Kiln Burning.
The Platform Above the Arches Being the Floor Level, Upon Which the Green Brick Are Set.

METROPOLIS.

CLANDESTINE CORRESPONDENCE BY GIRL EMPLOYES.

FREQUENTLY in the glass and pottery trades it happens that some of the fairer sex are wont to put notes in outgoing packages of this class of goods soliciting correspondence with the finder. At the works of The Fostoria Glass Company in Moundsville, W. Va., it happened the other day that a reply to one of these letters was opened by mistake in the company mail. The latter was one that had been written in answer to a missive announcing to the finder of the same that the writer, "an accomplished and wealthy young lady," would be pleased to correspond with him. Needless to say the glass company immediately placed the precious letter in the hands of its rightful owner, but the report does not say whether or not any instructions went with it governing the writing of such letters in the future.

For cheap machinery the reader is referred to our "For Sale" columns. We do not advise the purchase of cheap machinery. As a rule, cheap machinery is dear in the end, but for some places second-hand machinery answers a very good purpose. Those wanting experienced help will also find the "Wanted," "For Sale," etc., columns a means of satisfying their needs.

Written for The Clay-Worker.

BRICKMAKING IN THE LAND OF FLOWERS.

A Remarkable Deposit of Clay.

Mr. C. K. Weller.

AFTER THE great fire which laid waste a large part of the business center of Jacksonville, in May, 1901, quite a number of enterprising gentlemen conceived the idea that the rebuilding of the burned district would create a big demand for brick; that the local yards would not be able to make anywhere near brick enough to meet the demands, and hence that it was an opportune time to start new brick plants. Among others, the Columbia Brick Company was organized and proceeded to build a brick plant at Lake City, Fla. The prime mover in the enterprise, Mr. Charles K. Weller, is an experienced brickmaker, having served an apprenticeship under the venerable J. W. Crary, Sr., who, up to the time of his death, was a regular contributor to The Clay-Worker.

Mr. Weller soon had the plant in operation. At first they made brick by the tempered clay process, drying them in the open air. After losing several hundred thousand green brick by rains and washouts, they put in a Standard dryer. This was in November, 1901, and it worked to perfection until the following January, when the entire plant was destroyed by fire, which originated in the kiln sheds. The loss to the company was a severe one, but Mr. Weller is not easily discouraged. He at once set about rebuilding, and in sixty days was again making brick.

The plant is well located, there being a number of good towns within a short distance. The supply of raw material is inexhaustible. Mr. Weller thinks he has the deepest clay bank in Florida. At the top is a stratum of fire clay six feet in depth. Beneath this one and one-half foot of porcelain clay, then about five feet of very fine blue clay, then five feet of very rich yellow clay, and below this thirty to forty feet of good common brick clay. A sample of each strata has been analyzed by the N. P. Pratt laboratory, of Atlanta, Ga., with the following results:

Sample No.	Soda and Potash.	Magnesia.	Lime.	Per-oxide of Iron.	Alumina.	Silica.	Water, Etc.
1	.34	.02	none	.34	10.10	85.94	3.26
2	.54	.21	none	1.42	31.03	55.42	10.83
3	1.81	1.60	none	2.44	13.69	75.63	5.06
4	1.63	1.93	none	5.30	14.85	70.09	36.10
5	1.90	2.47	none	11.69	20.88	53.63	9.19

Referring to these clays, Prof. Schreiber, the expert on Florida mineralogy, says that sample No. 1 is a very good grade of fire clay, almost entirely free from undecomposed mica and that the second stratum is also of a highly refractory character, and thinks that a fine grade of light-colored face brick might be made from it. The lower strata are very different in character, one of them much resembling in general characteristics clays designated as Fuller's earth, which is used extensively for purifying various oils. The entire clay deposit is a rare one for Florida. It is remarkable for the extent of the deposit, which covers about twenty acres.

Mr. Weller has had a very busy season and expects to run the yard right on through the winter months. The accompanying photographs will give your readers a fair idea of the appearance of the plant. One shows the clay pit, and the other a portion of the yard, with Mr. Weller in the foreground, wearing his usual garb of white duck.

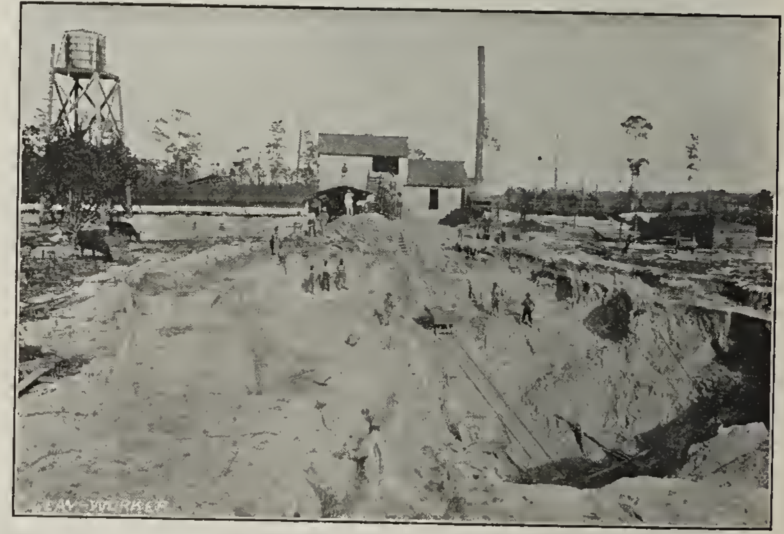
A VISITOR.

Written for The Clay-Worker.

THE MODERN CLAYWORKER.

THE AIM of all business, generally considered, is the making of money. The average manufacturer, previous to the time of the present marked period of prosperity, probably considered it a philanthropic enterprise, resulting chiefly in the employment of labor. The fewest examples of success have been shown in the manufacturing branch of modern business, but we are witnessing to-day the progress of what promises to be the most stupendous and markedly successful business proposition on record and that in the manufacturing field. The Steel Trust, so called, if not interfered with, will no doubt give to the world a splendid illustration of a successful application of scientific business economy and applied science to manufacturing. The history of this operation is interesting, and particularly so to manufacturing industries employing a furnace operation or the application of high temperatures in the conversion of raw materials into finished product. The progress made in the iron industry is due largely to the help given it by chemistry and scientific experimentation. The day of manufacturing experiments should be considered as passed. Laboratory research points the way to certain results in practical operation, eliminating the blind and expensive experiments formerly necessary in the solving of questions of extended manufacture, elimination of waste through utilization in new products and a positive saving in the manufacture of the original article.

The work of the individual industry in this line produced an industry ripe for the further application of scientific business economy in the operation of the trust or consolidation, working out the elimination of poorly located plants, expensively worked raw materials, poor plant arrangement, etc., common to the small dividend or losing plants, and instituting the economies worked out by skilled mechanics and engineers in questions of power and improved machinery and the skilled and economical direction and distribution of labor. There has been no point in the iron industry left unassailed by the energy and push of the directing heads in applying all the skill of science in cheapening product and reducing the whole scheme to system which alone permits of the handlings of such a large industry.



The Columbia Brick Company's Clay Pit.

The clayworking industry follows along lines similar to the iron industry, needing, in a modified degree, the application of the same sort of knowledge in solving its comparatively simple but fully as important questions when considering the production of ware at its fullest profit returning possibility. It is not the purpose of the writer to question whether or not the clayworking industry is generally profitable, it is a good business and has many marked examples of success. At the same time those who have traveled around the country on brickyard pilgrimages have noted that it is not universally successful.

Necessity for Technical Knowledge.

In the more common branches of clayworking the advance has been made through practical or manufacturing experimentation. The help of science has been deplorably absent. This is perhaps remarkable when the great cost of installation is considered, and would lead an outsider to believe that it is indeed an attractive industry and one having such a wide margin of profit as to make it paying to the most complete of novices. Speaking of novices, they are just the things for starting up a successful clayworking plant. They should, however, be full to the brim of good horse and business sense. Then they start right. They have no idea that they know all about the business, and they look around for experience of the right sort to put them going right, and they know that they have the best in the line. They buy knowledge that must produce results in order to gain its hire. Once upon a time an old experienced clayworker, who had made and lost a fortune in the clayworking business, was heard to remark in a clayworkers' convention that things had come to a pretty pass when lawyers, doctors, counterjumpers and bankers must rush into the brick business. This brought up the question if it were not advisable to have a banker interested in every brickyard, and it was decided that he generally got into it by the help of the other novices, and sometimes, unhappily, through the agency of that most trying of operators, the man who had nothing to learn in the business. Who knows but what the best examples of the modern clayworker will come in the future from the ranks of the novice. Is not the most wonderful of ironworkers a banker?

Ten years ago every dollar seemed to be inoculated with the clayworking virus and led its possessor into the business. Every clay indication offered an inducement to capital that some way could not be overlooked. Many of these plants have long since been worked up into general castings and the remaining capital secure for all time for use in other lines. Today we have present a demand for clayware unequaled in the general history of the trade and at prices calculated to return a fair profit on the investment. We observe also that as a rule new plants are slow to start up unless there is a call for them, and that the large improvement shown in the machine industry comes largely from increased investment rather than entirely new ventures. This is as it should be. There are two reasons for establishing a new clayworking establishment, but they must be joined together or either is not a sufficient provocation. One is an unfilled demand or a poorly supplied demand, and the other is a large deposit of No. 1 raw material Conclusions regarding proper locations are easily reached Everyone knows that the proper place is in the midst of a large market and over a large deposit of first-class raw material. The prospective investor knows that such a place is to-day generally occupied and it is generally the case that the supply and the demand are widely separated. The scheme of world development seems laid on this line, and so we all contribute more or less in prospering the cause of the transportation company. The question of transportation comes largely into every consideration of location, and it follows that the better the facilities the better the location, other things being equal. One summer I felt that I had a "call" to visit a summer resort. I embarked in a small boat on Lake Michigan, and the sea being rough and my works having furnished food for the fishes for some little time, I thought best to take advantage of the first landing. It proved to be quite a delightful spot, but one that was somewhat removed from the beaten paths of the professional resorter. While there I met a gentleman from Colorado who was visiting over night with a friend who had a cottage on the beach. He was a man of wide business experience and a man of the successful class. I had learned a good deal of his history, which was interesting aside from the interest one always has in success. His operations extended over a wide range, and he was at that time engaged in gold mining. He seemed to be fearless, and as evidence of such conclusions, or, in support of such conclusions, those who were favored had the backing to their conclusions of a badge which was presented to him by a very large mining interest, made from the gold of their several mines and forming the setting of a large first-water diamond. It was for bravery in leading deputy sheriffs against a mob of rioting miners. This man said he would avoid trouble every chance he had, would cross the street to avoid meeting a drunken man, but he never would run from a railroad. He gave as his reason for business success that he had a desire to always be in the midst of the "push." He didn't want to be connected with anything or in anything that had but one way out. Accessibility in location he gave as the main essential to success in anything, even summer resorts. In a way his conclusions would be a safe guide for those seeking a location in the clayworking busi-

Kilns and Yard of the Columbia Brick Company, Lake City, Fla.

ness: People and railroads, clay and water, four good things for a clayworker to get busy among.

Where Clayworking Plants Should Be Located.

Wherever it is found a fine deposit of clay is a hard proposition for a clayworker to turn down. However, if he is onto his job, as the saying is, he will take into consideration many other things which have great weight in determining the availability of location. If one could have things made to order, the location patternmaker would cut out on the lines of several railroads an inexhaustible supply of all kinds of the best clays, good coal in abundance and a large local demand for manufactured product. Such locations are by no means scarce, but are pretty well occupied. We find over the country two of the conditions often present. Shale deposits are generally most available in coal producing vicinities, and oftentimes one or two railroads are also present. In the latter case the location is desirable without the local demand. We find cases where clays are shipped considerable distances in order that the clay products may be manufactured at point of the large part of consumption. Such arrangements could hardly be considered desirable unless the local market is abundantly able to take the whole supply of manufactured product.

Questions which enter into a consideration of such arrangements are numerous, but perhaps the most important is the one of percentage of loss in burning, which would determine the advisability of shipping raw material or finished product. In considering the central location the fuel question, the one of greatest importance to the clayworker, also comes up, and the question of labor supply. The central location has for a shipping factory many advantages, which in some cases overcome the advantage of cheap fuel and raw materials at hand in the isolated location, but these advantages are disappearing in the changing of business methods, as the combinations now so noticeable in the business world are large in evidence in the field of transportation and competing freight rates are becoming facts of the past. Location on two or more railroads will probably give little advantage, in the near future, except in a more prompt distribution. It is likely that if the "trust" movement ever takes an active interest in clayworking, the active plants will be located where the best of raw materials and coal veins abound. The urban location offers advantages in the way of labor, paying more in most cases, but obtaining always a supply in excess of the needs, and, as a rule, a class of labor better fitted for manufacturing, appreciating the need of greater effort in order to earn a greater pay and having the knowledge that one or two others await their decision to discontinue work that they may step into the vacancy.

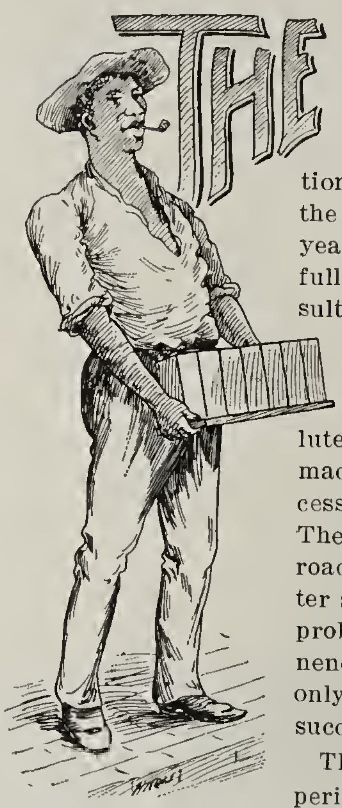
In deciding on a location the one important thing above all others is the exploitation of deposits. General appearances are often deceptive, and what often promises to be a field of great extent nearly as often develops grave difficulties and unlooked for changes. It does not seem advisable to give this question a hurried consideration. It is one requiring system and expense, time and engineering ability. It is becoming the established custom to look for the shale deposit as the desirable material, and it is fair to assume that, in the future, where there is a shale it will have the preference over other materials. These deposits usually lie in hills, are of great thickness and often present conditions of promising quality or the reverse, which conditions are apt to suddenly change from the one to the other as depth is reached or as progress is made into the hill. We will often find the surface indications on side-hill croppings of shale beds showing the presence of lime, and generally this disappears as the face of the hill is opened up, these lime particles coming from the wash of overlying drift.

It is important in such cases to determine the amount of stripping that will be required to obtain quantities of shale that can be worked from top to bottom. In many localities the shale deposits are apt to have rock partings of greater or less thickness. Such partings must be considered in the general plan of working the deposits, and their thickness ascertained as a basis of determining whether it would be desirable to mine certain levels rather than remove the large rock stratum and work it all as a bank deposit. This condition is best determined by sinking wells over the territory. Such knowledge is important in the matter of disposition of stripping, as it is important that this dead work is not done so as to in any way affect future development of deposit. Where color is an important factor analyses and tests of the shale from these several prospects is also an important item. One may know ever so much about clayworking and very little about prospecting. The civil engineer should be taken into account in figuring out the expense of figuring out a location, as well as the chemist. There is in the clay deposit much of importance to consider in relation to the finished factory, other than its extent and quality. These points are best considered through the data furnished by the experienced engineer.

(To Be Continued.)

PAVING A COUNTRY ROAD WITH BRICK.*

A Hard Paving Nut Cracked—A Special Clay Curb—Importance of Tile Draining Roads.



THE FIRST CIRCUMSTANCE or condition entering into the problem was the location of the road it was proposed to improve along the bank of the Ohio river at such an elevation, or rather want of elevation, as to bring about the covering of the road on an average of about once a year with high water, carrying to its fullest capacity the fine sediment resulting from the disintegration of coal measure, shales, and leaving thereon after subsidence a tenacious and retentive mud, absolutely destructive to the surface of a macadam road and thus requiring excessive expenditure for maintenance. The thorough occasional soaking of the roadbed attendant upon these high water stages added another element to the problem of construction with permanency in view. In this I recognize the only element of uncertainty as to the success of the experiment.

The conditions favorable to the experiment were the location of the road with reference to the materials used in construction, that is past works producing what are, without any question, the best paving brick manufactured, the celebrated Ohio River paving brick, manufactured under conditions as to economy of production rarely equaled. For material for foundation the same element of accessibility of waste material from sewer pipe works made it possible to adopt that nearly indestructible waste for the construction of a foundation which we hope will neutralize the uncommon condition due to soakage referred to above.

The drawing herewith is illustrative of the references in the description below, which are but explanatory of the selections quoted from the specifications under which the road was constructed. The selections given are only those referring to requirements peculiar to the form of improvement under consideration.

Underdrains.

Four-inch sewer pipe drains, length of joints two feet, shall be laid to grade in the trenches at sides of paving as indicated on cross-section sheet, and will be practically continuous on each side of the pavement. All sewer pipes shall be of shouldered, hard-burnt, glazed fire clay pipe of good quality. Fire cracks or slight deformations that do not affect strength or capacity will be allowable, but pipes otherwise defective must not be delivered along the road.

These 4-in. sewer pipes were placed in trenches under the curbing and three feet below the finished grade of the road, not because the ground was more than ordinarily in need of drainage, it being mostly a sandy loam, but in order to effectively and promptly carry off the water under the paving upon the recession of the frequent floods referred to above.

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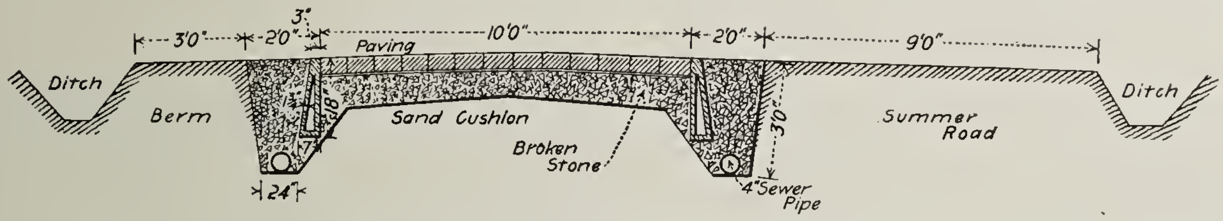
*Excerpts from a paper read before the Ohio Society of Civil Engineers and Surveyors by Sam Huston, C. E., and published in Engineering News.

The grade, spoken of above, throughout nearly the entire length of the road improved, was from 3 to 12 inches per 100 feet. The 3-in. grade I considered undesirable, but funds were not available to secure a heavier grade, although we used the debouchure of several minor streams about 1,000 feet apart, to secure without much extra expense the above minimum grades, and at the same time not bring the lowest points of the pavement below a certain uniform minimum, about 1 foot above the level of what are considered dangerous floods. For a distance of about 1,600 feet the pavement was laid over material 6 feet or more in depth, consisting of the waste from fire clay brick kilns and sewer pipe works. This material gave good drainage and it was deemed unnecessary to use the 4-in. tile over such fills. Otherwise the double line of tile was continuous for the entire length of road.

Foundation of Broken Vitrified Pipe.

Foundation material shall consist of broken vitrified sewer pipe, which shall be broken to pass through a 2½-in. ring, with sufficient finer material to fill voids after rolling and prevent sand cushion from passing downward. Such material shall be placed in the trenches over the 4-in. pipe and around the same up to within 18 inches of the surface of the sides of the completed pavement, and together with the subgrade, shall be thoroughly rammed, or rolled with a roller weighing or weighed to 8 tons. Said work being done when the sub-grade is in a moist condition, and care shall be used that the sewer pipes are not injured, crushed or displaced.

The material used was the waste of the works, consisting of rejected and unmerchantable sewer pipe, broken by hand with light sledges, mostly in the trenches and on the sub-grade. For finer material furnace cinder was used by consent of the Pike Commissioners, and if there is any weakness about the manner of construction, or carrying out the specifications, it arises from the use of too large an amount of cinder, and a want of proper incorporation of the same with the broken sewer pipe. The sub-grade was rolled and any unforeseen unevenness growing out of the nature of the material of the subgrade was made up with the foundation material.



DETAILS OF BRICK PAVEMENT ON A COUNTRY ROAD.

Vitrified Clay Curbing.

Curbing of quality and manufacture the same as Ohio River paving brick, 18 ins. high, 3 ins. wide on top and 7 ins. wide at the base, and not less than 2 ft. long, and of the form indicated on cross-section sheet, shall be placed and solidly beeded on the foundation as designated above, so as to stand true and even to grade and line.

This form and material of curb, so far as I know, is entirely new, was designed by the writer, and so far as the construction of the road is concerned, has proved its efficiency. In order to secure thorough burning, it was constructed hollow, with walls 1¾ ins. thick, is solid and substantial, having stood every test applied to it. Transverse fire cracks, where not too extensive, appeared of no detriment, but longitudinal cracks and inferior burning were the only sources of weakness, and the only defects calling for rejection. It was found that with proper care in handling during the process of manufacture, these defects were of infrequent occurrence. Where the whole curb is buried, as in the manner used in the road under consideration, they were found to be all that could be desied and demonstated their serviceability. Curbing, I believe could be manufactured on the same plan adapted to gutter work, provided they were bridged in the part of the hollow against which came the pressure of the brick forming the gutter. The reasons for building the curb hollow were to secure uniform burning through the entire cross-section of the curb, to save material not necessary to strength, and reduce the weight, an important item in the cost of manufacture. The weight of the curb was 68 pounds per lineal foot.

In the trenches partially filled as above and upon the subgrade shall be placed layers of not more than 6 ins. in depth of above specified foundation material, each layer of which shall be rolled or rammed to the satisfaction of the engineer. The surface of such material when completed and rolled shall fill the trenches outside of curbing to the level indicated on the cross-section sheet as surface of completed road, and between the curbing to within 4½ ins. of the same, with smooth and even surface, with same curvature as completed pavement. Between the curbing and upon the foundation thus prepared and thoroughly compacted, a layer of clean dry sand shall be placed, and shaped to the form shown on cross-section sheet by a templet scraper, with a depth of ½-in. The above with the sand cushion shall be classed as foundation, and be bid and paid for by the cubic yard, measured when the road is complete.

Crown of Pavement and Slope of Summer Road.

In the construction of the road 1 inch of sand was used instead of ½ inch, and the surface of the brick, when the rolling of the same was completed, stood ½ inch above the curbing to allow that much settlement under travel. The crown of the road was determined by the form of the templet scraper referred to in the specifications. The scraper was made as follows, that is 10 feet long, with the following measurements from a cord uniting the ends and at the following distances from the center: Center, 2 ins.; 1 ft. from center, 1⅞ ins.; 2 ft. from center, 1½ ins.; 3 ft., 1 in.; 4 ft., ½ in. Thus forming a curve for 4 ft., at the center, tangent to a slope of ½ in. per foot for the remaining 3 ft. at each side of the paved portion of the roadway. This latter slope was carried across the summer road and wing at each side of the paving. This brought the farther edge of the summer road 8 ins. below the center of paving as follows: Crown in paving, 2 ins.; side of paving above curb, ½ in.; fall of ½ in. per ft. of trench (curb and broken pipe) 2 ft., and summer road, 9 ft.; in all 11 ft. 5½ ins.

Brick Pavement.

Upon the sand cushion the brick paving shall be laid. The brick shall be of standard size of the best quality, sound, tough, Ohio river fire clay paving brick, hard burned, of good shape, free from flaws, cracks or breaks. No bats should be used except at curbs, where half bricks shall be used to break joints. The engineer may subject samples, selected by himself, to any reasonable tests as to durability and fitness. Bricks shall be subject to any inspection designated by the engineer, both before and after laying, and all rejected brick shall be immediately removed from the work, and not returned to it, and the deficiency made good by the contractor.

The brick shall be laid on the sand cushion, on edge, at right angles to center line of paving, and be kept in even, straight lines; with all joints broken at least 3 inch., and in perfectly upright position, the brick to fit close on ends and sides. In making closure at curbs, care shall be taken in shaping and trimming not to check or fracture the bricks, which shall be broken or cut at right angles to their tops and sides, and the work shall be done by experienced men.

The brick shall then be covered with fine dry sand to be well broomed in, sufficient only to fill the interstices or joints. When laid as above, the brick shall be thoroughly rolled with a roller of five tons weight, and any portions of the pavement, that in the judgment of the engineer may require the same, shall be rammed to his satisfaction, either before or after rolling, a plank being used under rammers. After rolling, the surface of the paving shall be true and even to grade and cross section, must show no continuous lines, or unequal settlement, and the contractor shall remedy any such deficiencies. When complete as above the surface of paving shall be evenly covered with ½-in. of clean, dry sand.

In reference to the last quotation it is only necessary to add that the brick used, the "Ohio river fire clay paving brick," have proved themselves, according to my observation, extending over more than twenty years, and in comparison with many other kinds of brick used in different cities and under various conditions, the most reliable and enduring pavers manufactured. I have seen them in quite a number of cities used on adjoining streets to many other kinds of pavers, and they have demonstrated their superiority, especially in the line of durability.

The sand used on the first paving laid was rather loamy, and would undoubtedly have proved detrimental, had not several weeks of extremely dry weather succeeded to its use. This dry season, however, counteracted any tendency injurious to the road, and clean sharp sand was used subsequently.

The following is a copy of the final estimate on the work:

Excavation	10,334 cu. yds.	@	$0.12	$1,240.08
Overhaul	47,490 cu. yds.	@	.01	474.90
Grubbing trees	18 each...	@	1.00	18.00
Four-inch sewer pipe	8,012 lin. ft..	@	.06	480.72
Curbing	10,784 lin. ft..	@	.20	2,156.80
Foundation	3,413 cu. yds.	@	.22	750.86
Paving	6,243 sq. yds.	@	.52	3,246.36
Total				$8,367.72

The total length of paving, exclusive of bridges, was 5,479 ft.

The low price for excavation was obtainable because the contractor was able, before the work was let, to arrange with a manufacturing plant, located within 300 yards, to use their waste for the construction of the heaviest fill on the contract, which material was delivered in place without expense to the contractor. The price for overhaul, 1 cent, was for each 100 feet or fraction thereof each yard was moved in excess of 100 feet.

Written for The Clay-Worker.

COST OF PRODUCTION—NO. 3.*

L. C. Moore.

In MAKING THIS comparison of methods of manufacture, we have assumed that the hand-mold manufacturer has but few modern appliances, while the manufacturer who uses machinery is supplied with an up-to-date equipment. Perhaps this is unfair to the hand-mold man, for in a few instances he may have good dryers and kilns. But such cases are so rare that we have left them out of our calculations. The machinery man may have a very poor outfit, not only of machinery but of dryers and kilns also. Such an outfit is worse than the mud barrel with the old gray mare attachment.

A poor attempt at a good thing is worse than a good attempt at a poor thing. We have seen more failures among manufacturers that used machinery than among hand-mold brickmakers. They were so accustomed to the old methods that when they purchased machinery and started upon improved methods, they found that it required a different training to theirs to make a success. Their ideas of economy often proved their ruin, for after spending a few thousand dollars for machinery, they decided to call a halt on expenses, and attempted to go on with no dryer, no good kilns, and no appliances for the economical handling of the raw clay. The hand-mold manufacturer has a decided advantage over such an outfit, and these outfits are very common. The hand-mold man has but little wear and tear, no interest to pay on a costly equipment, no belts to slip, no boilers to spring a leak, no wheels to jump a cog, no journals to get hot, nor pulleys to get out of line. He escapes many of the vexations of the machinery man, and unless the latter be trained to his work—one who understands well the management of machinery and men—the hand-mold man will pass him in the race of competition.

There are some localities of limited markets and cheap fuel, where the small yard is all that is practicable. But if not too remote from the large factories, the small yards are gradually being shut down on account of strong competition from the neighboring factories. All this would argue that the cost of manufacture by our modern methods must be considerably less than under the old methods. We would thus summarize the advantages of the modern factory, giving approximate estimates of the decreased cost of production per thousand:

1. Saving in the cost of gathering clay and molding same	$ .75
2. Saving in drying, handling brick on dryer cars, no loss from rains	.50
3. Saving in burning in modern kilns	.50
4. Advantage in securing and holding competent labor	.25
Total saved per thousand	$2.00

We shall say a few words in regard to the fourth item of this summary. The brickmakers who once used the old open yard and have changed to the new, will appreciate the force of the argument contained in this item. Did you ever have to hunt for men about April 1? How many trained, competent men did you find out of a gang of twenty-five that you used the previous season? The principal part of your last year's gang vanished about Nov. 1 and you never heard of them afterwards. One cannot keep good men without paying extra large wages if they know it must be a lay-off for every rainy day, and the best of seasons lasts from April 1 to Nov. 1. The loss that a manufacturer has from workmen who know nothing about the business is of such magnitude that there is great advantage in being able to give steady employment to one's men, thereby holding their services from year to year when desirable. A well-trained workman in any part of the factory is worth as much as two men who are untrained. It takes time to give men this training, and when once you get a man to your notion, be sure not to let your competitor persuade him to leave you.

If, then, we make bricks so much cheaper, why not sell them cheaper? We do, when we have to.

But while we are making our calculations upon being able to place bricks upon the market at a price much below that of the hand-mold man, where is the sense in selling for a small profit when a larger one may be had for the asking? It is so easy to cut prices, but very difficult to put them back to the old figures after once making a break. The best plan is not to make that break. Perhaps there was never before a time when the brickmaker had such opportunities for securing high prices for his products as during the year 1902. We do not argue in favor of exorbitant prices for anything, whether it be bricks or beef, corn or pork. But one's opinion often changes in regard to what is a fair profit. All lines of business are now prosperous to a degree seldom known, and our customers are in a financial condition to stand a good, round profit. Very few customers ever object to the price of bricks. Seldom do we have contractors say: "We can do better at your neighbor's yard." We know he can't get any cut on prices down there, and we will make no cut down here. Generally the purchaser is satisfied with the price, but they are all kickers for good stuff. This ability to furnish superior materials is really the greatest boast of the modern brickmaker. Not "how cheap," but "how good," should be our watchword.

But it is worthy of one's careful attention that he be able to make bricks this year at 25 cents less cost per thousand than he made them last year. If this has been accomplished without lowering his standard of quality he has done well. But remember that these good times may not last long, and it is wise to do all in our power to make as many good bricks as possible, as cheap as possible, and sell them for as much money as possible.

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*This, the third article of the series, was intended for the October issue of The Clay-Worker, the preceding or second article having been published in the September issue.—Ed.

Written for THE CLAY-WORKER.

AN UP-TO-DATE BRICK FACTORY.

Advantages of Improved Machinery and Appliances.

ONCE THERE WAS A TIME when the manufacture of bricks could be carried on in "any old way"—the cheaper, under any and all circumstances the better for the brickmaker—and the product sold at a profit. A mule, a boy, a clay pit, a few diggers and molders, a kiln in which the brick were burned black and hard on the outside of the kiln and red and soft on the inside—that was the old-time method—and still prevailing in some places. Then came, in progressive neighborhoods, the reign of the brick machine, improved kilns, represses, dryers, etc., and improved brick. Now all brickmakers understand the advantage of rapid-producing brick machinery, but all do not strive to bring their factories up to modern standards, and by neglecting this leave out many things that serve for the best economy—labor-saving and fine product. And this is true of not a few brick factories even in the neighborhoods of some large cities, where demand for good building material is large and steady.

I can speak for the Nation's capital city, to the building progress of which over fifteen brick factories, in and near the city, contribute. I am sure we have here a few as good brick factories as can be found anywhere, but in some others there is lack of up-to-dateness in some features. Still all this can be remedied, and perhaps will be, for the money-making opportunity in brick is here. The greater number of the brick used in Washington are made in Virginia, on land that once was a part of the District of Columbia, belonging to the old "ten miles square" that comprised this territory. On this retroceded soil of the Old Dominion there are a number of up-to-date brick factories, one of which is that built and operated by Edward D. Diggs & Co., whose main Washington office is on Thirteenth street, near G, to which place the office has been recently moved from G street.

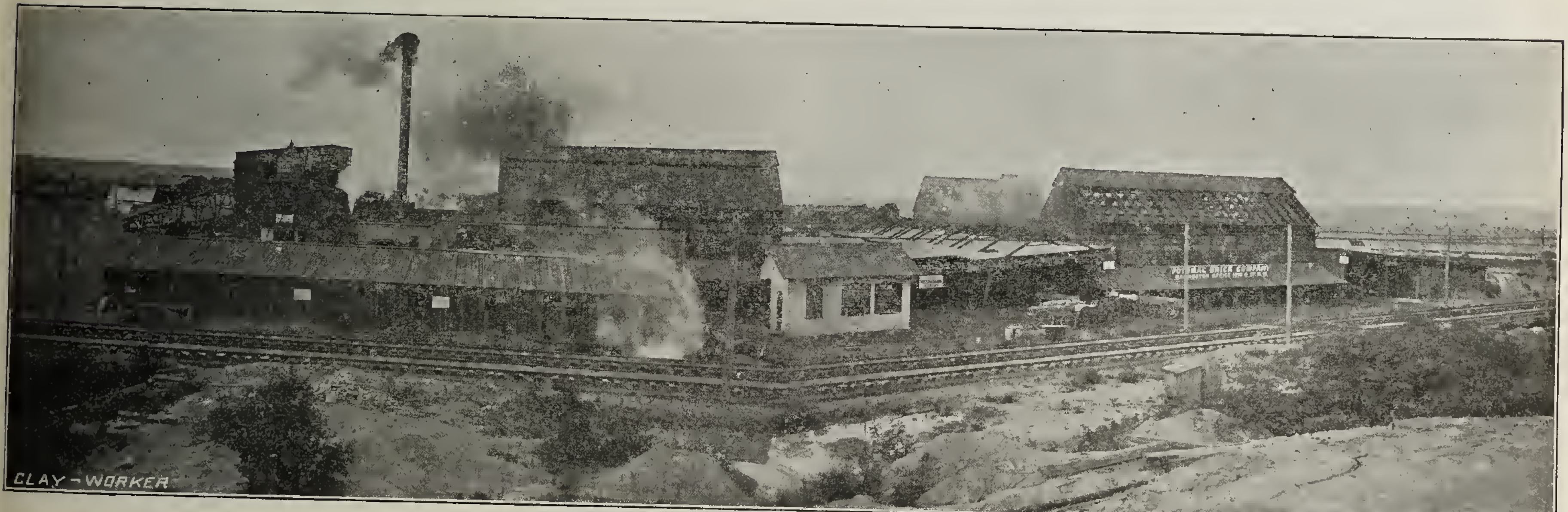
The New Diggs Plant.

The Diggs Company (Potomac Brick Company's) factory is situated on the Washington, Alexandria and Mount Vernon (electric) railway, near Addison station, about three miles from the center of Washington. The plant is new, having been finished June 1 of this year; but brickmaking was begun there on Aug. 14, 1901. Since the latter date work has been going on and brick of fine quality turned out. The product is red, repressed brick and dressed face brick, and the capacity of the factory is between 20,000,000 and 25,000,000 annually. This plant is admirably located for work, being quite close to its clay beds—some of which are twenty-five feet deep, as seen from excavations—and at present very little hauling is necessary to bring clay to the point of delivery, at the lower end of an elevated track-way, which extends to the factory's top story. Up this steep way iron cars, drawn by wire rope operated by steam power, carry the clay and dump it into the pug mill receiver; thence the material passes on to the brick (wheel) machine, the waste product from the machine coming back to the pug mill by cup-band carrier. The company's land at this place comprises about twenty-two acres, a great deal of it fine clay. The factory itself covers several acres and is mainly under one roof, or series of connected roofs, and its equipment is arranged for quick and effective work.

When the brick come from the wheel machine they are put on the represses (there are four of these) and taken thence by iron track system to the two dryers, the latter of brick, wall and top, consisting of ten tunnels each and each having capacity for 75,000 brick. The iron cars, with their respective loads of 500 brick, now take the dried material, also by track, to the big kilns, of which there are five, each holding 425,000 brick. When an order for special shapes—usually arch brick—is received these are cut and ground, the latter process by steam power, in a department separate from the main building. Here grinding stones and brickdust are much in evidence, and desired forms are accurately and quickly obtained.

Electric Light and Fire Fighting Features.

The power plant of this factory consists of two engines and two boilers, one of the latter being of 100-horse-power, the other of eighty. An electric plant also is part of the factory's equipment, and is used for lighting incandescent lamps. For fighting fire in the factory there is efficient arrangement of pump and hose, and besides this patent extinguishers are placed at various places in the buildings. Concerning water, there is a well-filled tank, sixteen feet deep and sixteen feet in diameter, situated near at hand. A smaller tank for supplying boilers for wetting clay also is used. The rush of business in the factory here described and the busy aspect of other brickmaking establishments in the same neighborhood give one the impression that a great deal of money is now being made out of brick sold in Washington. And this may be true; but it is also true that there is considerable expense attached to the production of good brick, not the least item of which is that connected with hauling material to market. At present there is no way to send brick from the yards in Virginia mentioned, except by wagon—a long haul of from three to five



General View of the Brick Plant of the Potomac Brick Co.

miles, according to point of delivery. At best not more than three trips per day per wagon can be made, and the load carried (two-horse team) amounts to about 700 bricks. The average cost, when teams are hired, is $1.50 per 1,000 brick. Therefore, the hauling problem is one that gives the Washington-Virginia brickmaker much thought. Perhaps this difficulty could be gotten over by employment of gasoline or some other kind of power wagons. The initial cost of such wagons, of course, would be far greater than the horse and wagon outfit, but by use of power hauling machines many more brick per load can be carried, quicker time made and actual expense of hauling reduced. A ten-horse-power machine would easily carry 3,000 bricks—and beat the equine team out of sight.

A Great Face Brick Order.

Besides running a big brick factory E. D. Diggs & Co. represent a number of other factories in the interest of enamel and fancy brick, decorative terra cotta and roofing tile. Through this company the government printing office obtained 1,500,000 face brick which now have so much to do with the ornamental features of the great printing house. The building, with the walls, trimming and other outer parts in finished shape, speaks well for the art of the brickmaker, who is here represented in about 11,000,000 of his product. It is said that the new printing office is the strongest building for its size ever put up. It ought to be of great structural strength for the brick and steel walls are two feet and seven inches thick and the cost, as last estimated, will be $2,400,000. It is thought that the building will be occupied in November or December.

A Glimpse of the Potomac Brick Company's Works.

In the power department the four engines are already installed—two of these of 800 horse-power, one of 400 and one of 250. There are eight boilers of 300-horse-power each.

The growth of the government printing office business since the establishment, in 1856, of a plant for this purpose, has kept pace with the busy and business talk of Congress and busy pens of the departments. Forty years ago there were employed in this office about 300 people. Now 4,000 employes find work there, of which number one-third are women. The numbers in some of the departments of the place are as follows: Compositors, 1,200; bookbinders, 900; stitchers, 260; press feeders, 200; pressmen, 100; stereotypers and electrotypers, 55. Besides these there are hydraulic pressmen, electricians, engineers and firemen and many others.

NICODEMUS.

NOT TO BE FOOLED.

"Both these samples," said the customer, "smell like cheap goods to me."

"Those whiskies," replied the distiller, "are the best on the market. They're both over ten years old."

"Then they're old enough to have better scents."—Philadelphia Press.

Written for The Clay-Worker.

LIGHT AND HEAT.—(Tenth Paper.)

By Master Mechanic.

THE COAL MINERS' STRIKES seem in a fair way to be settled for another time, so that we will have our usual supply of coal as formerly. The high prices to which the unnatural conditions brought coal led many to think of how to economize on fuel consumption in the future.

We endeavored in these papers to teach the fundamental principles which govern the consumption of fuels, and will further elucidate some of the rules necessary for accomplishing the nearest perfect union of carbon and oxygen in this paper.

We have had some heated discussions in The Clay-Worker in regard to chimneys and their functions, wherein no authorities or scientific experiments were referred to. Each writer quoted his own opinion, and as these clashed, the subject was dropped without any special good having been rendered. In order that we may not draw forth any heated comments, we shall quote authorities and actual experiments while treating the matter of chimneys, flues, grate surface, etc.

What we know we have learned in the hard school of experiment and out of books recording deduction from scientific research, and, therefore, write these items not unadvisedly. Our authorities are Rankin, Nystrom, Mechanical Draft, Haswell, Kent and others.

Chimneys are built to create draft. Mechanical Draft speaks as follows on the subject:

More or less confusion exists in the use of the term "draft" in boiler practice of its double meaning. As usually employed it refers to the difference in pressure between the external air and the gases as they leave the boilers, although as related to the combustion of the fuel, it should properly apply to the difference of the under and over-air pressure of the fuel and grates.

In either application it indicates the intensity or force of the draft, and is generally measured in inches or fraction of inches of water in a draft gauge.

The term "draft" is, however, sometimes employed as a measure of the volume or weight of the gases passing through the fire. As the reading of a draft gauge gives no direct indication of their volume, the quantity of air or the gases must be determined by other means.

In the case of a chimney the maximum intensity of draft exists only with the maximum temperature of the gases; but after the temperature reaches about 600 deg. F. their density increases more rapidly than their velocity increases, so that the weight of air supplied is a maximum at about this temperature. As the draft is almost universally measured by the difference in pressure, expressed either in inches of water or in weight by unit of area, the term will be here employed as indicating the intensity or force with which its acts.

This difference of pressure, whether it is the result of creating a plenum in the ash pit or a partial vacuum in the boiler furnace, is always necessary to produce the flow of air through the fuel whereby combustion is maintained. It is evident, therefore, that the draft, or pressure difference, and the flow of air are interdependent. The pressure gauge generally used to determine the pressure the draft in a stack exerts consists of a U-shaped glass tube partially filled with a liquid, usually water In one end of this tube a pipe is attached which reaches into the chimney or flue, so that the gases flowing or being contained therein can infringe and exert a pressure, or visa versa, if the pressure is less than the surrounding atmosphere take off some pressure, which would make the water rise in the vertical tube nearest the chimney or flue.

The water in the other tube will naturally follow the same movement downward. Now, should the gases in the stack exert a pressure, the water in the outer tube is made to rise. As these tubes are graduated tó a certain scale, the atmospheric pressure can be ascertained to a nicety in any flue or space where there is a difference of density between it and the surrounding atmosphere. Where there is a strong draft the water in the outer tube will decline to the lower figures, while a light draft will unbalance the liquid very little.

With such a draft gauge and thermometer to ascertain the temperature of the gases going out of the stack, the efficiency of it can be closely ascertained.

We have many theoretical formulas relating to the draft in stacks and flues. The most noted are those of Peclet and Rankin, which were mostly used in determining the proper construction of chimneys and their actions under certain conditions. Kent in his latest work, however, says: "All attempts to base a practical formula for chimneys upon the theoretical formulas of Peclet and Rankin have failed on account of the impossibility of assigning correct values to the so-called constants G and f. In the formula mentioned G represents a constant for the passage of the air through the coal, and f a constant depending upon the surfaces over which the gases pass, whether smooth, sooty or rough. Haswell mentions that late experiments as to the draft of chimneys have developed the result that an increase of its area near to the top increases its draft. This would also interfere with the above mentioned formula."

In regard to the force and intensity of draft Kent gives the following: "The force of the draft is equal to the difference between the weight of the column of hot gases inside of the chimney and the weight of the column of external air of the same height. For this the formula is very simple after the gases of the inside of the chimney have been measured with the draft gauge, as follows:

"If D is the intensity of the air outside and d the intensity of the hot gases inside in pounds per cubic foot, h the height of the chimney in feet and 192 the factor for converting pressure in pounds per square foot into inches of water column, then the formula for the force of the draft in inches of water is F, equal .192 h D—d.

"The density varies with the absolute temperature.

$$d \text{ equals } \frac{T_0}{T_1}\, 0.084\, D = 0.084\, \frac{T_0}{T_2}$$

Where T_0 is the absolute temperature at 32, F equals 493, T_1 the absolute temperature of the chimney gases, and T_2 that of the external air.

Substituting these values, the formula for the force of draft becomes:

$$F \text{ equals } 192h\frac{39.79}{T_2} - \frac{41.41}{T_1} = h\frac{7.64}{T_2} - \frac{7.95}{T_1}$$

Kilns and Stock Sheds of Potomac Brick Company.

To find the maximum intensity of draft for any given chimney, the heated column being 600 degrees F. and the external air 60 degrees, multiply the height above the grate in feet by .0073, and the product is the draft in inches of water in the gauge.

The following table shows the result of the height of water unbalanced in chimneys of 100 feet high, taken from "The Locomotive:"

Temperature in the chimney.	Temp. Ext'l Air—Bar. 14.7 lbs. per sq. Inch.					
	0°	20°	40°	60°	80°	100°
200............	453	384	321	263	209	175
300............	611	541	478	420	367	315
400............	732	662	598	541	488	436
500............	829	760	797	639	586	534

Actual tests in a chimney 122 feet high showed a difference of 90 degrees F. between the bottom and top, being 320 degrees at the base, 230 at the top.

Tall chimneys are not considered economical at this date. One hundred and fifty feet are considered sufficient for any purpose. Exceptions are, however, made where noxious gases are to be carried as far as possible into the upper air. Two stacks 150 feet high are better than one 200 feet in height and more economical in first cost.

The tallest chimney of which we have knowledge is that of the Halsbruckner Huette, Saxony, near Freiberg. It is on an elevation, from which it measured from the base to the top, 460 feet. The elevation is 2:19 feet above the foundry works, which makes it 679 feet above the sea. The flue conveying the gases crosses a river and is 3,227 feet in length. The cost is said to be $40,000 for its erection. Since its erection lightning struck it; for its protection a copper top was added nine feet in length, which makes it 485 feet high.

MASTER MECHANIC.

DES MOINES' NEW BRICK PLANT.

Mr. H. L. Frost is putting in a new modern dry press plant at Des Moines, Ia., which is now being erected and is nearly ready to run. Mr. Frost was formerly president of the Colfax Pressed Brick Company, at Denver, where he used a Berg press, and in building his new plant at Des Moines he purchased another Berg Press and outfit from the Chicago Brick Machinery Company, and a nine-foot dry pan from the Eagle Iron Works, at Des Moines. Mr. Frost has every prospect for an exceedingly successful plant, having a fine quality of shale, an excellent market and good shipping facilities, and he is a past master in the art of making dry pressed brick.

If you want experienced help read the "Want" ads. in the Clay-Worker.

DRAIN TILE FOR THE ARKANSAS VALLEY—A FACTORY ON THE PLAIN.

LA JUNTA is a small town on the Arkansas river, in Colorado, eighty miles from the Kansas State line. A town on the plain, with a Spanish name in which the original pronunciation of H for J is retained, so that we must say "La Hunta" when naming the place.

On the outskirts of this unassuming town are located the works of the La Junta Brick and Tile Company, which were started twelve years ago by Mr. James McNeen, and owned by him until recently, when the company was incorporated, Mr. McNeen, however, retaining nearly all of the stock. The works are compactly built, as may be seen by a glance at the accompanying cuts. The variety of kilns used gives one the idea that almost anything in the form of a kiln can be successfully used here. There are three round down-draft kilns with open bottoms, connected to a single stack; three 28-foot solid-bottom kilns with short stacks for each flue; one square kiln with side stacks and four old-style clamp brick kilns, their total capacity being more than 2,000,000 brick. The accommodating superintendent insists that they make their kilns after their own designs and that they all give equally good results in burning. A spur from the main line of the Santa Fe Railway passes through the yard and is so graded that cars may be loaded from the yard level.

The shale bank from which the raw material is obtained is the unique feature of these works, for of course the material is a necessary accessory to the plant. At about sixty rods from the factory is a mound or bluff sixty feet high, capped by a covering of shelly rock three feet thick, which, when removed, exposes a bed of shale having a shelly and shattered texture. In the main the color is black, but the deposit is interspersed with a variety of shale and clay varying in hardness and quality. The bed is so shattered that it can be loosened with a heavy road plow, and after this is done the hillside resembles a plowed field. The material is then easily gathered with a wheeled scraper and hauled down the slope and dumped upon traps, which are platforms, under which wagons are driven. By means of a lever the trap, which is double, is dropped in the center and the wagon is filled. Two teams with wheeled scrapers and six wagons constitute the regular force for moving the material from bank to mill. The ease with which the shale is mined and transported is without parallel in the writer's observation. Plans are being perfected for the construction of an electric trolley line and tramway for transporting the shale to the factory, which will reduce the work to a minimum. The dynamo required to furnish the power will also furnish lights for the plant.

The La Junta Brick and Tile Works.

While brickmaking has engaged much the larger part of attention and effort at this factory, drain tile have been manufactured to supply a growing demand. Last year twenty carloads were sold, which in an irrigated country means that the movement to drain lands seeped by irrigation water has begun. Mr. McNeen predicts an increasing demand for tile in the valley, and he intends to be able to supply it. A special building has been put up for drying tile, for the reason that the clay checks easily and must be dried slowly. The brick, however, are dried in a 10-track Standard dryer without serious checking.

View of Tile Yard.

The tile and mud brick are made on a No. 2 Little Giant mill, now made by the American Clay-Working Machinery Company, of Bucyrus, O. Thirty-eight thousand brick per day are made on this machine. By the substitution of tile dies for the brick die, tile from three inches to twelve inches in diameter are turned out. Dry pressed brick are also made. A new four-mold Berg machine makes 20,000 brick per day, which are wheeled direct to the kiln and set in position for burning.

The clay is thoroughly prepared for the mold or press, which, it should be remarked, is an essential part of the clay business. There are two dry pans which grind the shale as it comes from the bank, after which it is elevated to the screens. That used for mud brick and tile passes through a revolving cylindrical screen, thence into the pug mill, which, with its auger-like blades, feeds it to the tile mill. The clay for the dry press is screened through a Dunlap perfect screen, then slightly steamed, shoveled over, and run to the press.

A new 250-horse-power Corliss engine, a fine piece of mechanical workmanship, has been installed, which furnishes more than enough power for the entire plant. Not the least important among the valued equipments in this country with alkali soil is an artesian well 700 feet deep, which furnishes an abundant supply of soft water. On the whole the plant may be said to enjoy every manufacturing advantage, except that coal, of which a great quantity is required, is expensive, costing $4.25 per ton on the yard. Should the efforts of oil drillers who are operating in the vicinity be successful and natural gas or oil be found in abundance, that drawback will be overcome.

The demand for brick is growing with the development of the country, and the use of drain tile and sewer pipe is also increasing, so that the business prospects for the La Junta industry are encouraging.—Drainage Journal.

A CHAT ON BRICKMAKING, ANCIENT AND MODERN.

By A. Adams.

Read Before the Clerks of Works Association of Great Britain.

ALLOW ME TO express my admiration of the splendid building in which you are met, a fitting center for an association such as this—an association which, though it does not state the principle in so many words, yet recognizes that it is the thinkers who rule the world—that brains, not muscle, are the masters.

And while such an association means business, it is business in the best sense of the word; not in the sense of money-getting only, but of making good work. The man whose problem is, "How can I get the greatest amount of money for the least amount of work?" is a fraud, and as blind as a bat to his own best interests.

This meeting does not indicate the spirit of the bricklayer who was seen leaning against a wall, and who, when asked what he was doing, replied that he was holding the wall up, while his mate went and drew the money for the job! This meeting indicates that while you are masters, you are also servants, who wish to make themselves and their work of greater value year by year. The very antithesis of the man who, when someone said to him, "You cannot do too much for a good master," replied, "Neither will I!"

The need for human labor may be roughly classified under three heads: Food, clothing, habitation. And while, of the thousand and one things in which men labor, not more than one-fourth can, strictly speaking, claim a place under either of the above heads, yet nearly all owe their origin to the need, real or supposed, of mankind.

Almost as soon as man discovered that he must work if he would eat, he also found that he must add to his labor in order to clothe himself; and though we claim our trade to be "as old as Adam," yet it is the last of the three great branches of industry brought into existence by man's necessity. And, being last in inception, it has been last ever since, for you may find to-day brick works within one hundred miles of the foremost city of the world in which brickmaking is carried on in very much the same manner as obtained in Egypt under the Pharoahs, and when the Tower of Babel was being built on the plains of Shinar. And though brickmaking under the Pharoahs was considered a vulgar trade, only fit for slaves, yet the clerks of works who used those bricks had no such notion of their work, for we find a brick pyramid mentioned by Herodotus as having borne the following inscription: "Disparage me not by comparing me with pyramids made of stone. I am as much superior to them as Jove is superior to the rest of the deities. I am constructed of brick made from mud, which adhered to the ends of poles and was drawn up from the bottom of the lake."

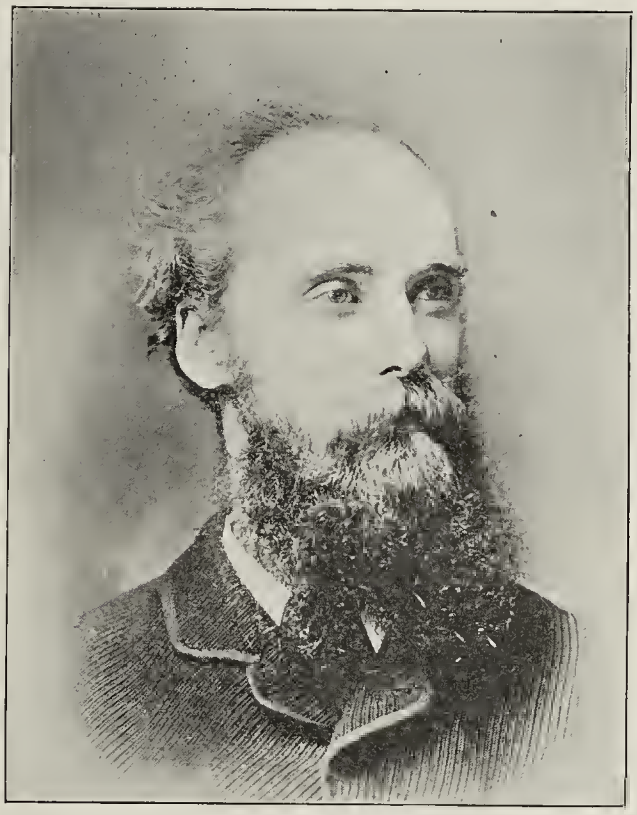
Primitive Methods of Early Days.

The exact method which the ancients generally employed in preparing the clay and making the bricks we do not know, but the little information we have points to the fact that the clay was molded in a soft state, after having been mixed with straw. Burning bricks was but little practiced, though it was not unknown. The climate, so utterly different from ours, did not insist upon a brick having to pass a red heat before it was proof against the weather, and so they were content to allow the sun's fierce rays to bake the bricks, which would then stand for generations.

Still, I think those people of a long-past age made a mistake, because we find from many relics that they had an eye to standing well with posterity as builders and designers; and as a brickmaker with shame I confess that if it had not been for the faulty work of those ancient brickmakers a great many remnants of splendid buildings would have been left to mark the sites of cities that lived and died before the Christian era began. Those old brickmakers no doubt said: "Ah, well; it will last my time," and because posterity had done nothing for them, they would do nothing for posterity.

The ancient buildings were mostly faced with stone, and backed up by brickwork; and as the bricks weathered gradually, the stonework fell, and in turn was covered over by the gradual returning of the baked brick to its primitive state; so that nothing remains of these vast cities but mounds of earth, where the cities are supposed to have stood.

We are indebted to the Romans for the art of brickmaking, but it did not become general until after the Norman Conquest and there was little perfection until the reign of Henry VIII.



A. Adams, Peterboro, England.

The most ancient building in London is the Lollard Tower, of Lambeth Palace built in 1454.

The only traces known of ancient kilns were the Roman pottery kilns, which were holes dug in the ground 4 feet deep, and walled around to a height of 2 feet. A poor supply that would make for the London market!

The largest kiln known to-day is 713 feet by 55 feet.

You have read the story of Rip Van Winkle, who had been sleeping in a wood, and on awaking he heard voices in the distance. He walked towards the sound, though the way seemed unfamiliar, and when he arrived at the village everyone was a stranger to him; no one knew him, nor he them. And then it was slowly borne in upon his mind, after many questions, that he had been away from his native village for twenty years, and that he had been sleeping all that time.

An Industrial Awakening.

And so the genius of brickmaking has been sleeping for hundreds, yea, thousands, of years; and only in the century just ended has it awakened, to find that the world has been marching on, leaving it so far behind that it must needs swap news with the mummies.

But sleep does, or should, give vigor, and so the awakened genius has been "making things hum," in order to make up for lost time; for during the last fifty years more than three-fourths of the brick machinery in existence in this country has been brought into use. Indeed, in the early days of last century very little machinery was used, practically none, for making of bricks. Those brickmakers were considered up-to-date who had what we call pug mills, worked by horse labor, to prepare the clay. Forty years ago half the brickyards had no machinery except for the making of tiles.

I have seen boys of from ten to twelve years of age treading clay at 6 a. m. on a bleak March morning, with bare feet, and trousers rolled up to their thighs. On one occasion I remember the clay was too soft, and when the lads got on to the top of the heap and started treading, they gradually sank in, nearly to their waists, and had to be dug out; and with the temperature almost at zero! It was bitter work, but those who survived it made tough men. One lad in particular I shall never forget; he was a Tartar, and so the old man who employed him found out. The boy had stopped away from his work one day; of course, such excuses as not feeling well, toothache, etc., were of no use in those days, and the molder wanted the boy to apologize and promise not to run away again, but he would not. And so I think I see him now, being placed on the corner of the molding bench, with a big lump of soft clay on his head and another in his arms, to stand there until he would promise. An hour went by, and the molder looked up. "Now, will you promise not to run away again?" No answer, and the molder went on with his work. I was not far off, and although I knew that the boy was wrong, yet I could not but admire him. I knew what holding two lumps of soft clay meant, and wondered how long he could hold out. Another hour went by, and the same question was put by the molder; still no answer. It was not possible, however, for the lad to bear the strain much longer; he was swaying like a drunken man, and in another minute his knees gave way, and he fell with his double burden into the heap of soft clay beside the bench, and they had to sort him out. Whether that lad ever made a clerk of works or a builders' foreman I never knew, but he had mettle enough for the job.

Modern Methods of Manufacture.

Brickmaking may be divided into three methods, so far as texture is concerned. The first and oldest is the slop brick, of which the sand stock is but a variation; the next and more modern is the wire-cut, with its near neighbor the semi-plastic; the third and latest is the semi-dry.

The slop or soft mud brick has many variations of manufacture, but the principle through all is that the clay is dug in the winter to weather it, water is added until it is as soft as stiffly made mortar, and it is then made into bricks, either by the clay being formed into a rough shape by hand and dropped into a mold to be finished, or else the same work is done by machinery in a different way.

Plastic or wire-cut bricks have also variations in their mode of manufacture, in this way: The clay may either be dug and weathered as in the mud brick, or it may not, according to the type of machine used; but the final molding of the bricks is always the same. A stream of clay as wide as a brick is long, and as deep as a brick is broad, issues from a die, and is cut by wires to the requisite thickness; hence the name, wire-cut.

In the semi-dry process the clay, which must be more or less of a shaly nature, is ground in a revolving mill similar to a mortar mill, but with a partly perforated bottom. The heavy edge runners crush the clay to a fine powder, when it falls through the bottom of the mill; it is then lifted by elevators and by some makers passed through a screen, after which it goes to the brick machine. In some machines the clay is measured off in the proper quantity for each brick, and is then subjected to great pressure, four times in some machines, but only two in most.

Semi-dry bricks, as a rule, are conveyed direct to the kiln; the others are not. The class of kiln used depends upon locality, knowledge, and pocket. You will see that in each successive step the brickmaker has tried to make himself more and more independent of the clerk of the weather office, who, through bad management, has spoiled so many of his bricks; and so the brickmaker has tried to do without adding the water to his bricks which has got to come out again.

Now I am going to assert that good bricks can be and are made by each and all of these methods, and if the English brickmakers were asked why they adopted the method in use, they would answer that it was because it suited their clay the best, so far as their knowledge and experience had gone.

I have known yards where slop brickmaking has been superseded by the wire-cut, and that in turn has given way to the semi-dry; but I have never known a yard to go back from a semi-dry to a slop brick as a mercantile article, for the simple reason that the soft mud brick is out of date except with the old-fashioned, or for want of capital, or under special conditions, such as around large towns where dust-bin refuse can be had cheaply to take the place of fuel. As to the plea that this fuel put into the brick improves it, I can only say that I admire the man who makes a virtue of necessity. And it is wise philosophy upon the part of every man, if he wishes to live happily, to persuade himself that his wife is the best he could have had. If fuel added artificially is claimed as an advantage for the brick, what shall we say of clays like the Fletton, which contains its fuel in a natural condition, and does not, like breeze, leave the brick full of small holes after burning?

Brick Qualities.

When a person asks me which is the best kind of brick, I ask, the best for what purpose? For some particular purposes I should say blue, for others wire-cut, and for others, which are in the great majority, semi-dry. The only place where semi-dry are not equal to wire-cuts is where there is heavy friction. And the only reason why blue has in many cases superseded wire-cuts with careful architects and clerks of works is, not because a wire-cut brick, carefully made and burnt, will not answer all reasonable requirements, but because every blue brick carries upon its face a guarantee that it has passed a heat which makes disintegration practically impossible; such guarantee is not possible with ordinary bricks without hand selection after burning, and the gradations of color by which he selects are so subtle that a careless workman may pass bricks which ought to be rejected for that particular job.

Apart from the question of color, the qualifications we look for in a brick, from a practical point of view, are: A square, clean brick; a good arris; a brick that will cut where you want it; a good weight carrier; and the minimum of absorption. When you can get such a brick as that at a low price it must be popular. And it is but natural that those who feel that their particular craft is in danger should cry out against the advent of such a brick, and say that it is impossible to make a decent one at the price. As a brickmaker I say: "Come and see."

In making bricks by the old method, a portion is left for nature to do; by leaving the clay to lie for months a certain disintegration and chemical action goes on, one stratum intermingling with others that are different in texture. Now what the old method did by time and water, the newer process does by machinery, especially in the most modern method of semi-dry, by which every particle is crushed and separated from its fellow, and then they are mixed all together; the same law holding good here as does in human affairs. The strongest community is not that which is composed of the very rich and the very poor, who are kept as far apart in sympathy as heaven and earth, by laws though unwritten yet rigid as death, until the terrible rollers of revolution crush each from his fellow, and then mix them promiscuously in one gigantic process, as a mighty protest against the abuse of nature's first law.

On looking closely at the pieces of clay which I hand round, you will find that the texture of each is different from the others, and these are samples of a face of 30 feet, no two feet of which are exactly the same. A perfect brick for all purposes (by that I mean the making and burning, as well as the using, wear, and weight-carrying of the brick) requires to be composed of equal portions of the face from top to bottom, so that the rich, poor and medium layers are all crushed together and thoroughly intermingled, like Macaulay's ideal Roman State:

> When none were for a party,
> But all were for the State;
> When the rich man helped the poor,
> And the poor man loved the great.

That is the ideal, and the nearer it is followed, the nearer perfection is the texture of the brick so far as the clay is concerned. But though many brickmakers blunder sadly in the clay-pit, yet more serious errors are committed afterwards. The perfect semi-dry brick requires the clay to be finely ground, and then subjected to a pressure so great that on emerging from the mould there shall be no trace of molecular formation, and upon breaking the brick the texture shall be as even, and almost as fine, as cast iron. To that brick, well burnt, no period of life can be set; under ordinary conditions 100 years is but a small matter.

I am aware that there are people who can point to the failure of the semi-dry process, as in the Nottingham district, and say that twenty years ago nearly all the bricks made there were semi-dry, and now there is not a semi-dry yard; and that buildings by the score attest the folly of trying to make bricks without water. But, after studying the method and the clay, I can see no reason for surprise. It was simply a question of the means not being adapted to the end. But I am not exaggerating when I say that the most carelessly made brick, from the Fletton clay, has better weathering qualities than the best Nottingham made by the same process.

Skill Required to Make Good Brick.

One of the greatest curses brickmaking has to bear is the commonly accepted fallacy that anybody can make a brick; and although many fortunes have been added to this goddess, it is still unappeased, and the sacrifice goes merrily on. The good brickmaker is handicapped, for, although he knows all that a good brick requires, he dare not do all he would, because his ignorant neighbor sees no reason for it, and prides himself on getting something the shape of a brick at less labor and cost. A bad brick damages not only the man who makes it, but the locality from which it comes; therefore the good brickmaker cries out in self-defense, "Remember, there are bricks and bricks."

I would like now to drop generalities and describe to you a particular brick about which London heard twenty-two years ago. It attracted but little notice, and that not of a kindly nature, because, owing to the fact that the clay was untried, many inferior bricks were the result of the pioneers' labor; but the brick has improved in quality and favor until, at the present time, probably half this great city's needs in the way of common building bricks are supplied from the bed of clay which I wish particularly to describe to you. Standing on the edge of the clay-pit, you will see the clay or knots being worked with a face of from thirty feet to fifty feet, and standing straight up like a natural wall. The clay is most widely known as the Oxford clay, or middle Oolite formation, and is an interesting study to the collector of fossils. In it are found the Belemnites and the Ammonite shells; wood, too, is often found, deep down where geologists tell us it has lain for cycles of ages, compared with which our existence is but as the flight of an arrow. There is a varying depth of subsoil on the top of the clay which has to be thrown aside; below this is a layer of plastic clay, in depth from five feet to ten feet, which is either cast aside (when prices are too low to admit of a profit), or is made up by the wire-cut or stiff plastic process; underneath this lie the famous Fletton Knots.

The men you see at work do not dig the knots, it is too hard for that; and neither do they blast it, because it is too soft; they rarely use a pick, but a bar five feet long by one and three-eighths inches, with a two-inch chisel point, well steeled and sharp. With this the men bar the knots down and allow it to roll into the wagon, until the bench is worked too low for the clay to roll, when shovels are used. The loaded wagons are shunted a short distance to the endless hauling arrangement, which conveys them to the grinding mills; these are generally nine feet diameter. The knots are tipped into the pans passing under rollers weighing two and one-quarter tons each, and when fine enough, the powdered clay drops through the bottom of the mill and is conveyed by the elevator to the sieve, the tailings coming back to be reground, and the fine stuff dropping into a conveyor which further mixes it and carries it to each machine. The clay then passes down a hopper into the machine charger, which measures off the exact quantity required for each brick; the charger is an iron box with no bottom, through which, as it passes over the mold of the machine, the clay drops into the mold and the returning charger strikes it off level, thus measuring the quantity of dust required. The head of the press now comes down and gives one pressure, relieves just a little to get rid of the air, and then comes on again. As the head rises out of the box the brick follows it, and is then pushed forward and dropped into a second box, and the two pressures repeated while another brick is receiving its first two pressures in the first box.

The reason why bricks sometimes vary in thickness is that it is the duty of the lad in charge of the machine to vary the feed as the clay requires, and if he neglects to do this when the clay gets a little drier, a larger quantity of clay particles will be measured off, because the drier the clay the closer it runs together, and the less it will compress under pressure. So that we sometimes reach the breaking strain of the machines, which the makers tell us is 170 tons. You would find upon examining a quantity of bricks from any given bulk made by one machine, that the thickest bricks were the most dense and the heaviest in proportion to their bulk.

The bricks, when made, are placed on barrows, seventy-two to a load, which weigh about five cwt., and are taken direct to the kiln. All the kilns used are the continuous burning type; that is, the heat, when raised to the proper temperature in one compartment of the kiln, instead of being allowed to pass off into the atmosphere, is drawn into another compartment, and utilized to raise the temperature to a red heat, before fuel is added. But this process has been preceded by another, because the green bricks, containing nearly three pounds of moisture per brick, would not bear the fierce heat of the hot chamber to pass into them, and so there is an arrangement by which the heat of the cooling chamber behind the fire is brought forward and introduced into the compartment some days in advance of the other fire, in order to drive off the greater portion of moisture. And any mistake in judgment on the part of the burner in taking into account the weather, which may have added to or taken away from the natural moisture of the clay, or if he has not correctly gauged the amount of heat which he has introduced and gradually increased at the proper time, this will result in cracked surfaces to the bricks, which you are so annoyed to see.

Durability of Good Brick.

These cracked surfaces troubled me very much years ago, because I thought they were an open invitation to the frost to start disintegration right away; but for twenty years I have watched them, and have been amazed to find that really badly cracked bricks, made in the early days of Fletton, are just the same to-day, and our oldest chimneys show not the least sign of perishing.

As to the weight-carrying capacity of Fletton bricks, there are about seventy tall chimneys at Fletton, the two largest of which are 232 feet high, 18 feet 10 inches diameter at base, the superstructure weighs about 1,500 tons, and the superficial area of brickwork at floor line is 164 feet; a very fair test, I think you will admit, of weight-carrying.

I must apologize for dealing at such length with the Fletton brick, but the reason is that the brick has been misunderstood, and careless manufacturers have sometimes given a bad impression; but I see no reason why the bricks should not improve in bulk in the next ten years as much as in the last ten, but it will only be accomplished by go-ahead intelligence, and willingness to spend money on improvements in plant. The best bricks will come from plants answering to that description.

I should like to close by inviting the members of this association to visit our works at an early date, when we will endeavor to show you that we are alive to the needs of the trade, and are sparing no trouble and expense to satisfy its requirements."

A lengthy and animated discussion ensued, on the comparative merits of stock bricks versus Fletton bricks, in which Messrs. J. Pain, G. Roberts and others took part.

—Answers to Points Raised During Discussion.—

Although it is true that there may be sun-dried bricks of the ancients still in existence, yet it is also true that the bricks did disintegrate, and the buildings fell into ruin, owing to the fact that, however favorable the atmosphere, it had a gradual effect, which in time told, to their destruction; and the fact that adobe bricks have been found amongst ruins only proves the truth that they were so preserved because they were covered up, as none are found on the surface.

Straw must have been chopped up before being mixed with the clay.

Wood was used for fuel in later times, because of its cheapness as against coal; and though the common bricks do not require it, yet wood has advantages in burning delicate wares, and is so used to-day in the famous Sevres pottery.

I used the term "slop brick" as a convenience, to include all bricks that were made by hand from clay as soft as mud. I made three general divisions, instead of having twenty particular methods.

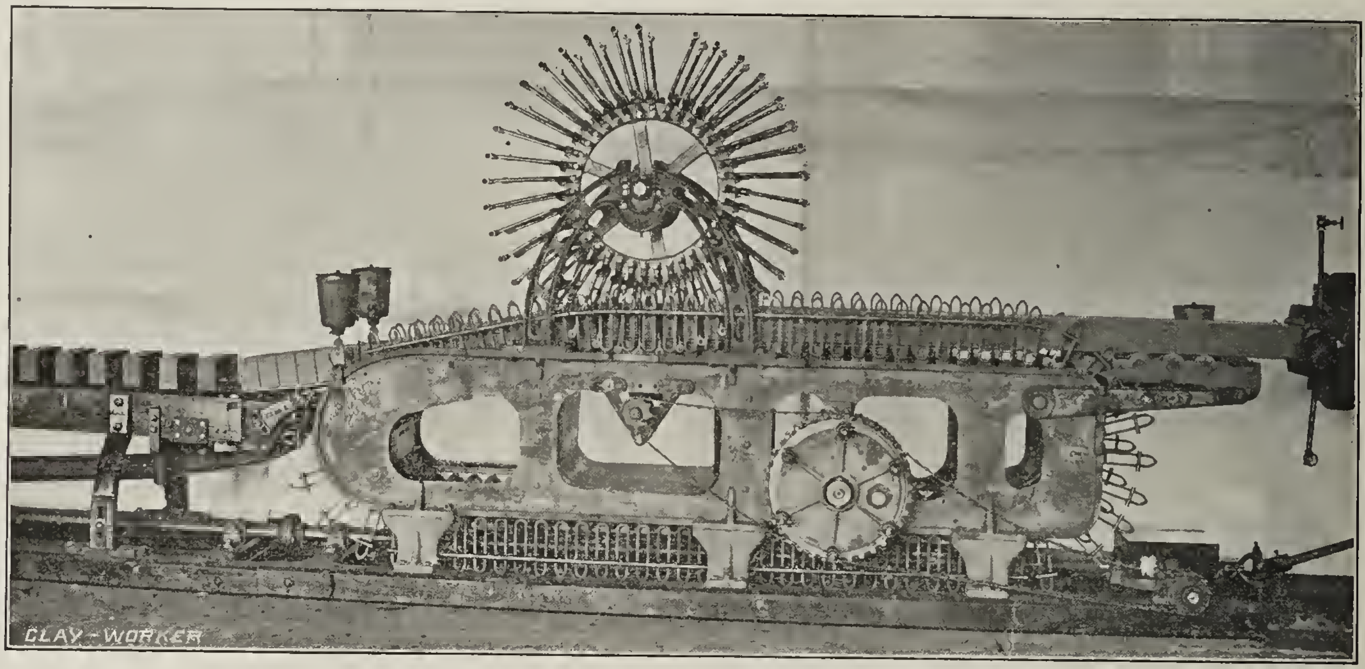
The very best qualities of semi-dry brick, viz., its squareness and smoothness, are urged as objections against it when plastering work is considered. It is obvious that the same brick cannot be at once rough and smooth. But there are two remedies: (1) a plentiful supply of water on the work before plastering; (2) use a grooved brick made for the purpose, and supplied at same price for all plastering work when asked for.

I have used millions of the Fletton bricks, and my experience is that good Flettons cut well. And their fire test is especially valuable. All Fletton continuous kilns are lined with Fletton pressed bricks, which are heated and reheated hundreds of times, and then when taken out are not shaky; they are specially suitable for bakers' ovens.

A Kirkcaldy test in 1889 gives the Fletton pressed brick 25 per cent. greater crushing strain than the stock.

AN UNUSUALLY LARGE CUTTING TABLE.

The Brick Cutting Table we have is one of the "Bensing" Cutters, manufactured by the J. D. Fate Co., of Plymouth, O., and was especially made for the Wooster Shale Brick Co., of Wooster, O. It is larger and heavier than is usually built, and is fitted with the latest improvements, including their new automatic wire cleaner.



The Wooster Shale Brick Company's Special Fate Cutting Table.

The Wooster people have experienced a great deal of trouble with various cutters, and were obliged to repress all their brick, for fronts, but they find that with this table no repressing is needed.

The success of this line of tables is very marked, as the long list of satisfied users will testify.

The Fate Co. has enjoyed a most prosperous season, and has not been able to catch up with its orders. It is now contemplating increasing its plant, to accommodate its large and rapidly increasing business.

THE ORIGINAL PORCELAIN MANUFACTORY.

In the year 1751 the first manufactory for the production of porcelain or china was established at Warmstry House, Worcester, by Dr. John Wall, in conjunction with the other persons, and the original articles of partnership commence with the recital: "Whereas, a new manufacture of earthenware has been invented by John Wall, of the city of Worcester, doctor of physic, and William Davis, of the same, apothecary, under the denomination of Worcester porcelain."

BONE PORCELAIN—AN UNUSUAL CLAY PRODUCT.

PORCELAIN in which bone ash is a constituent is of all ceramic products in Germany the least known, and yet it is well worthy of special attention. In cast pieces any suitable and desired shape can be had. The easily fusible lead glaze employed gives the colors a soft mellowness. Underglaze colors can be used in great variety as the melting temperature of the glaze is low, for it seldom reaches cone No. 1. The disadvantages of bone porcelain are that the materials forming the body are more expensive; the burning requires more care, and the ware is more fragile and sensitive to sudden changes of temperature. The following is given as some English formulas for body requiring a biscuit heat between cones 6 and 10 (1,250 to 1,330 degrees, C.; 2,282 to 2,426 degrees, F.):

Bodies.

China clay, 35; Cornwall stone, 23; bone ash, 40; flint, 2 parts by weight.

China clay, 35; Cornwall stone, 8; bone ash, 50; flint, 3; blue clay, 4 parts.

China clay, 20; Cornwall stone, 40; bone ash, 40 parts.

China clay, 8; Cornwall stone, 40; bone ash, 29; flint, 5; blue clay, 18 parts.

China clay, 32; Cornwall stone, 23; bone ash, 34; flint, 36; blue clay, 5 parts.

China clay, 7; Cornwall stone, 40; bone ash, 28; flint, 5; blue clay, 20 parts.

For German conditions we may substitute Zettlitz, or even Hirschau kaolin, for the China clay without the need for calculating, but if we have to use a kaolin with a larger admixture of quartz sand a calculation must be made. Cornwall stone may be replaced by a finely-ground mixture of ½ Swedish feldspar, ¼ quartz and ¼ Zettlitz kaolin. Particular care must be taken in the selection of the bone ash. Beef and dog bones are to be preferred to pig bones. Flint may be replaced by finely ground quartz sand. As a substitute for the blue clay we take the best Loethain clay. For the finest bodies the following recipes are used:

China clay, 20; bone ash, 60; feldspar, 20 parts by weight.

China clay, 30; bone ash, 40; feldspar, 30 parts.

China clay, 25; Cornwall stone, 10; bone ash, 45; feldspar, 20 parts.

China clay, 30; Cornwall stone, 15; bone ash, 35; feldspar, 20 parts.

These bodies give a fine biscuit, but are short and brittle. The raw goods are bedded in perfectly clean sand or well burned flint, but allowance must be made for shrinkage. After the biscuit burn, the pieces, with their contents of lime from the bone ash, will absorb from 2 to 5 per cent. of water. For the above bodies the following glazes are recommended, using the frits Nos. 1 to 4:

Frits.

Frit 1. Cornwall stone, 6; saltpetre (potassium nitrate), 2; borax in crystals, 12; flint, 4; pure anhydrous potash, 2 parts by weight.

Frit 2. Cornwall stone, 24; borax crystals, 53; sand, 40; feldspar, 32; slummed chalk (whiting), 16 parts.

Frit 3. China clay, 55; slummed chalk, 60; feldspar, 75; borax crystals, 100 parts.

Frit 4. Flint, 77; feldspar, 11¾; China clay, 42½; slummed chalk, 47½; borax crystals, 71¼ parts.

Glazes.

Glaze 1. Frit No. 1, 24 parts; Cornwall stone, 15½; flint, 6½; white lead, 31 parts by weight.

Glaze 2. Frit No. 2, 90 parts; Cornwall stone, 30; white lead, 30; flint, 2 parts.

Glaze 3. Frit No. 3, 200 parts; China clay, 16; white lead, 3½; Cornwall stone, 3; flint, 2 parts.

Glaze 4. Frit No. 4, 348 parts; feldspar, 42; China clay, 22; flint, 71; white lead, 117 parts.

Glaze No. 4 is rather harder and requires a firing temperature beyond that of cone No. 1. For articles intended for everyday use the difference in the degrees of heat in the biscuiting and the glost oven should be as great as possible.—(Sprechsaal.)

Written for The Clay-Worker.

A THRIVING POTTERY TOWN.

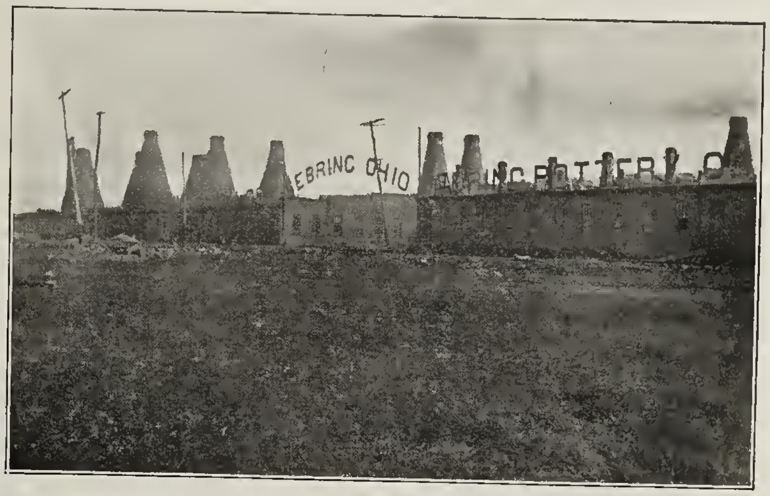
ONE OF THE most successful and surely one of the newest cities that has been built entirely upon the strength of the potting business is the little city of Sebring, Ohio. No longer a town, but now a hustling, bustling city. The city was started four years ago, and the first pottery was erected by the Sebring Pottery Company, of East Liverpool, O., and was called the Oliver China Company, after Mr. Oliver H. Sebring, under whose control the first plant was placed. The Sebrings owned all of the land and started the town. It was a big undertaking, but it was a success from the start; lots sold fast and it was not long until the company began to think of erecting the second plant. The second plant was finally a "go," and the erection of same began, the plant in the city of East Liverpool being sold to a new company, which is now known as the Sevres China Company. The second plant was called the Sebring Pottery Company, after the old firm name, and by which the plant just sold was known. The venture was such a success that the third plant was erected and the French China Company, in East Liverpool, was sold and was bought by a concern now known as the Smith-Phillips China Company. The third plant was erected in Sebring and is known under the name of the French China Company. The plant at East Palestine, O., which was known as the Ohio China Company, was finally sold to people who had formerly been connected with the old company.

The Sebring China Company was then organized and a two-kiln plant for the production of true vitrified china was erected, the old plant at East Palestine retaining the name of the Ohio China Company. The new works had not been completed long when the plants were separated and distributed between the different stockholders of the old company. The officers of the old company were F. A. Sebring, president; O. H. Sebring, vice president; E. H. Sebring, secretary, and W. H. Sebring, treasurer.

As the town grew the Sebring Land Company made many improvements, and after the city was incorported these came thick and fast indeed. The Sebrings were very progressive and were not to be kept back in their good work, and it was not very long until the town was supplied with a complete electric light plant. The sidewalks and streets were paved one by one, until to-day the greater part of them are paved, the sidewalks paved and the city sewered. As the business of the town grew other necessary industries were established, among which might be mentioned the Sebring Cooperage Company, an institution organized and a plant erected for the manufacture of casks, barrels, boxes and other packages in which to pack the finished product of the potteries and other industries which had come to the little city. Other industries were established and many improvements made in the city, and now the city has exceedingly good railroad facilities, a good water supply, good electric light and power, street cars from Sebring to Alliance, O., a distance of four miles.

At the time that the Sebring Pottery Company was organized, in the year 1887, the capacity was limited to two ware kilns and one decorating kiln. The average output of the plant for a year was then in the neighborhood of $30.000. The plants up to the time of the dissolution had a combined capacity of twenty-four ware and twenty-four decorating kilns. They employed 1,200 workmen and the estimated valuation of a year's output from the combined forces puts the amount at something over $1,000,000.

The plants when taken as a group occupy a floor space of 276,000 square feet. The combined forces were dissolved some months ago, however, and now each plant is owned by entirely separate stockholders, and each run entirely independent of the others. The Sebring Pottery Company and the Sebring China Company are controlled and operated by F. A. Sebring. The Oliver China Company by O. H. Sebring, and the Sebring Cooperage Company by O. H. Sebring. the French China China Company by E. H. Sebring. It is said that another plant will be erected very soon by F. A. Sebring, and it is also mentioned that O. H. Sebring and son, Bert, expect to erect an additional plan next spring.



Plants of the Sebring Pottery Co. and the Ohio China Co.

The Sebring Pottery Kilns in Course of Construction.

The Sebring Pottery Company has a floor space of 120,000 square feet, and at the time it was erected no expense was spared in making it thoroughly up-to-date and convenient and economical in every department. The plant has a capacity of six kilns and runs twelve months out of each year. The capacity of the Sebring Pottery Company—and the same may be said of eleven of the potteries in Sebring, with the exception of the Sebring China Company—is devoted entirely to the production of semi-porcelain, and they all turn out a very high grade of the class of ware.

Written for The Clay-Worker.

TRENTON, N. J.—ITS BRICKMAKERS AND POTTERS.

ENTERING THE Jersey capitol the day after election one encounters the horde of victors and vanquished, the sombre scowling countenance of the one, made more intense by the benignant affability of the other. As a city of 75,000 inhabitants, 718 of whom are of common clay, the stranger may be impressed only by the fact that they are mostly enveloped in the toga of politics and possessed of a charming spirit of courteous indifference to the genial spirit of the outer world.

Fortunately my incursion had no relationship with politics or party victories. What I wanted most was a conveyance that would carry me to the grounds of the brickmakers and to the hearts of the toilers.

Inquiry into the brick industry soon convinced me of a retrogressive condition. Where formerly twelve yards existed there are now only six or seven. And in the place of twenty-one million front and fancy brick, which was officially the annual output of this city, this figure is now reduced to ten million, and these figures cover all kinds and conditions.

H. C. Kafer & Co.

Have a trim, well squared-up yard, covering some five or six acres, located at Princeton avenue and Kirkbride street. Here, in the office, I was welcomed by Mr. Kafer, an old-time subscriber to The Clay-Worker. From him I learned much of the local conditions. Trenton no longer demands a fancy brick, supporting only the cleanly dressed front and hard. In addition the clays are running poor, little of the binding quality, and altogether inferior for the purpose of making good brick. In many of the yards it is ploughed, and hauled to the crusher, and must be well screened before being turned into the tempering pit. The clays necessary for the making of the better brick are brought by freight from Erie and other places on the Reading railroad, some four or five miles distant, and this, at $5 and $7 per carload, tends to increase the cost and diminish the profit.

Of the future prospects Mr. Kafer spoke encouragingly. "We have several large contracts on hand, and have been making shipments to New York, to the mammoth Euclid Hall apartment house."

J. L. Mott & Co., the well-known sanitary plumbing supply manufacturers, are moving their works from New York to Trenton, and in the erection of their new works some three million brick will be required.

Roebling & Co., bridge builders and wire rope manufacturers, are making large additions to their plant, which now gives employment to over 4,000 men, and this will use up some of the reserve stock.

Under the guidance of Foreman Kane, who descends from a line of brickmakers, we traversed the ground. On the east side stood four 10-arch kilns, well built and in good order from the grates up. These were flanked by the lines of stock sheds, the ten-hand gangs being disposed of on the drying floors, which are level and capacious, between the kilns and the four seventy-foot tempering pits over on the west side.

Inquiry as to the result of burning with soft coal elicited the fact that it was slower and not as satisfactory as the hard. Again, it would burn in patches, leaving a square of brick burnt too hard or not enough. On an average Foreman Kane declares he can always get a good burning in fifty-two hours.

The Roman and front brick turned out justifies the notion that here they know what constitutes a good brick and how to get them. The output for the year will be between three and four million. The market prices are:

Roman	$25.00 per 1,000
Hand-made front	17.00 per 1,000
Stretcher	12.00 per 1,000
Hard	8.00 per 1,000
Salmon	6.00 per 1,000

Within three-quarters of a mile west from here and behind the newly completed reservoir on Pennington avenue is the plant of

Applegate & Co.

This yard covers some thirty acres, and was established some sixteen years ago. It is equipped with a Martin soft-mud machine and a Potts sander and crusher, and augmented by two hand gangs, four 10-arch kilns and three tempering pits. In the busy season seventy-five hands are kept busy. The bricks, consisting of hand press, stretcher, hard and salmon, are dried by the rack and pallet system, the output running to about three million common and six hundred thousand press brick. The clay bed is fairly good, but cannot be altogether depended on. Twenty years ago this yard used to be headquarters for fancy brick. These are now retailed by the dozen like eggs. The stock around the yard proves that the building operations of this fall are far from brisk.

On the other side of the railroad track, at the corner of Kirkbride and Calhoun streets, is the plant of

Donahue & Nolan.

This is a hand yard employing some eight hand gangs, with an annual capacity of about three million. Like all the other yards, they have been handicapped for the want of coal, and while having perforce to put up with soft during the latter part of the season, found it inadequate for the better class of brick.

The yard is equipped with Carnell presses, three tempering pits, a crusher and screens and four 10-arch kilns. The yard clay is harsh and pebbly and the stiffer clays are brought from Erie and shipped right into the yard. Messrs. Donahue and Nolan have the contract to supply the Trenton Armory, and this will draw upon their reserve to the extent of three million.

Fell & Roberts

Run two yards, one located on Pennington avenue and the other about a mile and a half distant, on Calhoun street.

Saluting Mr. Roberts in the yard, I soon learned from him that the glory of brickmaking in Trenton did not begin to compare with the success of J. P. Morgan in trust making.

"Twenty years ago and we used to turn out fancy brick at $30 and $40 per thousand, and turn out to the annual tune of two million, with three-quarters of a million fine fronts. To-day the call is for common hard at $8 per thousand, and some of the hauls have to be made four and five miles. Here are the difficulties with which we were confronted this summer: The clay here is too poor, and we are obliged to haul or freight the clay over the Pennsylvania & Reading railroad two or three miles, and that 11-arch kiln has been standing since last June because we couldn't get the coal to make a burning."

"Truly," I affirmed, "the brickmaker's lot is not a happy one."

"At least here in Trenton," said Mr. Roberts, "where clay is poor, coal hard to get, long hauls to be made, heavy rains, lots of plum cake brick and money difficult to collect. It reminds me of something I once saw on a circular, 'Why walk about and be miserable when you may be buried peacefully and respectably for $10?' "

Asking the question as to wages, I found the following to be the scale: Burners, $3; molders press brick, $2.40; common brick, $2.15; laborers, $1.50.

The International Pottery Company

Opened its doors on presentation of a Clay-Worker card, and under the guidance of Mr. William Burgess, the president, I was shown over the plant. The plant covers some 12,000 square feet, the product consisting of table and toilet ware. This was first established in 1879 in a small way; now the capacity has more than doubled, with 250 hands on the payroll. The departments are laid out with six ware kilns and three muffled decorating kilns, straight draft, and the usual pressing, firing, dipping, burnishing and decorating rooms.

To the outsider the printing and decorating department is always interesting, and in this the modus operandi of rubbing down the copper plates with the mineral color and the transfer and printing on the press, the cutting of the sheets and the imprints made by the girls and tinting is all worthy of inspection.

A pressing call on Mr. Stover, the superintendant at the Trenton potteries and a member of the Ceramic Society, about completed my rounds for the day.

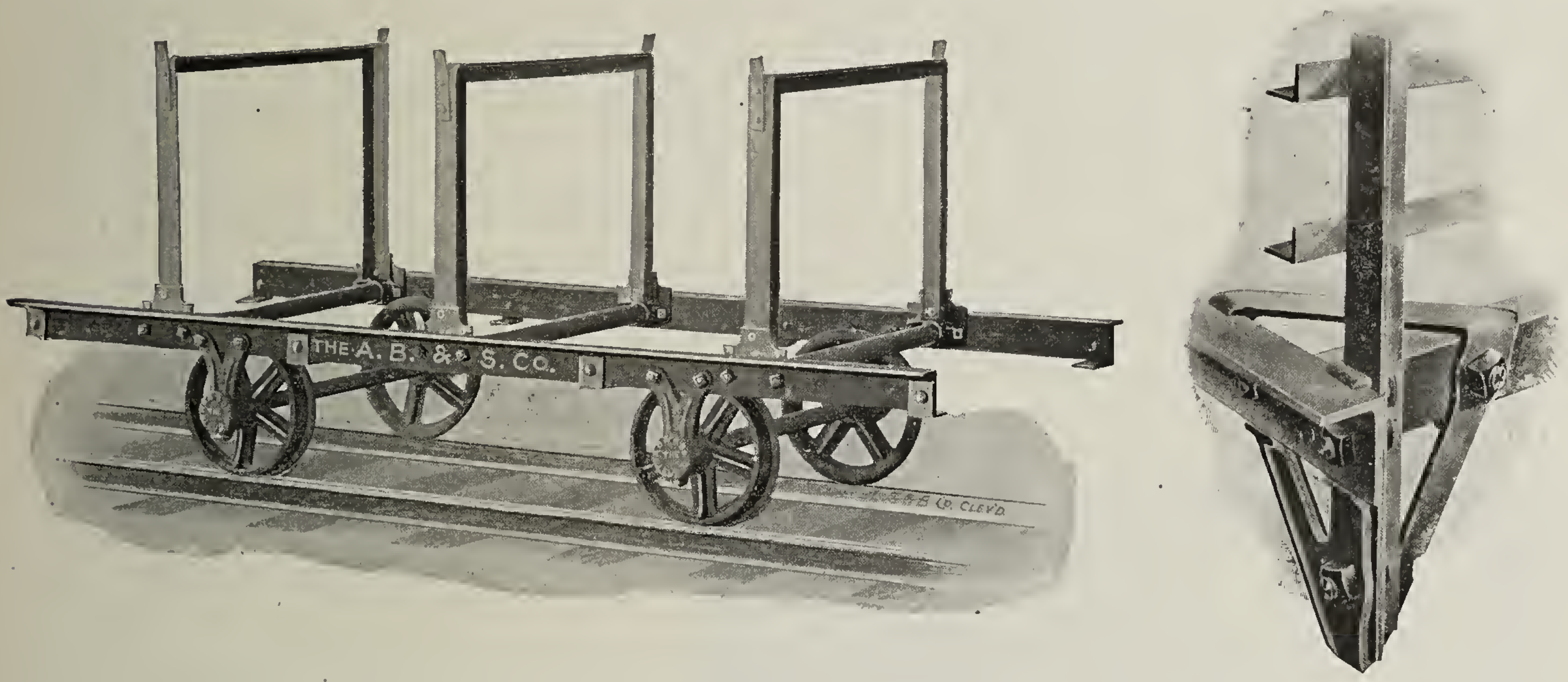
The National Potters' Association are still insistent upon knocking at the portals of the White House, and this time to lay before President Roosevelt a petition to obtain some measure of relief from the immense imports which admit of the entrance of German and French pottery wares duty free, while the tariff provides a duty of 55 and 60 per cent. These duties are not collected and as a natural sequence the home industries suffer, as they cannot compete. W. P. LOCKINGTON.

DOUBLE-DECK DRYER CAR NO. 124, BUILT BY THE ATLAS CAR & MANUFACTURING CO.

IT HAS BECOME absolutely essential to clay manufacturers to use machinery and equipment which will withstand the rough usage and heavy wear which is so common in this branch of industry.

Realizing the importance of this condition, the Atlas Car & Manufacturing Co. have brought out a double-deck dryer car, embodying great strength and reasonable weight, together with a practical and artistic construction. One of the most important requisites to a perfect dryer car lies in building it in such a manner as to prevent any tendency to longitudinal or lateral rocking. The cuts represented herewith bring out this point very clearly, showing a car fitted with three cross pieces of wrought iron pipe firmly threaded into a malleable bracket at either end, which in turn are held securely to the framework of the car by means of bolts. This feature in itself prevents the side bars from getting out of alignment. It will be noticed further that the malleable brackets are each provided with two small projections or lugs resting upon the top of the side bars of the car. These lugs are designed to relieve the bolts from entire strain of the heavy weight above. The bracket is also made in such a way as to form a perfect seat for the upright angles, the ends of which are held in place by two rivets. Special attention is called to the fact that the upright angles are of one continuous piece bent into shape, thereby adding great strength to this part of the car.

A newly-designed corner bracket is shown in the smaller cut, which has been used with the greatest of success, as the testimony of customers will show. It is represented as being applied to a rack car but can be used with equal advantage as a support for double-deck car uprights. Of necessity the pipe cross-piece is not used, and in its place an angle is substituted. The merit of the bracket is shown acting as a brace in three distinct directions. This will readily be appreciated by reference to the cut. These cars are all supplied with anti-friction roller bearings of improved pattern, the rolls being cut from high carbon drawn steel shafting. The Atlas company is especially equipped with modern machinery for the manufacture of dryer cars, having been among the first to introduce steel construction in connection with the building of cars of this type. The number of cars now in use bearing this company's name plate have penetrated practically all parts of this country and Canada. Its export business in the same line is also no small item.



The Atlas Car and Mfg. Co's. Double Deck Dryer Car No. 124 and Special (Patented) Corner Bracket.

Careful attention is given to prompt and careful execution of all orders, and the company will be glad to assist its clients in any way possible, both as to suggestions and the designing of new cars.

TOO MUCH OF A GOOD THING IS TOO MUCH.

Madden & Co., the well-known manufacturers of the Hoosier brick and tile machine, Rushville, Ind., write that they have had an exceptionally good trade the past season. They were especially pleased to receive an order for a medium-sized tile machine for the new plant of the National Drain Tile Company, at Terre Haute, Ind. When sending in the order the National Drain Tile Company stated that the medium-sized machine was preferred to a larger one, as they know from experience that they could not handle all the tile that the large Hoosier machine would turn out. They are using Hoosier machines at all four of their plants, and claim that at the Hillside plant, where they have a large machine, they have to hire an extra man to pick up and throw back the tile that slip off the table through the inability of the off-bearers to handle them fast enough. It is rather unusual for a machine to embarrass the operator in this manner by turning out too much ware.

Written for The Clay-Worker.

DETROIT BRICK AND BUILDING NEWS.

New Plants Being Built and Old Yards Being Enlarged—Advantages of Steam Shovel Demonstrated by the Clipperts.

EXPANSION AND PROSPERITY are the present watchwords in and about Detroit. All manufacturing interests seem to be on the top wave of prosperity. The brickmakers of this section have had the best year within the memory of the present generation. As a result, old yards are being enlarged, and a number of new ones being built, while a few others "are in the air."

One of Detroit's oldest and best known brick firms, L. D. Haggerty & Son, are building an entirely new plant. It is being put up regardless of expense, and will be in many respects a model, up-to-date brickyard. They hope to be in operation before the close of the year.

The Clipperts are enlarging their plant. They have been running up to their full capacity all through the year and yet have hardly been able to meet the demands for their brick. Early in the season they installed a Thew steam shovel in their clay bank, and say that it has proven a great advantage to them. It is a trouble saver as well as a money saver. They find that their clay handled with the shovel works better than it did by the old spade process. They are enlarging their drying capacity, and expect to run up to their full capacity right through the winter.

Clipperts' Clay Bank and Thew Automatic Steam Shovel.

The F. H. Wolf Brick Company have had their full share of trade, and Mr. Wolf is now figuring on improvements that will give him increased capacity. He recently made a trip among the brick plants of western New York, where continuous kilns are being used, and has about made up his mind to build one of that type. Mr. Gustav Voelcker, formerly connected with the Lancaster (N. Y.) Brick Company, is now with Mr. Wolf, and will superintend the erection of the new kiln. Operations on same will probably begin very soon.

The Hall Brick Company are keeping up with the procession, and are now figuring on building another new plant of 100,000 daily capacity. The affable and energetic manager of this firm, Mr. Walter Hayes, was a delegate to the bankers' convention at New Orleans this month. He was formerly connected with the banking business and is still identified with it.

The Detroit Red Pressed Brick Company are making plans for a new plant, which they hope to have in operation early in spring. Mr. Delbert Morris, general manager, is now investigating up-to-date equipments and hopes to have a thoroughly modern soft clay plant.

Representatives of all the firms mentioned will attend the national convention at Boston, so that Detroit will be well represented at the next N. B. M. A. meeting.

A visit to the plant of the American Blower Company demonstrated the fact that they are very busy. They are enlarging their plant by the addition of a large three-story brick structure, and when that is finished will begin the erection of a new office building. They were so nearly swamped with orders during the summer that they called in their traveling men for two or three months just to catch up. Mr. James Inglis, treasurer and manager of the company, says the past year has been the busiest in the history of their company, and that the outlook for next season is equally as good.

Notwithstanding the immense demand for brick, prices have remained about the same throughout the season, ranging from $6.50 up for common building brick on board cars at yard.

DOROTHY DALE.

EMPEROR OF GERMANY TURNS POTTER.

Emperor William, ever in search of new fields of activity, has turned his attention to pottery and is bent on achieving distinction as a potter. Some years ago a childless admirer of his bequeathed to him at his death a large estate known as Cadinen and situated not far from the Baltic seacoast.

A year or so ago, while engaged in certain alterations and improvements on the place, the Kaiser found traces of ancient pottery works. He at once caused investigations to be made, and by dint of researches ascertained that Cadinen had in mediaeval times been celebrated for its majolica, and that the clay on the property was particularly well adapted for the production of the finest kind of this particular ware.

William has made up his mind to revive this ancient industry, which has been dormant, as far as Cadinen is concerned, for several hundred years. He has caused machinery to be set up and exports to be brought from Italy and likewise from Meissen for the purpose of instructing the inhabitants of the district in the art of pottery.

The works which the Emperor has established are divided into two parts, one of which is for the production of ordinary pottery for common use among the country people, while the other division, to which several Berlin artists have been attached, is devoting its entire attention to the production of the finest kind of majolica in the hope of restoring to that branch of German industry the artistic fame which it enjoyed in by-gone centuries.—Exchange.

DOWN EAST.

A great conflagration, sweeping away almost all of St. Pierre, Miquelon, promises an increased demand for held-over stock throughout New England. St. Pierre is a great market for Penobscot river ports, and in times past has been the ground on which was laid the foundation of many a Maine brickmaker's success.

The coal famine and its sudden end tends to reduce the price of wood.

The brickmakers are looking backward and forward with increasing pleasure.

Many of the brickmakers here will be at the Convention.

PENOBSCOT.

A blind business man is the only one who could have an excuse for not advertising, because he couldn't see what he was getting for his money.—Exchange.

BY THE LIGHT OF THE KILN FIRE

A MISUNDERSTOOD BRICKYARD HERO.

"NEVER JUDGE A MAN by his looks, nor a brickmaker's moral courage by the quality of his work," said the old veteran as he wabbled between the burner and the arches he was filling. "Tell yer why I say so," he continued, "fer naterally we are inclined to believe that a no-account man will make no-account brick, and a first quality man make a first quality brick. And I ain't sayin' it ain't a good rule. What I do mean to say is that there's lots of first quality men gettin' blamed for being bad brickmakers, when it ain't them adzactly that's to blame. Some didn't get proper instruction; some didn't' git a fair show, and some—. Well some was too damn good to stay in the mud, anyway. And that's a fact.

"Years ago, when I ran a yard at Hackensack, we had a man that we looked upon as a tramp and an apology for a human being, because in the two weeks he was with us he didn't' seem to get the hang o' nothing, and he was so meek and quiet that everybody got into the habit of pokin' fun at him and rigging up schemes to pester him. But one night he drew his money and next day he was missing, and nobody was sorry. I'd forgotten all about him, until one day I was in New York and started for Brooklyn over the Fulton ferry. Them ferryboats is built 'way out, ye know, on sides so they hang over the real boat, which is the shape of any ordinary boat in the hull, but these wings shade right over the hull, extending several feet over the water. Underneath them is the windows in the main body of the boat that lets light into the firemen that work in the hold.

"Well, I went aboard that ferryboat and went into the man's room and lit my pipe and was smoking peacefully, when who drops in but "Dude Charlie," as we called him, and sat a little distance away from me. We was both watching a pleasant picture. It was that of a happy young mother with her baby, perhaps two years old, and the prettiest little cherub that ever an artist painted. They are standing on the platform at the bow of the boat enjoying the stiff East river breeze, the little one, arrayed in stiff white chambray, was jumping up and down and shouting in great glee, at which the mother seemed to be much amused.

"My eye left them for a moment, when suddenly I heard a cry of horror; then I heard some one shout, "Man overboard!" I looked for 'Dude Charlie' and saw that he was missing. 'Ah,' said I to myself, 'the poor, spiritless wretch has seen fit to rid the world of his useless wretchednes. Poor fellow!' Then I heard a woman's piercing shriek. 'My child! My child!' she screamed, and then lapsed into hysterics.

"I ran, with others, to the rear and looked astern, and imagine my astonishment when I saw at some distance 'Dude Charlie' treading water and holding the white-robed child high out of the water.

"'The cowardly fiend,' I thought. 'Not content with self-murder, he envied the happiness of that mother and her child and thought to drag the little, innocent thing down to death with him, but lacked the courage.' And I thought of the punishment that should be meted out to him when we got him aboard.

"The boat was backing toward them, and now it was within a few feet, and just when we expected to see it veer to one side to permit of the unfortunates being lifted aboard a great chorus of groans and cries went up from the passengers, for instead of veering, the boat had passed right over the man and child.

"The pilot signaled to 'go ahead,' and the big boat forged ahead with a great burst of speed, leaving a trail of churning water in its wake. But there was no sign of Charlie or the child. Back and forth over the spot we went for a dozen times in the vain hope that the churning of the water might throw the bodies to the surface, but it was without avail, and I wept with pity for the mother and consigned 'Dude Charlie' to the hottest pot in Tophet.

"It was a boatload of gloom and sorrow that drew into the pier, and half the passengers were ashore when I heard a muffled cry from below decks. 'My God,' it said, 'Hurry; quick! A boat! Get a boat! They are under the ferryboat.' Well, somebody had presence of mind sufficient to get a boat, and pretty soon up over the stern they passed the form of the little tot, with all the jaunty liveliness gone from his chambray skirts, and its long, yellow ringlets streaming like seaweed across its pale face. Then they passed up 'Dude Charlie,' and as he lay motionless on the deck I was almost sorry that they had found him.

The mother cursed him and reviled him as he slowly regained consciousness, for she was stark mad with the shock and grief. I thought I saw a glimmer of either pain or anger in Charlie's eyes, and for the first time I began to have regard for him with no other reason on which to ground it.

The little one was laughing and crowing in its mother's arms inside of five minutes, despite its wet clothing, and they were hurriedly sent into a cab and disappeared.

"I went over to Charlie, who was now the idol of the boat's crew, who had seen him go overboard after the child. 'Charlie,' I said, 'go down in the boiler room and dry your clothes; or, better still, borrow some old clothes and come up town and get a new rig; and then come back with me.'

"He looked at me rather scornfully, and said: 'I am not a beggar; and you can't buy any more grub or clothes for me. If that damn fool of a captain hadn't run over me I wouldn't mind this a bit. You see,' he went on, for a moment forgetting his resentment, 'when I saw the boat coming right down on us I grabbed a chain that hung down under the apron. When they went ahead they drew this chain close up to the hull. Lord! but I thought it would crack my neck and squeeze my arm off at the same time. It choked my breath, and I couldn't make a sound; but I hung on to that she-devil's' angel all the time. Talk about gratitude! Bah!' said Charlie, and with a look of disgust he made for the fire room to dry his clothes.

"A year or so afterward I was in a railroad collision—it makes no matter where. The engine of one train had telescoped two of the rear cars of a train preceding it. Crushed under heavy timbers and amid scalding steam one poor fellow was calling for help. The rescuers hurried to his assistance. A great weight lay across his loins and the men began to work as best they could amid the steam to relieve him. 'Don't mind me, boys,' he said in a voice choked with anguish. 'There are two little girls under me. Get them out first.' The little girls were rescued little the worse for their experience, but when the timbers were lifted from the form of the heroic young fellow it was his corpse we lifted from the wreck. We laid him on the bank among the other victims beside the track, and as I looked into the calm, pale face I recognized the features of 'Dude Charlie.' In his pocket was a clipping from the personal column of a New York paper. It read: 'Will the young man who saved the child from drowning from a Fulton ferryboat on July 10 call at 234 Fifth avenue and learn something to his advantage?' It was pasted on a piece of stiff paper and underneath was written in Charlie's hand: 'Nit.' So I say, don't judge hastily."

THE DREAMER.

Ewald Bros., of Fall City, Wash., send in their subscription to The Clay-Worker and state they will start a brick plant at that point in the spring.

Exports to Argentine. During the year 1901 Germany sent to Rosario de Santa Fe, Argentine Republic, bricks, glass and ceramic ware to the value of $33,934 upon which duty was paid and $610 worth of ware that entered free of duty.—Keram. Rund.

Workman's Festival. At the Emperor's brick works, at Cadinen, the 28th of July last was a holiday and feast day, for all the employes. Her Majesty, the Empress and Queen, Augusta Victoria, with her children, honored the festival with their presence—Deuts. T. & Z. Z.

Sandstone Colored Brick. What is the cheapest way of producing the sandstone colored bricks for which there is now such a demand? My clay is a yellow-burning clay from the lignite coal measures, which burns in the continuous kiln between cones 8 and 9.

Answer. To produce sandstone colored front bricks the first thing is to have the clay which, either by itself or by the addition of suitable materials, will burn to the right color. It should be noted here that by sandstone color is not to be understood any one particular color, but a whole scale of colors is included, and may be gray, yellow, greenish or reddish. What is meant is the surface quality, or sheen of the color, which gives the brick the appearance of natural sandstone. If you have a yellow-burning clay, then it should be tested to find if it will take on the desired sandstone appearance. Perhaps this may be brought about by the addition of a lighter burning clay. For this purpose trial measures must be made, with various proportions. These front bricks are, of course, produced in the cheapest way if you have a clay at your disposition which at the lowest possible heat for producing a durable brick will give the wished-for color. If you want to manufacture these sandstone colored front bricks, we recommend you to send a sample of your clay to an expert chemical clay laboratory, stating at the same time what color you want to get. You will then have competent advice and directions how to proceed.—Deuts. T. & Z. Z.

Turf Fuel. I use coal in my continuous kiln for burning bricks and roofing tiles, but very near to my plant there is a bed of turf that is now for sale, and I would be very much obliged to you if you would tell me whether turf will give a sufficiently high temperature for burning bricks, whether burning with turf will affect the quality of the ware, and whether, in order to use it, any alterations will have to be made in the continuous kiln?

Answer. Bricks can be burned in the continuous kiln with turf and a heat can be reached sufficient to fully vitrify all ordinary clays and beyond that, indeed, very high temperatures, sufficient for burning highly refractory ware, can be got with turf, but in such case the turf has to be consumed in a generator, and the gas thus produced is used for burning. This is also advisable where you want to get a high percentage of clean-colored ware, without culls. If the turf is dry and has not too much ash you can get just as clean colored goods as when burning with lignite. In order to have turf that is always dry, it must be dug out at the right season in sufficient quantity and must be stored under roof so as to keep it dry. The quality of the ware is not hurt by using turf for fuel and, unless you make gas from it, there is no need for any special arrangement for its combustion. The pieces of turf should be about the size to enable them to be fed into the kiln. If the fuel feed holes on your kiln are very small it would be advisable to enlarge them. In setting the bricks in the kiln the firing shafts must be larger and with more space at the bottoms than for coal. In setting the fire shafts for turf no bricks are allowed to project, as for coal. The shafts are set even all the way up. If gas is made from the turf then the usual arrangement is made for firing with gas. Gas firing, as is well known, offers the advantage of great cleanliness, giving us a very high percentage of clear colored goods, and we can get any temperature we need without difficulty. When firing with gas it is not so necessary that the turf should be so dry as it is for direct firing. Before using turf two important points should be carefully considered, which determine its value for industrial purposes and which you should test to see if they are in agreement with your conditions. These two points are contained in the following questions:

1. Is it possible to dig, prepare and dry, without difficulty, during the favorable time in the summer, as much turf as your plant will require for the whole year, or for the season it is in operation?

2. What will be the cost of the turf at the moment of using it, as compared with the cost of coal?

The answers to these questions should agree with your conditions, and it is only upon the answers proving favorable to you that it would be advisable to use turf for fuel. Many brickmakers have given up the use of turf deposits that they already owned, because they found it cheaper to use coal than to dig and prepare the turf; then, too, the latter was not always to be got in a dry state in sufficient quantities for continued work.—Deuts. T. & Z. Z.

Installing a New Kiln. I want to add a small continuous kiln to my brick works for an annual production of from 700,000 to 800,000 bricks, roofing and drain tiles, say about 400,000 building bricks, 100,000 various description roofing tiles and about 200,000 drain pipes. What system can be recommended. Do the open-top continuous kilns prove satisfactory, or is the consumption of fuel too great? Is anything known about the Linczenpolz (Budapest) system, and is it any good? Would, perhaps, two or three intermittent, down-draft kilns be better for my purpose? How much fuel do they consume as compared to a good continuous kiln?

Answer: For your purpose the open-top, continuous kiln can be confidently recommended. The consumption of fuel is very little more than in the crown kiln, but the cost of construction is very much less. The Linczenpolz system is described as an improvement on the Siemens & Rost kiln with the portable flues on the crown, but I do not know it. Burning in the down-draft kiln is much more costly.—Th. Ind. Z.

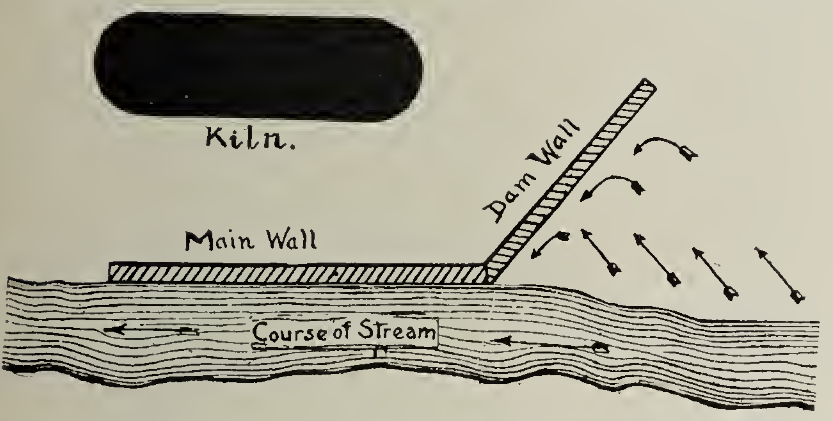
Defective Drain Tiles. I manufacture drain tiles and make them up to as large as 16-inch internal diameter. The small tiles, up to 4-inch, are perfect, but of the larger tiles half of them, when they come out of the kiln, are burst open. Is the fault in the burning or in preparing the clay?

Answer: Although your statement is not very full, we may be pretty sure that the evil is caused by setting the ware before it is thoroughly dry. If the smaller pipes show fewer cracks than the larger ones this is because, being thinner, they dry quicker. Then, too, the large pipes are under the direct action of the fire, while the small ones, being nested in the large pipes, are protected. In this case there is only one remedy: Exercise the greatest care in drying and when water-smoking use the thermometer, as should always be done for that part of the work. Perhaps you burn with too strong a draft. Measure this with the draft gauge. After you have found what is the right draft for your ware, you can, by the aid of the draft gauge, make sure that you always have the right draft. I am supposing that the clay is properly prepared and its fatness corrected, if necessary, by the addition of sand or grog, for this is an absolutely necessary and first condition.—The. Ind. Z.

Cement Works in Russia. About ten years ago the cement industry in Russia was very insignificant. In the southern part there was only one factory, that of the Black Sea Company, at Novorossisk. This was a German enterprise and its output was never more than 30,000 barrels. The Black Sea Company may be said to have had a monopoly and the price it got (over 5 rubles per barrel) finally attracted competition. The metal and mining industries increased very largely in the district served by the cement company, and the demand for cement increased in proportion, so that it was possible to profitably import foreign cement. About the end of 1896 a French company started a factory about twenty-two miles distant in the direction of Batoum. This example was soon followed by others, and in 1898 the Black Sea Company, which had stood alone for seventeen years, had eight new competitors. Notwithstanding the extraordinary increase in the demand for Portland cement, which rose from 400,000 barrels in 1896 to about 1,500,000 in 1901. the greatly increased production brought down prices to such an extent that, in 1900, the older factories paid no dividends and the others suffered severe losses. Some of them had to go out of business entirely. In order to prevent further lowering of the price an association of cement manufacturers has been formed. Whether this will do any good remains to be seen. The bigger concerns will probably be able to stand. There is no lack of raw material, and fuel and labor are cheap. Attempts will be made to reduce expenses, and to this end the casks, which were brought from Poland, will be made on the spot, as wood is plentiful. In this way it is hoped that the industry will develop in a satisfactory manner.—Th. Ind. Z.

Foundation for Kiln. I propose to build at these works a continuous kiln, with twenty chambers of about 40 cubic meters (1,400 cubic feet) each. Where I want to build it is made ground. About eight or ten years ago the place was filled in with the rubbish from a stone quarry and some large pieces of rough stone. This is about three meters in depth. The original ground, underlying this, was a swampy meadow. The floor of the main flue is designed to be one meter below the kiln floor. It is shown in the drawing I send you as being a single course of brick seven centimeters thick. Will this one course be sufficient on filled-in loose soil, and will the swampy under soil have any harmful effect upon the ware? Is there a possibility of a false draft, that is, of the draft being spoiled by the flue sucking in the outer air? Would any particular kind of insulation be required in this case and how should it be applied? A mountain stream runs past the brick works. The middle of it is about 50 feet from the proposed kiln. When the stream is swollen the water under what would be the floor of the kiln rises about five feet. Would this have any effect upon the kiln?

Answer: I think it is a very serious question whether the kiln should be built in the position described. The cost of the foundation, at least, would be considerable. In the first place the position where the kiln stands must be completely protected from high water. This will be done best by building a dam, up-stream, at an acute angle so as to prevent the water running inland. This should cover the whole breadth of the kiln and be joined to the protecting dry wall running the length of the kiln, as shown in the sketch. At a sufficient distance from the kiln, down stream, put a dam wall that will go down to, at least, the level of the bottom of the stream, or, if there are not too many difficulties about it, dig a drain at least 20 inches wide and as deep as the bottom of the stream, the walls of which should be of good, fat clay, well rammed. In this way the water will be kept away from the fill upon which the kiln has to stand. This is about the best way to keep the ground in question dry. If you want to make sure that the kiln will not settle while it is being built, then I urgently recommend you to put the foundation on good piles; otherwise it is to be feared that, inspite of the eight or ten years that the filling has stood, the enormous weight of the kiln and its contents will be too much for the soft ground formation below. Your best and cheapest course seems to be to select a more suitable location.—Th. Ind. Z.



Hemp or Wire Rope? Is answer to the question: Which is better for a transmission of about 60-h. p. a distance of 200 feet, running direct, a hemp or a wire rope? I would recommend you, under all circumstances, to use a wire rope, taking care to observe the following points: The pulleys must be large enough. They should be at least seventy times the diameter of the rope. They must be well balanced and must be lined with sole leather. A wire rope a half-inch in diameter will be sufficient for this transmission of power. The speed of the rope should be from 40 to 80 feet per second. The rope must be properly spliced, not hooked or coupled together. The lower drum must do the hauling and the pulleys must be carefully aligned. If these conditions are observed the installation will give satisfaction. A hemp rope could not be recommended for such a distance as 260 feet, if for no other reason than its much greater cost.—Th. Ind. Z.

Gypsum Molds for Roofing Tiles. Which are the most suitable gypsum molds for roofing tiles, the cast or the pressed? It is less frequently the gypsum that is at fault, as it is the screwing together of the mold which appears to make it brittle. If in screwing together the master mold and the gypsum mold the ribs shift, then the upper part does not match the lower; the pressure is then untrue and there is no end to the difficulties. How is the trouble to be got rid of?

Answer: Pressed gypsum molds are, in my opinion, unsuitable for pressing roofing tiles. A cast mold, with the proper relationship between gypsum, water and space, is unquestionably more durable, and is superior to every other description of mold, particularly if it is taken into use a few hours after it is cast and without previous soaking. It is obvious that the master mold must fit accurately in the box, and, after the casting, all superfluous gypsum must be removed, so that iron meets iron at the edge of the tile. Unequal pressure in the mold will be avoided by the above mentioned careful casting and screwing together. Should the molds be too rigid the bolt holes can be enlarged a very little, so that the molds have a slight movement and equal pressure can be produced. The shifting of the ribs cannot take place if the screws are tightened sufficiently.—Th. Ind. Z.

Roofing Tiles by Contract. The proposition is for the owner of the plant to have his lock-joint roofing tiles, which are made on an auger machine, contracted for by his superintendent, the owner providing power and the auger machine, paying the engineer and supplying fuel for burning. The data offered with this question was so very incomplete that it is impossible to suggest what would be a fair price to pay for the contract work. Nothing was said about the character of the clay, the capacity of the machine, the distance the clay has to be hauled and other matters which play a very important part. In this case I can only relate what I did myself for the same purpose, and I recommend that for one week the owner should undertake a personal and full supervision of the work, so as to know exactly what the machine can do in this time. Let each tile be stamped with the date and determine how much breakage there is in drying a week's work. Thereupon care should be taken that the marked tiles are burned in due course. The contract price is then fixed upon the basis of a week's work. I will quote as an example the exact course I pursued. I should first say that my material shows, practically, no breakage in drying. I took charge of the work for one week in my little plant and hustled as much as possible. In each of the six days there were made as follows: 10,200 bricks, 7,860, 8,450, 8,760, 9,250, 7,240 roofing tiles. Thus the week's work amounted to 10,200 bricks and 41,600 tiles. The wages paid for this amounted to 583 marks 41 pfennigs. ($137.10). My kiln averages 50 per cent. of first grade ware, 40 per cent. of second and 10 per cent. of third grade. Based upon this I made the following arrangement: For the first grade my superintendent (the contractor) receives 14.30 marks ($3.36) per thousand; for the second grade, 11.30 marks ($2.66); for the third grade I do not pay anything. For the building bricks I pay 9.50 marks ($2.23). Only 25 per cent. of bricks are allowed to be made. More than that is not paid for. I took, as data for my reckoning, that for the second grade tiles four-fifths and for the bricks two-thirds as much should be paid as for the first grade roofing tiles.

Reckoning the week's work upon this basis gives us:

20,800 1st grade at	14.50 per M =	297.44 marks	($69.80).
16,640 2d grade at	11.30 per M =	188.03 marks	($44.18).
4,160 3d grade at	.... per M =	....	
10,200 bricks at	9.50 per M =	96.90 marks	($22.78).
		Marks 582.37	($136.86).

In this way I am one mark (23½ cents) to the good on each week's work, but my real profit is in the greater percentage of first grade ware produced, which is also an advantage to my contractor-superintendent. The percentages that I now average are: 62 per cent. first grade, 27 per cent. second grade and 11 per cent. third grade.—Th. Ind. Z.

Written for The Clay-Worker.

CLAY DUST—NO. 1.

By A. Lumina.

CLAY DUST, the finely-powdered, unconfined, omnipresent, misplaced matter resulting from the preparation of clay for brick manufacture, especially for dry-press, but also for soft-mud and stiff-mud machines, that escapes all bounds, fills the air and finally settles upon and covers everything about the works—hardening and polishing belts, causing them to slip, filling oil holes and boxes and penetrating all bearings, causing them to heat and wear out, cutting and grinding gears and all moving joints by the constant friction of its comminuted particles; the fine dust that soils the clothing of the brickmaker and marks his occupation as distinctly as flour dust that of the miller; that smears the face of the brickyard workman, permeates his hair, nose and eyes and affects his respiratory organs—the man who is not familiar with all this, who does not fight against the injurious, unsanitary and unsightly effects of this dust, whose clothing and body does not or has not come into intimate and frequent contact with it, is not a practical brickmaker, and, though he may catch and absorb some of the "clay dust" that I am going to scatter abroad through the medium of this journal, though he may by rubbing up against me get some of the hard-earned accumulations of a veteran clayworker, yet unless he supplements this by actual contact and personal struggle with the concrete, practical working problems of the factory, with no fear of soiling his hands or clothes, he will accomplish little either for his own advancement or for the progress of the ancient and honorable art of brickmaking.

Years of Progress.

My brickmaking experience, though not beginning as early in life as that of many of my co-laborers, yet involves the only business occupation I have ever had, and covers a period of wonderful chemical and mechanical progress; a period of dissemination of knowledge by trade journals, books, associations and technical schools; a period of lessened physical drudgery but of greatly increased mental exercise and activity; a period demanding greater skill and larger capital, greater technical knowledge and higher business ability, and that is gradually transforming the brickmaker into a man of culture and refinement, and of influence, socially, financially, politically—the peer of any business man in the land.

While the brick business, by reason of the condition under which I entered it, and the circumstances that have governed my practice, has not brought me a perceptible amount of "gold dust," has covered me with "clay dust," and I feel that I ought to be liberal in dispersing it for the benefit of my fellow-craftsman. A man's success should not be measured solely by the size of his bank account. It is the fashion to instruct beginners with the story of successes, but more can often be learned from the story of failures. Successes, however, are generally made up of failures, and who does not expect to succeed some time? It is a true saying that a "man before he succeeds in business must expect to measure his height on the ground two or three times," and the brickmaker especially must "bite the dust" more than once before he is master of his art.

Looking Beyond the Dollars.

As for myself, I don't expect ever to accumulate much money —my mind is given too much to other things—but I do expect to accumulate considerable knowledge of the art of brickmaking, and, as I will have no use for it in the next world except, it may be, of the process of burning, I want to leave it here in shape to be used by those who may be seeking to know how to avoid many of the mistakes of their predecessors. But as I am learning more every year and finding out how much there is yet to be learned about brickmaking, I have thought to wait until I could look back upon a longer service, until I should become too old for active duties on the yard, and only able to use voice and pen to publish the lessons of my experience. But, my friend, the editor, urges me not to wait until I am a decrepit, garrulous old man. He insists that I begin at once the publication of useful, practical information germane to his journal. In deciding to comply with his request I am influenced a good deal by the benefit I received in the early years of my brickmaking experience from a series of articles in this journal—"Hints on Brickmaking," by R. Brick"—written by a man in the prime of active life, who, much to the sorrow of all who knew him, did not reach old age, but whose wise and helpful words are still with us. Had he not taken time, in the vigor of his active years, to give expression in his clear, forceful and happy manner to the principles and methods of brickmaking, many of us would have missed an important source of help and encouragement. I only wish that in my own way I may contribute as much to the uplifting and improvement of the brickmakers' art as did my lamented friend Morrison.

It is not my purpose to make this series of articles a formal treatise upon brickmaking, but to discuss every month such subjects as seem to me specially opportune, or that may be suggested or called for by contributors and subscribers of this journal.

This introduction, given perhaps at too great length, suggests a few more thoughts for this issue upon two closely related subjects.

Dust-proof Machinery.

Brickyard machinery is seldom designed by the practical brickmaker, but generally by some ambitious mechanical genius of the machine shop or foundry. I have watched the development of many of these machines and in my early days partaken somewhat of the enthusiasm of the inventor when he had completed a machine that in the shop worked perfectly; reduced clay to a fine condition or produced excellent samples of brick. I have then watched these machines in operation upon the brickyard and shared in the disappointment of their failure; have worked nights to repair them, and finally, in some cases, after expensive delays and much worriment, have seen them thrown out upon the scrap pile. And why? What was the cause of the failure in practice of a machine that seemed so perfect in theory and design? In most cases the answer is to be found solely in the lack of consideration given to the action of clay dust. I have struggled with a clay pulverizer, correct in principle and very effective in practice, that no man could run a week without spending at least one night in repairing, and most men couldn't run forty-eight hours. Why? Simply and solely that no provisions had been made to keep the clay dust out of the bearings. I have also had disastrous experience with brick machines, especially the early dry presses, that would break down so frequently that no profit could be realized from running them. These machines worked perfectly in the shop or when clean, but adequate provision had not been made for the escaping clay dust, and they were wretched failures on the yard. Machine manufacturers have been slow to realize this effect of clay dust and the brickmaker has suffered. If the makers of these machines could themselves run them for a few months on the brickyard improvements would be much more rapid. However, I am glad to say there are now reliable machines made by progressive, conscientious men, so perfected in design and construction as to give little room for criticism. The experienced brickmaker can easily select the best, but the beginner is largely at the mercy of the salesman that is the best talker or offers the lowest prices.

Cleanliness on the Brickyard.

However perfect the brick machine may be, if it is not kept reasonably clean and free from clay dust it will soon wear out and break down. This is a trite remark, but is so often disregarded that one must continually repeat it. No expenditure of time pays so well as that for cleanliness and orderliness of factory.

In many large manufacturing establishments order, neatness and cleanliness in shop and workmen are now considered to be important elements of economy and intensified production. Clean and comfortable shops mean clean and well-kept tools and machinery, and clean and orderly workmen. Hence we see manufacturing plants with handsome exteriors, attractive buildings, situated on green lawns, adorned with flowers and shrubs, and with interior light, well-ventilated and provided with wash rooms, lockers and dining-room for employes. Such an establishment attracts the best workmen, and in it order and discipline are more easily maintained, carelesseness less frequent, repair lessened and production increased.

It makes one ashamed of his pursuit to visit the average brick plant in this country. If there has been a recent rain he will have to wade through mud to reach the buildings. These buildings are often mere shanties covering the engine and machinery, with barely head room for the operators. Dust and grease cover everything, the workmen themselves being dirty and careless in appearance and actions. Everything seems out or repair—the boiler and steam pipes, uncovered, leak; the engine pounds, pulleys squeak, belts flap, gears rattle, and the machines shake and move upon their foundations. Piles of debris are seen in convenient places, and the product of the factory, taken from the cheapest and most wasteful kilns, is no better than that produced centuries ago. If such brick plants as these were universal or were necessary to a profitable business few native-born Americans would care to engage in it. But the fact is that the surest and steadiest dividend payers are those brick plants that have a large investment in permanent buildings and modern improvements, and that provide for the health, comfort and cleanliness of their employes.

A man working on a brickyard should not be afraid of soiling his hands or clothes, but his employer should provide conveniences for changing his outer garments and washing his hands and face before he starts out for home. Such an employe—other things being equal—will have his pick of the brickyard laborers in the community, and hence will secure a larger, better and more profitable production, and will also have the satisfaction of having improved the condition of brickyard labor, and of having elevated the status of the brick manufacturer and helped to give his business that high place which it should occupy in the industrial world.

(To be Continued.)

OBITUARY.

John A. Day, Belleville, Ill.

JOHN A. DAY, president and general manager of the Day Brick Company, at Belleville, Ill., died a few days ago at the family residence in Belleville. Mr. Day was a prominent figure in business circles in Belleville. For years he was president and general manager of the Belleville Street Car Company, and later organized a company which constructed the Day electric road between East St. Louis and Belleville, which is now the freight road of the East St. Louis and Suburban electric railroad system. At the time of his death the deceased was a director of the Belleville Savings Bank and in the East St. Louis and Suburban Electric Railroad Company.

Mr. Day's death resulted from a sudden illness at the Day brick yards a few days before his death. What was the matter with him is not known, his illness being a puzzle to the physicians, and at first it was stated that he had suffered a stroke of paralysis, but the physicians stated that he was suffering from a break-down of some sort.

Mr. Day was born in St. Louis in 1855. When a child he was taken to Germany with his parents, and returned in 1879. In 1886 he was married at Belleville to Miss Lena Abend. He leaves a widow and two daughters. The funeral took place to Walnut Hill cemetery and it was largely attended. The services were under the auspices of the Belleville Lodge of the B. P. O. Elks.

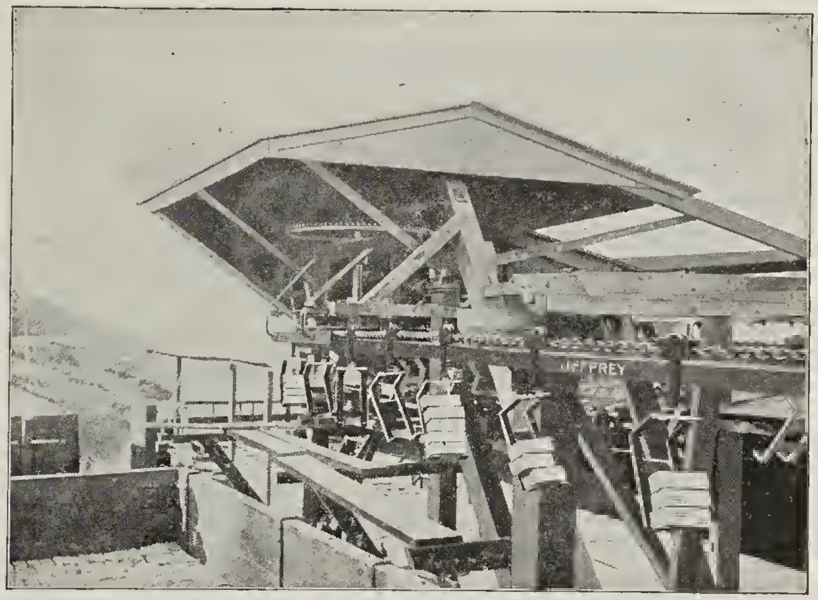
BARNEY BRICK CONVEYOR.

The accompanying illustration shows a view of the Barney Brick Conveyor, manufactured by the Jeffrey Manufacturing Company, of Columbus, O., U. S. A., the well-known manufacturers of elevating, conveying and power transmission machinery.

This Conveyor fills a long-felt want in every brickyard and is desirable for plants of small, as well as large, capacity.

It consists, principally, of three parts: The endless carrier chain, the swinging basket, and the overhead track or runway. It can be disconnected at any point, and sections run in any direction, while the overhead track is constructed to such points in and about the yard as will best serve the distribution of the brick.

It possesses many distinctive points of merit, i. e., moderate in first cost, simple in construction, repairs are few and easily made, while it increases the yard storage capacity 100 per cent. and effects a saving in the cost of handling brick from 25 to 50 per cent.; the proportion of broken brick is considerably reduced. By its use the old-time wheelbarrow is displaced and the conditions of weather are practically overcome, making it possible to do continuous work.



The Barney System of Carrying Brick.

No brickyard can afford to be without this time, labor and money saver.

The manufacturers will be pleased to quote prices and send printed matter to all interested parties.

THE ONLY WAY.

There is only one way to advertise and that is to hammer your name, your business, so constantly, so persistently, so thoroughly, into the people's head that if they walked in their sleep they would constantly turn their heads to your store.—John Wanamaker.

A MODEL FIRE BRICK PLANT.

The Reese-Hammond Fire Brick Company, of Pittsburg and Bolivar, Pa.

This is the largest independent fire brick company in the country, and has one of the most complete plants in every respect to be found anywhere. Mr. J. B. Hammond takes great personal pride in the equipment and arrangement of his plant, with a view of making it the model fire brick plant in the world. They have recently installed their third Berg press, putting it into their enameled brick department for making the highest grade of ware.

Written for The Clay-Worker.

THE NEW YORK MARKET.

FOR A LONG drawn out season of brickmaking the one for 1902 will stand prominent, although for the past month it has been very uncertain as to whether brickmakers would be able to mold more than one day in the week. Still some continue to take chances. The labor question has been a hard one the past summer, and continues to be for those yards which still keep on molding. It would seem that when the other yards stop molding there would be men looking for jobs. If so, it was not for many days, as a trolley line is being built through the town, which put them to work.

A New Yard to Do Quick Work

Is being built on the east side of the Hackensack river, opposite the majority of the yards in Hackensack. I say a new yard, for, of course, your readers will suppose that it is a brickyard, and from the information I can get it is. But what kind of brick are to be made I have not been able to learn. "The man in the street" says that they are going to make common brick, and we all know that the man in the street is pretty good authority. In the first place, rumor has it that they are going to make and burn and have ready to ship to market in forty-eight hours. That is making brick in a hurry, and I, for one, am waiting patiently to see the plant in operation.

The plant is in course of construction and appears to be put up for an experimental station. On the north end there is a space about 12 feet square and about seven feet high with a roof over it. Running south from the inclosed space is a shed 140 feet long and about six feet from the ground to the plate, and about six feet wide from plate to plate, with an A roof of hemlock boards. The posts, plates and rafters are of 2x4 hemlock. At the south end of this shed is another inclosed space about fifteen feet square, with an A roof on it, all of hemlock, with an 8-inch brick foundation inside of it, as if some kind of machinery was to be put in it. The structure has aroused quite a good deal of curiosity. A German who works on one of the yards directly opposite watched the progress of the building. When the 140 feet of shed was put up he went to his boss and said, "The thing across the river must be for what you call 'em, where they roll balls on; it is not for a brickyard; the boat club are de men dat will have the fun." It may be turned to some account after the men who have invested their money in a scheme to make and burn brick ready to lay in forty-eight hours are through with it. It is a fast age, but not in the line of making a satisfactory building brick in that length of time.

The clay which is to be used is to come from some other place besides the land around the sheds, as there is none of that material which would make a satisfactory brick. Probably, as they are to be made so fast, quality of clay makes no difference. Those who are at work on the yard are waiting patiently for the time to come when those who are engaged in the enterprise will begin to manufacture.

The Coal Strike a Benefit.

There is at the present time more kilns in the Hackensack district ready to be burned than at any time during the history of brickmaking. Manufacturers are waiting for the coal strike to be settled and the mines to go on producing coal, so that they can get enough to burn the kilns now ready, as well as those which will be finished up. Soft coal has been tried in some places with the best of burns—in others the less said about the result the better. Of course, it is the fault of the coal—all know that—so it is best to accept that explanation. By appearances it certainly would have been money in the pockets of the experimentors had they waited six months for hard coal to burn with. The trade has benefited by the lack of coal, as that has been the means of causing an advance in the price of brick because the stock of burned brick is scarce. There is another lesson that the brickmaker should profit by; they have not the stock to ship, or, in other words, it is under the shed instead of laying in market to keep the price down. If they were burned the maker would be in a hurry to get them off. It shows that with controlled shipments prices would be in the shipper's favor.

A Bit of Bad Luck

Came to one of our manufacturers by the sinking of a schooner which carried his brick. She was bound out with a cargo for Passaic, when by some mischance she struck the Newark Plank Road bridge, just got through and sunk with over 70,000 brick. The job for which they were intended was using them about as fast as they could be freighted from the yard at Passaic, though that town is, as the crow flies, about five miles by water down the Hackensack to Newark bay, then up the Passaic to that town. That way it is nearly as far as from the yard to New York. For a few days they had to put on teams and draw some over, but it was slow work. By good fortune, he was able to procure another vessel until his own was repaired.

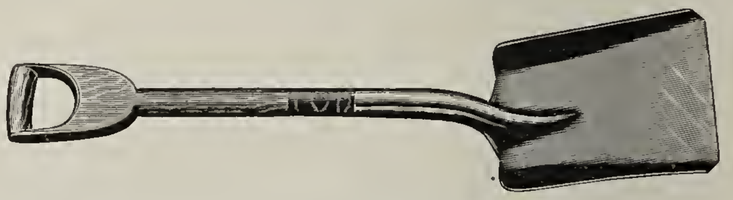
The Brick Market.

The market is one which makes the brickmaker feel happy, if he has the brick to ship. The price is on the move up, all on account of the lack of coal to burn the green brick now set up and all ready to burn. Those who have brick to sell are sending them in and getting a fair return. Probably there may be a continuance of the present prices or a still further advance for the rest of the season, if the long-looked-for hard coal does not arrive. With a full supply, so that all the yards which use coal could get brick for the market, there would be free shipments and the market would be in the hands of the buyer. The rates at present are $5.50, $5.75, $5.87½, $6.00, $6.25 and $6.50, an advance of nearly $1.00 per thousand, all because coal is scarce.

A. N. OLDTIMER.

STEEL SHOVELS, SPADES AND SCOOPS.

THE AVERY STAMPING CO., of Cleveland, O., whose advertisement appears on another page of this issue, wish to announce that they have something of special importance to the clayworking trade. They make a complete line of Cleveland pattern, hollow back shovels, spades and scoops, which are acknowledged as being equal to any similar product on the market. As is well known, common shovels are short-lived because they cannot stand the extraordinary strain upon all parts in handling clay and other heavy material, and in this connection particular attention is drawn to the fact that the Avery Stamping Co. make shovels with extra thick blades and offer them as being most desirable for doing the work mentioned. The Avery Stamping Co. would be glad to hear from interested parties and will submit circulars and discounts.



If you have anything in the way of machinery that you don't want put a card in the Clay-Worker "For Sale," "Wanted," etc., column.

Advertising alone will not make a millionaire of any man. It is a pinch bar with which a live, hustling man may make a business move with little perceptible power.—Business Problems.

WRITTEN FOR THE CLAY-WORKER.

ST. LOUIS BRICK AND BUILDING NEWS.

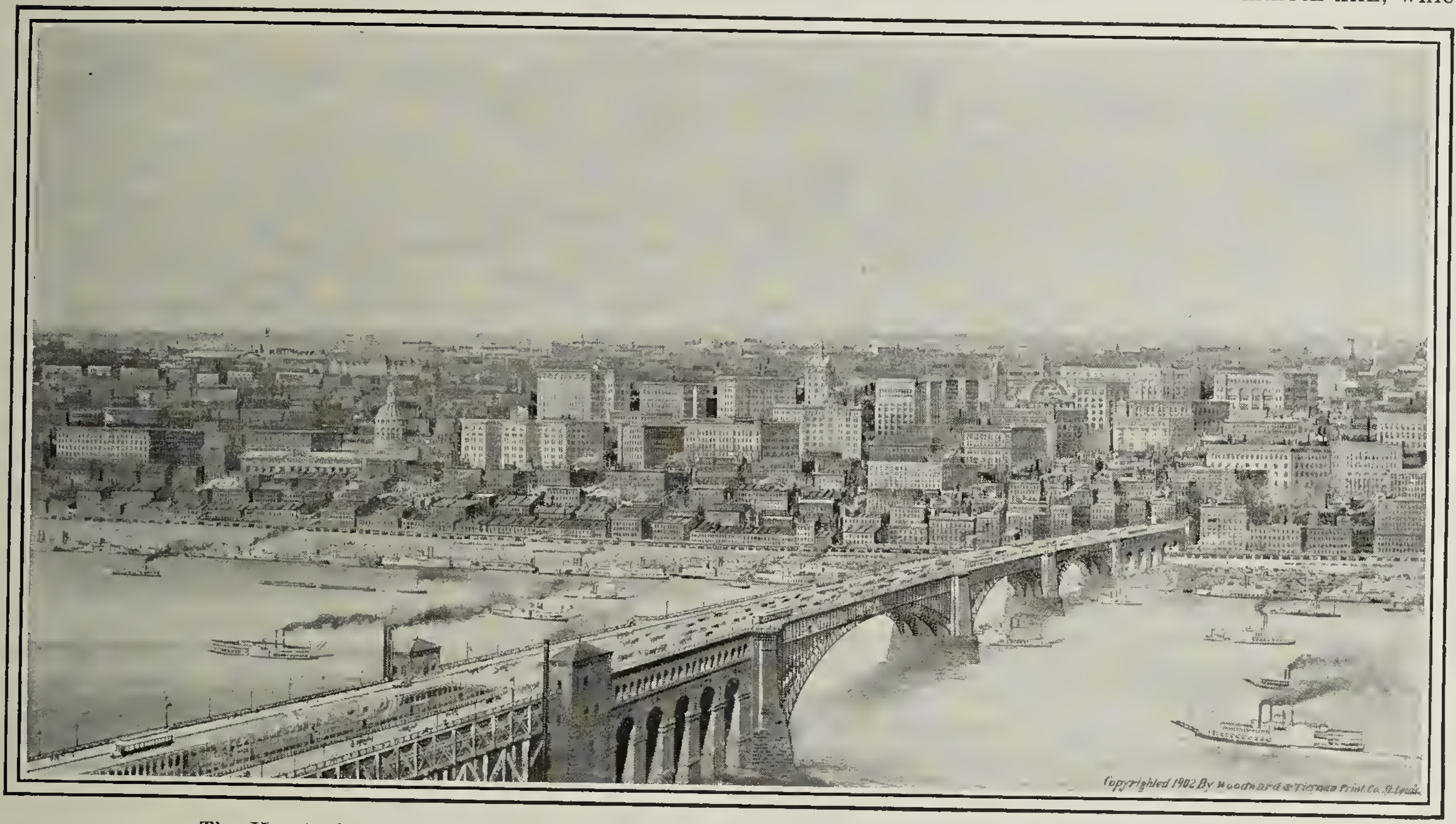
The World's Fair City Growing Rapidly.

ALL THE BRICK and terra cotta plants are busy taking advantage of the pleasant weather, for no one can tell when disagreeable weather will set in. The present fall has been an ideal one for various clay industries. There is a good demand for brick as long as building can be done.

Permits for buildings issued during October were for structures estimated to cost $1,175,600, while for the same month of last year they aggregated $1,012,819, showing a very satisfactory gain for this year. This is also a material gain on September, that month showing only a total of $775,035. Local brick dealers all report that it has been a very satisfactory month, with enough building in sight to assure them that the year will end in a satisfactory way. It also seems to be the opinion that there will be a busy winter building season and that much heavy work will be done.

Prices of brick have not changed. Merchantable brick are $7.75; strictly hard, $8.25; red pressed brick, $17.50, and sidewalk and paving birck, $8.50.

The St. Louis Vitrified and Fire Brick Company a few days ago filed notice of an increase in its capital stock from $100,000 to $135,000. The assets of the company are $129,868.12, and its liabilities are $22,836.76.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The Heart of St. Louis—Courtesy of Department of Publicity, Louisiana Purchase Exposition.

Gordon C. McNeil, president of the Newbern (Ill.) Press Brick Works, that has its headquarters in this city, says that they are very busy. Extensive improvements to this plant have just been completed. Not only has new and improved machinery been put in, but the capacity of the plant has been greatly increased.

The Evans & Howard Fire Brick Company are as busy as they can possibly be. They are taking advantage of the pleasant weather to rush out all the work they can. Mr. Laclede Howard, the president of the company, who has been in Europe all summer, has returned, much improved in health. Mr. George Jones, the secretary of the company, is off on a pleasure trip to Hot Springs, where he will recuperate for ten days or longer.

Mr. W. F. Scott, president and general manager of the Fernholtz Brick Machinery Company, has been on a trip to Texas, in the interest of the company. He states that business has been exceptionally good with his company this fall and that they have had to work hard to keep even with the orders that they have had placed with them, notwithstanding the increased capacity of their new plant.

Mr. Grath, of the Illinois Supply and Construction Company, reports business as being splendid with his firm. They are receiving many orders for their new Grath hand-power brick press, their Grath steam-power press and their Grath up-draft kiln.

The Williams Patent Crusher and Pulverizer Company are just as busy as they can possibly be. They have booked orders that will keep them going steadily well into the new year.

Robert M. Foster, the president of the Fernholtz brick Machinery Company, was elected one of the judges of the Circuit Court, at the municipal election November 4, by the largest plurality of any of the candidates. Mr. Foster is one of the brightest and best-known lawyers in the city, and his large plurality was caused by many of the opposing party voting for him, instead of for the regular party nominee. This compliment is a well-deserved one.

The Newbern Press Brick Company, with headquarters in St. Louis and the plant at Newbern, near Jerseyville, Ill., has just completed the construction of a mammoth kiln, which will have a capacity of 200,000 brick. The new kiln will give the plant an annual capacity of 8,000,000 brick.

The Brickmakers' Union of Belleville, Glen Carbon and Edwardsville, Ill., have affiliated with the Building Material Trades organization.

A case involving the rights of minority stockholders in corporations was decided in the Federal Court of Appeals here November 12, the suit being that of Charles B. and Libbie Kimball against the Chicago Pressed Brick Company. The Kimballs were stockholders in the company, and brought suit to have a sale in which 3,047 shares of stock were transferred to the St. Louis Pressed Brick Company, set aside. The case was first heard in the United States Court of the Eastern district of Missouri, resulting in a verdict in favor of the brick companies' but the leading officer of each company was restrained from voting on the transfer of the stock. The Appellate Court sustained the verdict on the ground that eleven years had elapsed before suit was brought, and said if the stockholders were dissatisfied they should have brought suit long before.

A. SAINT.

Written for The Clay-Worker.

BUFFALO'S BUSY BRICKMAKERS.

They Now Appreciate the Importance of Modern Equipment—New, Up-to-Date Plants the Order of the Day.

THE MONTH just passed was a heavy one in the building line, or, as they say over at the City Hall, in the Department of Public Works, another biggest October in the history of this department—240 permits, aggregating $782,657, and on top of this the Construction News gives statistics of building operations in twenty-three of the principal cities of the country, placing Buffalo sixth on the list, with a gain of 217 per cent., due, as our superintendent of building says, principally to the construction of factories. Is it any wonder the brick association is eighteen millions behind its orders? But it is helping our neighbors.

Contractors are scouring the country round for brick. A railroad man told me the other day they were asking for rates on brick over his road from Binghamton, 203 miles distant. Rochester, Attica, Dunkirk and Niagara Falls have none to spare.

Brother Weyer, at Wanakah, with his new yard, has orders for all he can make, and he is rigged up so he can work all winter—everything under cover, dryers and kilns.

There is a lesson in this state of affairs that the brick manufacturers in this city should heed and ponder over. With one exception they are all summer yards—the soft-mud process, rack and pallet system—dependent on the weather for working and drying. They say Old Sol is the cheapest dryer on earth, and also that there was an unprecedented demand for brick and the wet season prevented them from making their usual quantity. I tell you, boys, as Pa Hamilton used to say, "you have got to git onto the band wagon and keep up with the procession," by putting in modern dryers, kilns and machines, etc., etc., or you will get left.

The high price and scarcity of brick has caused several large contractors to inquire into the cost of making a brick, and it is a strong stimulant to new yards starting. I have heard of one that has got figures for building and equiping an up-to-date plant with a capacity of ten millions. They have the clay—plenty of it lies between two railroads, with excellent shipping facilities—and the owners of the land are wealthy men.

Just one week ago one of our Sunday papers made the startling announcement, with big headlines, that the Buffalo contractors had gone and purchased the entire plant of the Red Star Brick Company, with yards at Jamestown, N. Y., Corry and Warren, Pa. I investigated at once, and found, instead of buying the plants, the contractors had bought the output. The Red Star Company has sold to Buffalo all they have to spare. They are having lots of inquiries from here for brick and are getting all kinds of prices. Most any price will be paid for prompt delivery.

All our manufacturers have had a very good brick year. They did not have to look for trade. Everything came their way they could take care of, and this winter they are going to take a vacation and attend the National Brick Manufacturers' Convention.

A friend writes they are going to build a new yard at Houghton, N. Y.; have had their clay tested; it is an excellent material, and there is money, brains and push behind the enterprise. That ought to make a go of it.

We have had beautiful fall weather, and all the yards run up to the last minute. Two or three hard frosts put a stop to the making of brick, but there are a good many thousands yet to burn. I drove around among the brickies yesterday. Bro. Brush had two kilns cooling and two burning, besides the continuous, which, with the dryer and one machine, will run all winter. George Schmidt's racks were full of dry brick. He was setting, burning and cooling, with good six weeks' work ahead of him. Bro. Haake's sons were just watersmoking a kiln and the yard looked pretty well cleared up. Charles Berrick's Sons' south yard had brick in the racks, one kiln well along in burning and another ready to fire, on their north yard. It was in about the same condition.

I did not have time to visit yards east of Bailey avenue. My friend's experiment using oil-soaked bricks for fuel was not a blooming success. The soft brick he had absorbed about one pint of kerosene. When placed in the grate and lighted, "Oh, my!" he says, "the smoke and smell would drive a dog out of a tanyard." NORTON.

Written for The Clay-Worker.

WISCONSIN BUILDING NEWS.

BUILDING OPERATIONS in Milwaukee continue to be very active and the present indications are that there will be no closed season during the coming winter, making allowances, of course, for the occasional few particularly cold and stormy days when all construction work necessarily ceases.

Many large structures are now in course of erection and others are contemplated. A noticeable feature in connection with all buildings is that most of them are being erected of first-class materials and enough money expended on them to make them substantial, enduring and artistic.

Among the notably fine buildings now going up is that for the Johnson Electric Service Company, on the east side, which is to cost in the neighborhood of $150,000. The entire building is of fireproof, cement construction, including floors, beams and columns. Ricketson & Schwarz have recently secured the order for 160,000 brick for this building, and are supplying hydraulic red brick. They also recently secured the contract for tile work for the new plant of the Milwaukee Gas-Light Company and have put in 650 squares of Ludowici tile. Other recent orders placed with that company are 80,000 hydraulic brick for the new factory of the American Candy Company; 70,000 paving brick and a million common brick for the Koeffler flats.

Speaking of the local situation in brickmaking, Mr. Charles T. Burnham, of Burnham Bros., says: "The demand for the product of all the Milwaukee yards is excellent, and we are all working to our full capacity, I believe. I know that I can say that for our yards. The past season, however, has not been a good one, because of the prolonged rainy and wet seasons during the spring and early summer months. That, however, is a condition which has affected all brickyards in this part of the country and all have suffered alike. The new continuous kilns we have at our south and west yards are now in successful operation and are beginning to show very satisfactory results. We are expecting that as time goes on they will prove more and more valuable to us."

Clifford Chase is kept busy supplying orders which have come to him since he has commenced the independent operation of his yards on the South Side.

Emil Kraatz, who is now operating the yard formerly run by his father, will increase its capacity by putting in a Chambers machine. He is also thinking of adding an improved dryer. He is now burning his brick with coal, having introduced the Boss system. The latter he commends very highly, says it enables him to burn better and cheaper than by the old process.

Local dealers report that aside from the shortage of cars and delays in transportation, they experience no trouble in getting brick from outside points.

The last of the brick pavements for this year are being completed and the indications are that next year there will be a marked increase in the amount of brick that will be used for paving purposes in Milwaukee. The creosote blocks for repaving the Sixteenth-street viaduct are just commencing to arrive in the city from Terre Haute, and will be placed as rapidly as they can be shipped here.

Word is received from La Crosse that three miles of brick and five miles of macadam pavement will be laid in that city next summer.

Several Milwaukee brickmakers have already announced their intention to attend the Boston convention of the National Association of Brickmakers. A BADGER.

Milwaukee, Nov. 12, 1902.

PITTSBURG AND WESTERN PENNSYLVANIA CLAY INDUSTRIES.

THE COLUMBIA Clay Manufacturing Company, of Pittsburg, recently incorporated under the laws of Delaware with a capital stock of $300,000, is preparing to erect a large brick plant in this district. The terra cotta and sewer pipe plant of the company will be located at Rogers, O., where the company owns valuable mineral lands. Among those interested in the company are D. C. McCurdey and L. T. Pfarr, of Pittsburg. The main offices of the company are located in Pittsburg.

The Monongahela Valley Sewer Company of Pittsburg, has been organized for the purpose of constructing sewer systems, culverts, conduits, etc., in Jefferson township, Allegheny county, Pennsylvania. The directors of the company are W. R. Murphy, H. A. Jones and J. N. Radcliffe, of Pittsburg. The company will become a large purchaser of sewer pipe and similar clay products.

The Pope Cement and Fire Brick Company, of Pittsburg, which purchased some important fire clay lands near Dunbar, Pa., some time ago, has made some decided improvements in the plant at that place. The company has also expanded in other directions and is fast becoming a factor in its line of work in the Pittsburg district.

The Reynoldsville Brick and Tile Company, of Reynoldsville, Pa., has been formed with a capital of $25,000, and will build a plant at that place. A. O. Donnell is president of the company and its offices are located at Reynoldsville.

The Osceola Silica Brick Company, of Osceola Mills, Pa., has been incorporated with a capital of $100,000, and will develop important ganister deposits near that town. The directors of the company are A. S. Brown and S. W. McLarren Osceola Mills; H. W. Todd, Phillipsburg, Pa., and R. L. Coffey, West Decatur, Pa.

The Ohio Valley Clay Company has been chartered under the laws of West Virginia, with a capital of $200,000, and will erect a large plant on the Ohio river, near Steubenville, O. J. W. Gill and George W. Cochran, of Steubenville, are the principal stockholders in the company.

The Big Savage Fire Brick Company, of Frostburg, Md., has completed arrangements for several additional buildings to their plant and will install a large amount of new machinery.

The Iron City Fire Brick Company, which operates several plants in western Pennsylvania, has lately booked some heavy orders for fire brick and shapes.

The Pittsburg Clay Pot Company, whose large plant located in Allegheny City, was destroyed by fire some months ago, has entirely recovered from the damage, and its new plant has been in operation for some time. The company practically controls the glass pot manufacturing business in this section, and there is a very heavy demand for the various products of the company.

The Rumbaugh Brick Company, of Greensburg, Pa., whose plant is located on the Southwest Pennsylvania road, is shipping some big orders of building brick to Pittsburg and Philadelphia contractors.

The Latrobe Brick Company, of Latrobe, Pa., has made some improvements to its plant. Although the company has been in operation only about a year, its business has outgrown its facilities, and other additions will likely be made.

GILBERT.

WRITTEN FOR THE CLAY-WORKER.

CAPITAL NEWS.

WELL, THE COAL STRIKE did not, after all, strike the Washington brickmaker so very hard. For a time he was a little put back for want of fuel, but now business is moving along at the various yards. The sales of building brick are not quite so extensive as was the case a short time ago. Still, there is not a little doing in this line, and building is in a healthy state of progress. The big flat still leads in our structural scheme here, and there is demand for rooms—living and office rooms—in these immense piles of brick and stone that, in many cases, all the rooms are spoken for before the building is completed.

As rooms in these places rent from $10 to $100 each, according to location—of both structure and rooms—it is apparent that one can hardly put brick in better paying shape here than in office and apartment buildings.

District Government Matters.

From recent estimates to be submitted to Congress for appropriations for the District, it seems that a great deal of money—if Congress is willing—will be spent upon improvements the next fiscal year. The whole amount asked for is nearly eleven millions of dollars, but part of this will be used for running expenses, salaries, etc. However, large sums will be spent for brick, which will be used partly in the new District municipal building, the filtering plant, and, perhaps, altogether in the municipal hospital.

New sewer work will call for a great quantity of sewer brick. The estimates in this particular are as follows: For B street and New Jersey avenue, sewer, sections A and B, $400,000; for Joy City trunk sewer, $50,000; Georgetown sewer, $22,000; for suburban sewers, $50,000, and main and pipe sewers and receiving basins, $50,000. For continuing work on the new sewage disposal system and other incomplete sewer work something over $240,000 is asked.

The estimates of the Board of Education for District of Columbia schools includes four new buildings, to cost in the aggregate $296,000.

The Improvement of Streets.

A large sum is asked for street work, but, as usual, asphalt keeps brick out of the streets, and flaunts its hill-and-valley aspect before the public, while brick must hide its face in alleys and gutters. Perhaps some day, when Trinidad Lake gives out and the pitch business goes to pieces generally, Washington may have good, even, flawless streets—of bricks. Perhaps by that time someone will invent a brick equal to the fancy of the District of Columbia governing powers.

This reminds me of something new in clay, though it will hardly reach Washington's thoroughfares, of which I will here quote in toto, from the Electrical World:

"Mr. Charles B. Jacobs has discovered a novel method, leading to a new and seemingly valuable product. By subjecting acid silicates, such as the compound $Al_2 O_3 2 Si O_2$, which forms the base of ordinary fire clay and kaolin, to continued fusion at the high temperature of the electric furnace a certain proportion of the silica is volatilized as white fumes, leaving a melt, which solidifies into a hard, tough mass of waxy appearance, having the chemical composition of the known normal silicates of aluminum, but possessing distinct physical properties, and being, therefore, a new product. For affecting the fusion any usual type of electric furnace may be employed. As an example, it is stated that a current of 100 volts and 1,500 amperes will bring about 200 pounds of the material into fusion in twenty minutes, and that the continuance of the fusion for forty minutes more suffiices to volatilize one-half of the silica, leaving the normal salts. The fused mass is run into metal molds of any desired shape. The uses suggested are for bricks for paving, building, furnace construction, tiling and refractory conduits of various kinds." NICODEMUS.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Handling Brick from Kiln to Car—A Question.

Editor Clay-Worker:

Inclosed find my subscription to The Clay-Worker for another year. It is an unending source of pleasure and information. I wish some of your experienced readers would tell me the best plan for handling brick from kiln to car where the top of the car is on a level with the kiln ground. How can the work of emptying kiln and loading car under such conditions be done cheapest and easiest? D. B. C.

Sandusky, O.

Wants More Buttonholes.

Dear Mr. Randall:

I met our old friend Gates the other day, and something about his general appearance struck me as being "out of whack," as it were. He presented the same genial, smiling countenance known to all clayworkers. His clothes fit him as usual, but there was a certain reserve which showed itself in his general bearing that I was unable to fathom. Just as I was leaving him I noticed the condition of his coat. Not a whole buttonhole to be seen. Each one, evidently, pulled out by the roots—if buttonholes have roots—and not a thread of vantage ground for the unfortunate with the tale of woe to anchor to, while unbosoming himself to the ever sympathetic "buttonholer," and by so doing distribute his grievance broadcast through the medium of your valuable paper. The tales of woe were not always interesting, but they furnished the "mother" for a learned and witty dissertation from the aforesaid "buttonholer," sparkling with humor, pathos and general sound deductions.

Since the meeting referred to I have had a feeling that something unforeseen would happen to mar the even tenor of my ways. You know that one can have a premonition of impending disaster, as, for instance, being unexpectedly called upon to "make good" as an indorser, or have a mother-in-law unexpectedly visit one for a month, but whatever it was that hung over me as a pall, materialized when I tore off the wrapper of your October number and scanned the "Table of Contents," and my worst fears were realized. The old familiar "Buttonhole Talks" was absent, and, as I now realize, merely for lack of inspiration.

It is in order for the readers of The Clay-Worker to petition Mr. Gates to have the holes fixed, or, if necessary, send him a quart or so of new ones, so that we will not be deprived of the genuine pleasure which is sure to follow in the perusal of "Buttonhole Talks." Yours truly, VERITAS NO. 1.

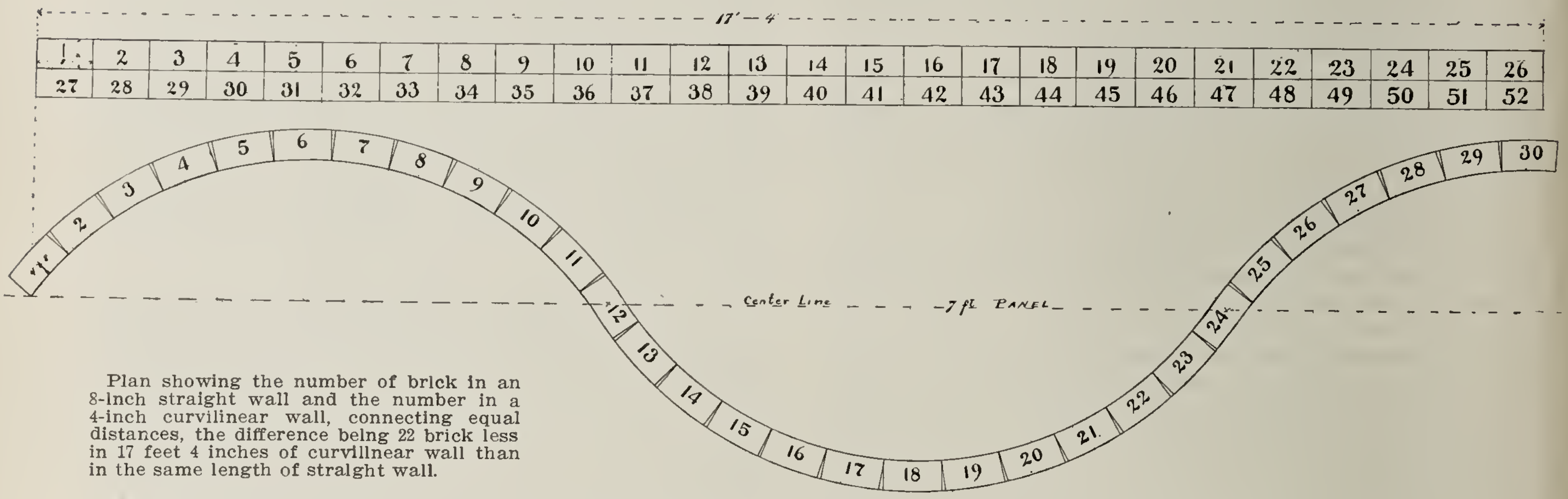
Chicago, Nov. 13, 1902.

Brick Walls.

Editor Clay-Worker:

Your October number contains, under the title of "Bricks and Bricklaying," an article by Mr. Owen B. Maginnis. After an illustration of a curvilinear fence built by Thomas Jefferson at Monticello, Va., he states that "this most learned and highly venerated statesman conceived the erroneous idea that it was possible to build a cheaper brick fence, one brick thick on a curvilinear plan, than a straight fence two or more bricks thick on a straight plan; in other words, he would save brick and labor."

Now, if he had left out the word erroneous and had commended Mr. Jefferson's idea as being beautiful, practical and economical I would have let the matter pass, but Thomas Jefferson was considered an architect of some ability, as well as a statesman, and as he is not here to reply to Mr. Maginnis, I will state that it does not take a practical man long to see where Thomas Jefferson was right, as can be seen by the accompanying sketch. Taking 26 brick 8 inches long as a basis, they would make a wall 17 feet 4 inches in length in a straight line; double this amount and you would have 52 brick in that wall. Now, lay off on the curvilinear wall the same size brick, and it will be found that 30 brick will more than cover the same distance.



Plan showing the number of brick in an 8-inch straight wall and the number in a 4-inch curvilinear wall, connecting equal distances, the difference being 22 brick less in 17 feet 4 inches of curvilinear wall than in the same length of straight wall.

In point of utility a 4-inch wall curvilinear is more rigid for the purpose of a fence than a 12-inch wall in a straight line. A 12-inch wall 17 feet 4 inches long would take 78 brick to each course, and a 4-inch curvilinear wall that would reach the same distance would take 30 brick to each course, and as it takes less material it also takes less labor, for by laying to a template the work could be done nearly as fast as to a line. Mr. Jefferson did not necessarily lose ground space, for what he lost on one curve he gained on the other. Then, see how much he gained in the beauty of such a wall. "A curve is the line of beauty."

How consistent it was with the tasteful colonial architecture of that time, and which of late years has been brought into such prominence.

I would like to see more of such walls built, and if it can be shown how cheaply, durable and artistic they may be built I have no doubt that a great many suburban and country places would follow suit. Possibly Mr. Maginnis may retract his statement after due consideration, and I suggest that before criticizing such men as Thomas Jefferson and presenting his theories to the practical readers of The Clay-Worker he should be more circumspect and not jump at conclusions.

W. D. S.

Wants to Start a New Brick Plant.

Editor Clay-Worker:

I received the copy of The Clay-Worker, also yours of October 27, and note what you say. I'm not a clayworker, and know but little about it, but I own a tract of land adjoining our town which has a deposit of clay suitable for brick, pottery and fire brick; also a fine white sand. I am also interested in a deposit of kaolin within three miles of this place.

Now, what I want is some one who understands the manufacture of brick and tile to help start a small plant at this place, beginning with brick and tile and enlarging the plant to work the other clays as soon as we can get at it. The clay is within 300 yards of the I. C. railroad station, at this place, which is sixteen miles north of Cairo, and no brick are manufactured nearer than Cairo. So I think a factory here would do a good business.

I inclose herewith postoffice money order for subscription to The Clay-Worker; also for "ad.," which please insert in your Wanted and For Sale columns. I wish to add that I was surprised to see what a splendid journal you get up in the interest of the clayworkers of this country—nothing cheap about it.

Pulaski, Ill., Nov. 4. J. L. ALDRED.

Brickyard Beverages.

Editor Clay-Worker:

I was pleased to see your correspondeut, A. O. T., in the September number of The Clay-Worker, open up on the Hudson river custom of allowing their employes to bring intoxicants upon their premises during working hours. I feel justified in calling it the "Hudson River custom" because it was introduced into Chicago, in the early days, by men who learned their trade at Haverstraw and emigrated to this city. The condition of the Hudson river brickyards, as described by A. O. T., is very similar to that in vogue here thirty or less years ago. The starting of a new brickyard was sure to be closely followed by the opening up of at least one saloon, and for many years no employer dared to try to check the desires of many of their workmen.

The prevailing idea seemed to be that to stop the use of beer by men during working hours was an infringement on their personal liberty. One or two attempts resulted in no men, until the restriction was removed. As a matter of course men who really desired to be sober and industrious gradually drifted into some other class of work and the reputation of the brickyard "gang" became almost notorious. In 1886 the company with which I was identified made a new departure (as a matter of fact it made several) by purchasing land fifteen miles from the city and starting a new yard. On the day the first spade full of earth was removed a notice was posted that no beer or other intoxicants would be allowed on the premises, and that any violation of the rule would be followed by the discharge of the violator. At this time the larger portion of our men were Germans, or of German descent, and the rule seemed to them an arbitrary one. After the first six months of strict enforcement of the rule, we had no trouble whatever with it. The few men who could not keep sober left our service and secured employment where the distinction between liberty and license was less marked, and our company was decidedly the gainer thereby. Not three months since one of the men, who was loudest in his opposition to the rule, came into my office and showed me a release from a $2,500 mortgage on his home. He said, "I want to thank you for this, as I am sure I never would have saved this money if you had not insisted that we should not have beer in the yard." This is only one of many similar cases. The men knew that the officers of the company were not temperance fanatics, and they also knew that they did not keep stimulants in the office.

When the Purington Paving Brick Company started its works at Galesburg it started out with the same plan, and to my knowledge there has never been a criticism on the part of the men. The result is that our men at Galesburg compare favorably with any set of employes in the United States. It is true that they receive the highest wages paid in any paving brick plant, but they deserve it. It is a very rare occurrence for a man to be under the influence of liquor. The most of them own their own homes, and the relations between employer and employed are, and always have been, extremely pleasant.

I have used the two cases with which I was familiar as an illustration of the truth of the statement that the manager of a brick plant can do nothing so directly in the best interests of everybody connected with it as to enforce the rule that there shall be no drinking of intoxicants on the premises. For some years at Galesburg we have furnished ice to our men *ad libitum.* This at first seemed a dangerous proposition, and we were warned of it, but never a man has been injured by over drinking. We are sure it is much cheaper for us to furnish ice free than to have the men furnish their own beer, and we are also sure that it is better for the men in every way.

I do not wish to be misunderstood, or to be considered as an advocate of total abstinance under any and all circumstances. There is nothing, except good ice water, much more refreshing than a glass of cold lager beer on a hot day, unless it might possibly be two glasses, but the working men who would stop at two glasses when heated and thirsty are, like hens' teeth, scarce. Few employers that I have known would object to their men taking a glass of beer when the day's work was done, and fewer still would allow them to indulge this practice during their working hours if they have the best interests of their men at heart. D. V. PURINGTON.

Chicago, Election day, Nov., 1902.

The Strength of a Brick.

Editor Clay-Worker:

In an article concerning "The Strength of a Brick," published in "Carpentry and Building," I note the following statements:

"We are apt to forget how large a factor of safety has come to be considered wise and how little real reliance is placed upon the innate strength of the units (i. e., bricks) which go to make up the masonry walls.

"The determining factor in the designing of a wall or pier is not the strength of the unit, but rather the lateral stability of the completed structure. The most ordinary sort of light hard brick has sufficient strength to satisfy the mere letter of even the most exacting building law.

"A short time since some tests were made by Norcross Bros. A record was kept of the load which produced the first crack in the material as well as the ultimate crushing strength per square inch. The former ran from 2,720 pounds per square inch for the poorest of the bricks, up to 8,000 pounds per square inch for the best quality, while the ultimate strength ran from 3,149 pounds per square inch for the poorest sample, up to 10,532 per square inch for the hardest. Or, reduced to tons per square foot, this means the poorest sort of brick cracked under the equivalent of a load of nearly 196 tons per square foot, with an ultimate strength of 226 tons per foot, while the best sample cracked under 576 tons to a foot and only yielded under an ultimate strain of a little over 739 tons per foot.

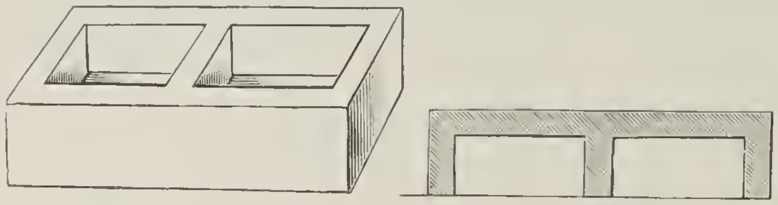
"When we consider that the utmost that the building laws of most of our large cities consider as safe is a strain of fifteen tons per square foot on masonry walls laid up in cement mortar, this unit strain, as compared with the ultimate resistance of the poorest of these bricks of 220 tons per foot, allows for a factor of safety of nearly 15, while in the case with the hardest bricks the factor is over 50.

"Now we should not argue from this that it is perfectly safe to use poorly burned bricks, or that the wise builder can save the difference in cost between a good and an indifferent brick and secure just as good a building."

This is true, and it is also true that brick walls might be made lighter by making the brick hollow without in any degree weakening the wall or structure. As we now build of solid brick, much of the material of which they are composed is wasted. The real element of weakness in a brick wall is not brick, but the mortar joints. Building laws recognize the fact that the quality of the cohesive or bedding element—the mortars that unite the brick—is the factor of weakness to be considered. Authorities permit nearly double the load to be carried by walls in which Portland cement is used as a mortar in place of ordinary quick, or ordinary lime mortar. The strength of the wall as a whole is only equal to the strength of the weakest member—the mortar joints that tie the brick together.

Advantages of Hollow Brick.

Take an ordinary 2x4x8 inch common brick, and see what we can do with its surplus stock. Flat sides and ends are needed. If we add one smooth 4x8 inch bed, we have a brick that can be used as a header or a stretcher in composite walls of any thickness, or veneered walls of two, four or eight inches thickness. We have left, then, one of the 4x8 sides or beds upon which to work. In clay manufacture we should as far as possible make all clay walls of uniform thickness. Keeping this in mind, let us cut into the bottom bed of our common brick two holes of uniform area, leaving ends and center wall of uniform thickness, and we have a hollow brick as illustrated.



Now, if we figure up the area of the bearing surface we shall find that we still have a very large surplusage of weight-bearing value in our remodeled bricks. That is, the factor of strength in these hollow brick is much greater than is required.

Now let us consider some of the advantages to the manufacturer who makes this hollow brick as compared with the old solid brick. There is a saving, as I figure it, as follows:

First—About 30 per cent. of the clay and handling—labor.

Second—A corresponding percentage of time in drying.

Third—An equal percentage of fuel and handling—labor in stacking and burning.

Fourth—Uniformity of wall and of vitrifaction, and with this an increased strength.

Fifth—A corresponding salvage in handling—labor and transportation from kiln to building.

Sixth—A corresponding salvage in handling—labor to place in wall.

Consider now the quality of walls they can make. If properly handled, the wall with thin mortar joints is the stronger, and "push placed" bricks insure the closest working joints, solid and well filled. The smooth top bed is an easy one to place mortar on and the cutting edges and reduced area of our bottom beds make it easy for the bricklayer to bed with a close and thin joint. The surplus mortar will rise into the holes that we have dug out of the interior of our bricks and when it has set will act like so many dowels to give the wall as a whole some extra lateral stability.

Now let us cut a section through our wall, remembering that hollow walls are better weather and fire walls than solid walls, because of their superior non-conducting value. If the air pockets are fixed and increased in number they are still better non-conducting walls. What is the result? With our remodeled brick we have secured one or more fixed air pockets, with each individual brick; and our wall is a better "hollowed wall" than is usually built. It requires less mortar and leaves a much larger volume of air spaces. With our mortar dowels we have increased lateral stability and with fixed air pockets we have added non-conducting value greater than can be secured in ordinary solid or hollow brick walls.

What does the brick trade think of the matter? Ask them to answer through the columns of The Clay-Worker.

S. E. LORING.

Good Place for a Vitrified Brick Plant.

Editor Clay-Worker:

If you know of or can refer this to any persons who would like to engage in manufacturing of vitrified brick and tiling I do think right here is the best home on earth for such a plant. We have enormous beds of shale right here by the railroad, in the edge of town, with a clay covering of three to fifteen feet thick, and the shale seventy-five feet thick, and can be entered at bottom, so that would have a face working of eighty to ninety feet and not a yard of waste. Besides, we have an abundance of natural gas and coal right here. We are on the B. & O. S. W. railroad, half way between Cincinnati and St. Louis. Very respectfully,

Loogootee, Ind. MOSER & LARKIN.

Wants to Know How to Make Flower Pots.

Editor Clay-Worker:

Will you please, through the correspondence columns of The Clay-Worker, or otherwise, favor me with a brief description of the process of manufacturing flower pots, naming the different machines, dryers and kilns best adapted to the work and number of men required to operate? Also approximate cost of such outfit. Any information regarding the manufacture of flower pots would greatly oblige, Yours very truly,

"A LEARNER."

Like Hot Cakes.

Editor Clay-Worker:

I am sorry I have overlooked my subscription to The Clay-Worker, but better late than never. Have been very busy, and that's not strong enough, *awful busy*, and have just had to neglect some things. Have built a new kiln and sold nearly everything hot this summer, if it was cold and wet most of the time. I'll soon close down for the winter with no stock on hand. GEORGE H. KETTELL.

Tipton, Ia.

Warrenite Wanted; Who Can Supply It?

Editor Clay-Worker:

Herewith find $2, for which please send us regularly for one year The Clay-Worker. Please send receipt. We have an inquiry as commission agents for a certain ground earth or clay advertised and sold as "Warrenite," and we should like the address of any firms who supply it. We would, therefore, feel obliged by being put in communication with any such firms, either direct or through your journal. Yours truly,

H. M'LAREN & CO.

Improved Kilns Wanted.

Editor Clay-Worker:

Enclosed you will find $2 to cover my subscription to The Clay-Worker for one year. I am in the market for some kind of a kiln, either continuous, up-draft or tunnel kiln. Will be pleased to correspond with kiln builders. If continuous, the kiln must have a capacity of from 20,000 to 25,000 per day, and if of the up-draft style, must hold about 300,000. I will pay cash for anything I get, but it must be O. K. in every particular. F. GOSS.

Tacoma, Wash.

WRITTEN FOR THE CLAY-WORKER.

PACIFIC COAST NEWS.

THE BRICK WORKS of the Simons-Fout Brick Company, situated at Eighteenth street and Corbett avenue, San Francisco, were burned here on the night of October 26. The main building of the works, containing a large quantity of machinery, was entirely destroyed. Two tanks, containing about 100 gallons each of kerosene and lubricating oil, exploded, but a large underground tank, containing 5,000,000 gallons of crude oil, to be used for fuel, was not reached by the flames. The boiler room, brick kiln and pugging mill were unroofed, and the high wooden side walls of the structure, which were some 300 feet in length, were destroyed. The works of the Simons-Fout Brick Company had been closed down for the season a few days previously, but the fires had not been drawn. No cause for the fire has been ascertained. The loss is placed at something over $5,000, fully covered by insurance.

Advices from Salt Lake, Utah, state that contractors complain of a scarcity of facing brick. It is said that Utah facing brick is spoiled to a large extent in the burning. Brick manufacturers claim that the clay is of so many varieties and colors that it is hard to tell how the burning is coming out.

A shortage of brick is reported at Coeur d'Alene, Idaho, where the price of common brick has recently been advanced from $9 to $11 per thousand.

The Standard Brick Company, of Los Angeles, Cal., recently made reductions averaging 50 cents per thousand in the price of its brick.

Some details of the discovery of a superior quality of fire clay found in the Similkameen district, Victoria, B. C., are furnished by J. Charles McIntosh. The fire clay is of excellent quality and approaches very closely in quality that of the best Scotch and English clays. A seam between two and three feet in thickness has been exposed in a tunnel driven in a large coal cropping near Similkameen bridge, an assay of which was made by the firm of Pellew-Harvey, Bryant & Gilman, of Vancouver. The following is the analysis received, also that of typical English clays, which are given for purposes of comparison:

Analysis of Similkameen Clay.

Silica, 7299 per cent.; typical, 72.5 to 74.5. Alumina, 14.97 per cent.; typical, 14 to 16. Iron oxide, 2.18 per cent.; typical, 2 to 3½. Water, 7.40 per cent.; typical, 5 to 7½. Lime, 1.70 per cent.; typical, traces of lime, sulphur, magnesia, soda and potash. Magnesia, .76 per cent.

A number of seams were also struck in the drilling operations recently carried on in the district. This is believed to be one of the best fire clays yet discovered on this continent, and should prove of great value to the operators of coal properties in that district, as it can be mined very cheaply in connection with the coal. It is used largely in the manufacture of fire brick, mantels, tiles and pottery.

The burning of a kiln of 500,000 brick was begun a few weeks ago at T. W. Gillett's brick works, near Brennan Station, Wash. This is the second kiln constructed since the brickyard was opened. No shipments have been made as yet, because of the lack of a siding. Mr. Gillett says he is simply experimenting to ascertain for what purposes the clay can be used and to test its quality. He says that so far the results are very satisfactory, and that he has one of the finest beds of clay in the State. He has a tract of 120 acres of clay, which he says is remarkably free from rocks and other foreign substances. He also states that the land adjoining his tract is composed of a fine bed of clay.

A valuable clay has been found on the line of the new Vera Cruz & Pacific railroad, now being constructed in Mexico, on a hacienda recently taken over by Alfred B. Mason, the president of the road. The deposit has just been tested by J. J. McGee, the clay expert, who says it is superior to any clay he has yet found all the way from the northern frontier to Yucatan. It is claimed that the clay may be made into a pressed brick, finer and more substantial than the best of building stone. When ground up and molded in the hands it resolves itself into a stonelike substance, which can be easily cut with a knife, leaving a smooth, glittering, polished surface. Mr. McGee further says that this Mexican clay, the finest of its kind found in the country, may be worked up into the finest tiling, manteling, cornices and pressed brick. A large plant is now in course of construction to treat the clay.

Harvey Garrett, a brickmaker of North Yakima, Wash., was in Goldendale, Wash., a few weeks ago looking over the field with a view of putting in a brickmaking plant. Mr. Garrett stated while in Goldendale that he was well pleased with the prospect from a business standpoint, and that he would positively start a plant there in the spring, probably in February. The firm of Garrett Bros. conducts a big brickmaking plant in their home town of North Yakima.

Griffin & Mills, of Los Angeles, have the contract for the brickwork on the city jail at Pasadena, Cal., and are now working on the contract.

The Rock Island Cement and Plaster Company is now putting in a first-class plant at Ancho, twenty miles above Carrizozo, N. M., for the manufacture of cement and plaster from the white sands found in Otero county. The incorporation of this company and the fact that it intended to engage in this enterprise was mentioned in our October letter to The Clay-Worker.

W. A. Doyle, manager of the Renton Clay Works, Renton, Wash., is in the best of humor these days, as his new factory is about completed, and orders are coming in rapidly. Mr. Doyle is making a shale brick, something new in the local market, which he pronounces a great success, and which he claims will have a great run.

Work in the brickyard near Campbell, Cal., is rushing, and contractors say that the quality of brick turned out from the yards there is most excellent for building material. About eight or ten cars of bricks are shipped daily from this one yard.

Groner & Rowell have just completed a test of their new tile plant near Hillsboro, Ore., and pronounce it perfect. Two kilns of tile have already been made and burned. They are now building their saw mill on the banks of the Tualatin, near the tile factory.

The employes of the Stockton pottery works of the Tesla Company have organized a union under the jurisdiction of the International Brick, Tile and Terra Cotta Workers' Alliance. There are similar plants at Oakland, Alameda and Lincoln, and these are also to be unionized and the scale of wages brought up to the Stockton standard, where the highest wages are paid.

SUNSET.

San Francisco, Cal., Nov. 5, 1902.

THE PENNSYLVANIA NEW YORK LIMITED FROM INDIANAPOLIS.

Under arrangements just completed, the New York Limited of the Pennsylvania Short Lines becomes an independent train from St. Louis and Indianapolis, composed of library, smoking, dining, sleeping and observation cars, and when necessary to avoid delay at Pittsburg, these cars will be run as a solid train through to Harrisburg, Philadelphia and New York. An independent sleeping car for this train starts from Indianapolis and runs through to New York, leaving Indianapolis Union Station every day at 7:15 p. m.

Three fast trains with through sleeping cars and dining cars run every day over the Pennsylvania Short Lines to New York, leaving Indianapolis at 8:10 a. m., 3:05 p. m. and 7:15 p. m.

For special information call upon or address W. W. Richardson, District Passenger Agent, Indianapolis, Ind.

OFFICIAL ANNOUNCEMENT.

The Seventeenth Annual Convention of the National Brick Manufacturers' Association and the American Ceramic Society To Be Held at Boston, Mass., February 2 to 14, 1903.

AS PREVIOUSLY ANNOUNCED, the Seventeenth Annual Convention of the National Brick Manufacturers' Association and the Fifth Yearly Meeting of the American Ceramic Society will be held in Boston, Mass., February 2 to 14, 1903. The deliberative sessions of each body will divide the first week, as in former years. That is, the Ceramic Society will meet Monday and Tuesday, the 2nd and 3rd, and the N. B. M. A. meetings will begin Wednesday afternoon, February 4, and continue through the week, as heretofore. The annual associational dinner or banquet will take place Wednesday evening.

Hotel Headquarters.

Headquarters during the convention will be at the Brunswick Hotel, one of Boston's largest and best hostelries. A minimum rate of $4.00 per day (American plan) will be made for rooms occupied by one person. When rooms are occupied by two or more the minimum rate will be $3.50 per day. The Brunswick is located on Boylston street and faces Copley square, one of the most famous spots in Boston, about which is grouped the magnificent Public Library, the Museum of Fine Arts and the great Trinity Church. The latter is considered by many architects the finest structure architecturally in the United States. The Brunswick may be reached by street car from either of the union stations—there are now but two, North and South stations. The elevated railway passes both stations and runs into and through the underground station at Tremont street, where passengers can transfer to the Boyleston street trolley line, which passes the door of the Brunswick.

Convention Hall and Exhibition Room.

The local committee has secured the exclusive use of Copley Hall for the entire week—February 2 to 7, inclusive—for convention and exhibition purposes. It is located across the street and one block south from the Brunswick, and is a large and thoroughly comfortable hall, which will afford ample accommodations for display of machinery, etc., etc. Those desiring to make exhibits are requested to advise the Secretary as to amount of floor space wanted and character of exhibit; whether it will consist of heavy machinery or models.

Reduced Railroad Rates.

Reduced railroad rates on the certificate plan have been applied for covering the two weeks ending February 14. The second week will be devoted to side trips to the various brick, tile and pottery plants in and about Boston and the neighboring cities. There are many interesting places within a radius of one hundred miles of Boston, such as Plymouth, Providence, R. I., Portland, Me., and Concord, N. H., while New Haven, Conn., and New York City are considered nearby towns, and will doubtless be visited by many of the delegates.

Boston a Great Convention City.

Boston's attractions are many and varied, and as this will be our first meeting in New England, a large attendance is anticipated. While Boston, though called the Hub, is somewhat one side of center geographically, it is so easily reached by fast through trains from every section of the country that its one-sidedness in location is but a slight disadvantage which is more than offset, many times over, by its many-sidedness in all other respects.

No city in all the nation possesses more of interest to the progressive workers in every calling than does Boston. It is one of the great head centers of industrial, commercial and educational influences which tend toward the advancement and betterment of all mankind. No city is richer in historical lore. The Old South Church and Bunker Hill are dear to the hearts of every American citizen, while in modern institutions of learning she leads the world, and so is an ideal meeting place for educational bodies like the N. B. M. A. and the Ceramic Society.

All sessions of the Convention are open to the public. Those who are interested directly or indirectly in clay work of any character are invited to join the Association and attend the Convention. Members and their families, or friends who may accompany them, will be entitled to reduced railroad and hotel rates. Those desiring further information relative to the requisites of membership, etc., are requested to communicate with the Secretary at Indianapolis.

THE EXECUTIVE COMMITTEE.

GEORGE M. FISKE, President.
THEO. A. RANDALL, Secretary.

CONVENTION DATES.

The Illinois Clayworkers' Association will hold its twenty-fifth annual convention at Bloomington, Ill., Jan. 6 and 7, 1903.

The Wisconsin Clayworkers' Association will hold its third annual convention at Green Bay, Wis., Jan. 27 to 29, 1903.

The American Ceramic Society will hold its fifth annual convention at Boston, Mass., Feb. 2 and 3, 1903.

The National Brick Manufacturers' Association will hold its seventeenth annual convention at Boston, Mass., Feb. 4 to 7, 1903.

The Iowa Brick, Tile and Drainage Association will hold its twenty-third annual convention at Ames, Iowa, January 21 and 22, 1903.

THE FIRE TAX.

The difference in the rates of insurance given by insurance companies on buildings that are protected by proper precautions should show every manufacturer that he himself, in the precautions he adopts, makes the rates for himself. In other words, if he will protect his own property he will save his own purse. The saving in the cost of insurance between a modernly-equipped factory, protected by modern fire protection and one that has no protection, would ofttimes practically pay the dividend on the capital invested. In event of fire the loss is not alone in the damage arising practically from the fire, but the loss of time in getting property back in its proper shape, getting machinery in working order, getting the organization perfected and getting the goods sold again after countermands owing to delay in shipments.—Exchange.

THE FORCE OF REPETITION.

It is silly to seek to avoid the duplication of circulation. Every advertiser duplicates circulation if he uses but one paper. He talks to the same people day after day. No, man, certainly but few men, is convinced on a first appeal. It is like the gospel of grace. It must be "precept upon precept; line upon line; here a little and there a little." In this way buyers are won. If one reads an advertisement in one paper and then sees it in another, the second sight of it will add to the potency of the first impression.—Fame.

EXTENSIVE AND VALUABLE CLAY DEPOSITS DISCOVERED IN WISCONSIN.

Valuable deposits of kaolin have been discovered in the vicinity of Glenwood, Wis. Recent interesting and costly experiments have been made, covering some six hundred acres, and the owners are confident they have in their possession very valuable property. It has been secured by Chicago capitalists, including large sanitary ware manufacturers. The deposit comes in layers to a depth of sixteen feet and is of fine quality with the exception that it contains small quantities of sand. The clay beds look like chalk and are in fact decomposed stone. The new industry opened up at Glenwood by this discovery is an important one for the State.

Written for The Clay-Worker.

BRICKMAKING DOWN IN MAINE.

THE SEASON OF 1902 closed with a heavy downfall of rain, a circumstance befitting the ending of one of the dampest brickmaking seasons that was ever known. It threatened rain almost every other day since the first of April, yet for all that the yards seem to have turned out more bricks than ever before, even in the dryest season. I am not trying to explain how this can be; I am simply stating the facts as they appear to me. The entire output of the yards east of the Kennebec will foot up some 13,600,000—a figure largely in excess and a better output of this section for any year in the past decade. Of these 13,600,000 more than one-half have been sold as fast as manufactured, and more than one-half of the remainder were contracted for in advance for use in the future. The balance will be held over to supply the winter demand, such as it is, and tide the bricklayers over until new bricks appear again. With all of its disadvantages in weather and labor, the brickmaker of eastern Maine never before saw such prosperous times. There never has in the history of the business in this section been a time when brickmaking was accompanied by less risk and by a bigger margin of profits than has been the case for the last three years.

The movement begun among the brickmakers to improve their methods of manufacturing has not been without some disappointing features. Mr. Burke, who reorganized his plant last spring, and established the Martin sand machine in the place of the old-fashioned mud machine; then, after a six weeks' trial he found the difficulties of securing competent workmen and suitable sand for his molds more than offset the advantages to be gained by the new process, and returned to his old mud machine for the remainder of the season. His output this year was about 15,000,000. The next yard to Burke's is the yard of Mr. Hugh O'Brien. Ten years ago Mr. O'Brien adopted the Martin machines and run them very successfully since, but he came to the conclusion that a still better process existed, and last fall he began negotiating with the manufacturers of stiff clay brick machinery, and finally ordered an outfit for an up-to-date steam plant. Between the installation of this new machinery and the running of the old yard, Mr. O'Brien has had little spare time this season. The new plant has been in operation now for about three weeks and is running very satisfactorily. Mr. O'Brien expects to make things hum with it next year. He made 15,000,000 sand brick this season and a half million of the wire cut.

Another big yard in the section is W. S. Hellier & Co, operating the sand machines, as they have for the last twenty years, turning out something over 2,000,000, and barely keeping up with the local supply. The only mud yard outside of Burke's is that of Sam Holyoke's, and he has refused to see any benefit in displacing the old style of brickmaking by any "new-fangled notions," as he calls it. He has operated his old mud machine this year with great success, and has turned out some 14,500,000 bricks, and he claims that they cost him less per thousand than either Mr. O'Brien's steam brick or Hellier's or Burke's sand brick. And he says furthermore that notwithstanding the statements he made in his paper read at the brickmakers' last convention in regard to the unreliability of brickmakers, he never in his life had a more efficient or more capable crew than he had this year. and he thinks that, after all, the working men of the age will compare favorably with those of the past.

It is still raining cats and dogs.

Hastily, A. D. OWNEASTER.

Ex-President F. H. Eggers Given a Verdict.

Editor Clay-Worker:

My many brickmaking friends throughout the country will be glad to know, I am sure, that I have won out in my suit against Turner, Vaughn & Taylor for damages resulting in the failure of their dry pans to work successfully on my yard here. The trial lasted two weeks, and resulted in my getting a verdict for $3,718. This is not as much as I thought I was entitled to, but I am proud of my victory, and glad to be rid of the bother and expense of a lawsuit. They may appeal, but I am not scared of that.

Business continues good here. The demand for brick keeps us all going at a lively gait. I wish I could make twice as many brick as I am now turning out. Price for building brick has advanced a little; we are now getting $7 a thousand for common brick, and all of us are behind our orders.

One of the interceptor cement sewers here (built of concrete) has proven a failure. A section of about thirty-six feet fell in. I believe this will be the end of concrete sewers here. There is nothing so good as good brick for sewer building.

Sincerely, F. H. EGGERS.

Cleveland, O., Nov. 12, 1902.

NEW JERSEY'S CLAY SCHOOL.

The organization of the department of clayworking and ceramics of Rutgers College, Trenton, N. J., as provided for by the legislative enactment appropriating $12,000 for this purpose, is rapidly advancing under the supervision of C. W. Parmallee, chief instructor in chemistry of said college. A building especially adapted for the purpose has been erected. One kiln has also been erected and a complete machinery apparatus for the production of bricks, tile, terra cotta and pottery has been purchased. The new department will no doubt be of great benefit to those directly interested in this work. The city of Trenton certainly deserves credit for their good works along practically educational lines. It is more of this kind of education that is needed in our schools and colleges, and the work is fast being taken up along different lines, and no doubt it will not be many years before we will see some kind of manual training in almost every school.

ARBITRATION'S VICTORY.

Arbitration has made one of its master triumphs in the settlement of the anthracite coal strike. It has had three central figures, Roosevelt, Morgan and Mitchell. In this trio we have men of preponderating influence who have placed their prestige and reputation on the side of industrial peace. Men of this caliber count in any time of crisis, and when they indorse a sacred principle, the multitude lend their ears to their advice and suggestions. In this instance these men have been potential factors in forcing matters to a final issue and fortunately for the nation this has been on the right side and not on the wrong. The industrial world in a general way has no objection to the best men taking the lead in the settlement of such a grave dispute as that involved in the anthracite coal strike. The relationships of labor and capital have now a higher status in public opinion than heretofore.—Age of Steel.

A POPULAR MACHINE.

The Chicago Brick Machinery Company reports a fine season's business generally, and especially the best fall trade, on the Berg Press that they have ever had. In fact, the demand for this machine is so great that they have kept the shops at Anderson running day and night, with two shifts of men, for several months past, on the Berg press alone, to keep up with their orders for this popular machine.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

NINETEENTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

Foreign subscriptions 65 cents additional.

☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

27 Monument Place.] T. A. RANDALL & CO., Indianapolis.

XXXVIII. NOVEMBER, 1902. No. 5.

THANKSGIVING.

The harvest is in and my work is all done—thank God!
Let me sit down and rest in the shade where the strain was the worst;
Here by the pit, where the pitiless sun baked the clod,
And but for the sweat of our faces our temples would burst.
Here by the kiln, where the heat of the great under-world
Seemed belching their furies to rival and vanquish the sun
Day after day, since the spring its first banner unfurled.
What a long, heavy lug it was! Now it is done.
Thank God!

The harvest is in and my work is all done—thank God!
I've been with the toilers since first came the call in the spring—
In the springtime of life when the spirit of hope was abroad,
When only to live and to work was a glorious thing.
But the season was long—oh, so long!—and the burden was great,
And the hope of the springtime was lost in the hot summer sun,
And often I yearned to go free; but now I will wait—
Wait here for the call of the master. My labor is done.
Thank God!

B. J. D.

CURRENT COMMENT.

The British admiralty claims to have succeeded in getting fireproof furniture for use in warships. Wonder if it is made of porous terra cotta?

* * *

'Tis said that in France the proprietor or employer has a legal right without qualification to the discoveries and inventions of his employes within his own field of work. This, we think, must be a check on invention.

* * *

The action of the Pennsylvania railroad in advancing the wages of its army of employes, which will doubtless be followed by all the other great railroad companies, is a sign of promise, for it not only means the disbursement of millions of dollars among the workingmen of the country, but indicates the faith which the railroad officials have in the permanency of our prosperity.

* * *

That our neighbors on the north are progressive is evidenced by the fact that a call has been issued for a meeting of the brick and tile manufacturers of Canada, at London, Ontario, Tuesday, the 18th inst., for the purpose of forming an organization similar to our own National and State associations, with the work of which, thanks to The Clay-Worker, they are fully cognizant. That the largest possible measure of success may attend their efforts is our earnest wish.

THANKSGIVING.

"Never," says our octogenarian neighbor, "has there been a time when the clayworkers of America could unite in universal thanksgiving more fittingly than now." Prosperity and plenty is the portion of every worker in clay throughout the land. The chief tribulation of those engaged in the industry the past year has been an excess of prosperity—an embarrassment of riches. Orders have crowded our manufactories, taxing the endurance of every one connected with the business, to the limit. The season of enforced rest which winter brings to many of our readers will be appreciated by them as never before. Now that the last kilns of a remarkably busy and prosperous season are being burned, the pictures in the fire must be rosy and consoling to a degree that should make every clayworker's thanksgiving deeply heartfelt and sincere.

A CLAY-WORKER EPOCH.

With our January issue The Clay-Worker begins its Twentieth year. We propose to celebrate the event by issuing an immense anniversary number, which in matter and make-up will mark a new standard of excellence in the clay field. A year ago we promised to give our readers the handsomest and best publication issued in their interest up to that time, and we did it. We now propose to excel that effort and so mark another epoch in clay literature. Our Twentieth Anniversary number will be a 10,000 edition. It will be beautifully illustrated and contain an unusual amount of instructive and entertaining matter. It will be, in brief, the clay journal de luxe of the year, and will be read by the progressive, responsible manufacturers of brick, tile and pottery throughout the United States and Canada. Advertisers who want to reach these good people will please take due notice and govern themselves accordingly. Those who have anything to sell that clayworkers can use to advantage will find our Twentieth Anniversary issue the best single medium of the year. To insure insertion, ad copy should reach us not later than Jan. 1, 1903. Those desiring special display are requested to send in their cuts and copy as early in December as possible.

CONVENTION THOUGHTS.

The interest manifested by the brickmakers of the Central and Western States in the coming national convention at Boston, augurs well for a very large attendance of representative manufacturers from these sections. The local committees are already at work planning and arranging for the entertainment of the delegates and those who accompany them. It is needless to say that a "feast of reason and flow of soul" awaits every attendant. The social features will be delightful, and alone will well repay a trip across the continent. But the social features of our national meetings are really the least important feature of convention week. To the open-minded, progressive brickmaker, the opportunity for obtaining valuable information on improved methods of manufacture is far beyond the comprehension of those not familiar with convention work, and the spirit of good fellowship which pervades the entire membership. The stay-at-homes who read the convention reports and think they get from the printed pages the gist of the information imparted at these conventions deceive themselves woefully. The printed reports are valuable to the student of clayworking, but they do not give a tithe of the information of practical value that is exchanged in the lobby or "buttonhole" talks. It is in the face-to-face chats that the real important and practical information is disseminated among the members. This is no reflection on the convention proceedings, which are important and deserve careful study, but it is a recognized fact by all who have participated in any of these yearly meetings that the real well-springs of knowledge are only tapped in the personal interviews and private talks outside the convention hall. So we urge the thoughtful, enterprising brickmaker who seeks to improve his product and increase his profits by better and more economical methods of manufacture, to put his house in order and attend the conventions, both State and National.

BRICKMAKING ABROAD.

"A Chat on Brickmaking, Ancient and Modern," by A. Adams, to be found on another page, is an interesting account of brickmaking in England, having as its object the booming of a certain kind of brick made in a certain district known as the Fletton. The paper is interesting, too, in showing the divergencies that arise in the meaning of words in two countries whose mother tongue is the same. In England, we will be told, there are no dry pressed bricks; in America we have no semi-dry pressed, and yet they are same thing. "Dry pressed" is not strictly accurate, for a powdered clay, absolutely dry, when pressed into shape would not hold together. Semi-dry pressed is more exact, but our term, dry pressed, is sufficient, is well understood and is shorter. The English semi-dry pressed bricks contain, as a rule, more moisture as they leave the molds than our dry pressed bricks do, but that applies to everything in the British Isles. We know of no country on the globe that, taken the year round, has as much humidity everywhere and in everything as the United Kingdom. Another expression peculiar to our British cousins, a provincialism we might call it, is the "knot" or "knots" for clay. "The famous Fletton knots," says Mr. Adams, and "standing on the edge of the pit you will see the clay or knots." Bricks made on an auger machine are known only as "wire-cuts." A "blue brick" means a vitrified brick. Most of the vitrified bricks there are blue, or bluish black. It is the fashion to make them so, but the color is not what the maker has in mind. We have evidence of this where English brickmakers manufacturing vitrified brick in this country declare that they too make a "blue brick," and in proof of it offer a very fine specimen of vitrified brick of a reddish brown color.

THE FOLLY OF SECRETIVE METHODS.

It is hard perhaps for one who has never attended an N. B. M. A. convention to appreciate or believe that the members really and truly tell one another the hows and whys of their business. The uninitiated regard their personal knowledge in the light of trade secrets, to be jealously guarded from their competitors. This is all fol de rol. The fallacy of this idea of secrecy is well demonstrated by the following excerpt from a recent address by President Pritchett, of the Massachusetts Institute of Technology: "One of the great advantages of education is the preparation which enables a man to learn from other people, without having to wait to learn, bit by bit, from his own hard experience. The experience of those who have gone before is to be found in books; of those who are working to-day, in the technical papers; and one can acquire many times as much information from these sources as he could obtain without them. He can also gain information by traveling and by observation. There is so vast a store of common knowledge to be had from these sources that, except in very rare instances, a man will gain nothing whatsoever by trying to withhold the little mite he has himself found out. If a man has really become proficient in any line of work let him publish his ideas, tell other people about them, explain his methods and do as much as he can to teach others the same work. If his methods are found to be good ones his fame will widen, he will be consulted as an authority and will be in demand as a workman. If he does not do this, he may feel reasonably sure that some other person will, and that this other person will be the one who will eventually pull ahead, other things being equal."

TRADE LITERATURE.

The Barney Conveyor is the title of a unique pamphlet received from the Jeffrey Mfg. Co., in which is illustrated the system of handling brick mechanically, as devised and patented by Mr. J. W. Barney, of Kansas City, Mo., where, on the plant of the Diamond Brick & Tile Company, it has been in operation for several years. Those interested, and every brickmaker ought to be, can get a copy of the pamphlet by addressing the Jeffrey Mfg. Co.

Brickworks Engineering, by W. D. Richardson, Cleveland, O. This is a small but interesting book, which contains instructive matter of special interest to those contemplating the building of new brick and tile plants. The chapters on Examination of Clay Deposits, Testing of Clays, Brickworks Construction and the Building of Dryers and Kilns are of more than ordinary interest. Those desiring a copy of this little book are requested to advise Mr. Richardson direct.

"Martin's Magazine" is the title of a quaint little book being sent out monthly by the Henry Martin Brick Machine Co., Lancaster, Pa. As the reader may easily imagine, it is devoted principally to Martin machinery. Nevertheless, it contains much interesting brickyard chat. A sample copy will be mailed free to any address.

The Atlas Car & Mfg. Co., of Cleveland, O., are sending out a new catalogue of dryer cars, turn-tables dump-cars, portable tracks, railroad switches, crossings, etc., especially adapted to clayworking plants. The line of cars illustrated includes almost every variety of car known to the trade. A copy can be had for the asking by those who in writing mention The Clay-Worker.

Hoosier Clayworking Machinery is fully illustrated and described in an attractive catalogue received from the manufacturers, Madden & Co., Rushville, Ind. In addition to their line of brick and tile machines they also show a line of cutting tables, clay crushers, pug mills, brick and tile barrows and other appliances. They will be pleased to mail a copy free to any of the readers of The Clay-Worker who will send them their address.

The Kentucky Fire Brick Works, Portsmouth, Ohio, are favoring their friends and patrons with a beautiful collection of half-tone engravings of their plant, which is located at Fire Brick, Ky. The views are tied with a silk cord between dainty covers, beautifully embossed in gold, and bearing the inscription: "But clay and clay differs in dignity, whose dust is both alike."

The Handsomest Catalogue that has reached our desk during the month is that of H. S. Palmer's hollow concrete building blocks and machines, published by H. S. Palmer, Washington, D. C. The machines are operated by hand, and it is claimed that with a very little practice an attractive and substantial building block composed of sand and cement can be produced. The blocks are hollow and measure about nine inches high, ten inches thick and thirty-two inches long. The book is handsomely illustrated and shows the various forms of building block that can be made on the machine. Also a number of photographs of buildings constructed of the blocks. In such sections of the country as are long on sand and lime and short on clay, these blocks may prove acceptable to the builder, but we hardly think they will come into general use where good brick can be had at reasonable prices.

Written for The Clay-Worker.

BRICK VERSELETS AFTER LONGFELLOW.*

Should you ask me why these letters,
Why these pictures with the figures
On their pads to show the seasons
And the days and nights repeated,
Why this ever-constant drumming,
We should answer, we should tell you:
"We are hunting for new patrons
With the Red Men of the Forest;
We are striving for more friendships
With our simple advertisements
And their frequent repetition,
Seeking entrance to your wigwam."

Far and near our scout is traveling,
O'er the prairie, through the forest;
Forth he goes to search the country
For the game and fruits of all lands
That will keep us o'er the winter
Busy working at our wigwams
On the Tygart's Valley river,
In the State of West Virginia;
Busy also at our wigwams
In the Juniata valley,
On the Pennsylvania railroad;
On the Susquehanna river,
In the lands of Clearfield county;
On the Conemaugh so tragic,
At old Bolivar historic,
In the State of Pennsylvania,
Where the clouds curl from our smokestacks.
Busy making brick for market,
Busy mining coal to burn them,
Busy mining clay to make them,
Busy blasting rock to make them,
Busy burning lime to bond them,
Busy making molds to shape them,
Busy grinding, molding, pressing,
Busy burning, loading, shipping,
Busy filling orders sent us,
Busy hunting future orders
From our friends of old acquaintance,
From our friends of new acquaintance,
From the strangers of the Northland,
From the strangers of the Southland,
From the strangers of the Eastland,
From the strangers of the Westland,
Forth our scout is hunting all them.
Smoking now the pipe of friendship;
And we ask that he may enter
To your wigwam so enticing,
There that he may tell his story
How the pioneer brickmaker
Was the first to start a fact'ry,
As we learn in early hist'ry.
He it was that made the linings
For the lime kilns, the cement kilns,
For the furnace, for the smelter,
That have made the iron, copper,
Made the gold and made the silver,
Zinc and lead and all the metals
That have civilized the white man,
Made him greatest creature living,
Ruler of the earthly kingdom.
In your storehouse for the winter
Don't you need some brick to keep you?
If so, we can bring you plenty
That will answer every purpose,
Of the best the trade is offered.
Whether furnaces or smelters,
Whether cupolas or boilers
That have caused you trouble often.
We are anxious for cement trade
And will guarantee good service
If you give our brick a trial.
Open hearth is furnace practice
That we like to meet and master
With refractories superior.
Have your bungs been satisfactory?
We can please you if they have not
With a brick that beats the record;
"Crescent" brand, that has no equal.
"Juniata" is another
Brick that has become quite famous
Since we placed it on the market.
Oven brick are well established
That are made of our material.

It is useless to delay you
Further with our tales and stories.
Now the scout will mount his pony,
Hit the trail and seek the wigwam
Of another friendly listener.

Just a word before departing—
Don't forget the tribe REESE-HAMMOND
When you need some brick assistance;
Keep an eye upon their progress,
See their scout take through the forest,
Cross the prairie,
Climb the mountain.
They will not betray your friendship,
They will not destroy your wigwam.
Do not fear to trust their hunters,
Don't deny their brick a trial,
And good fortune will await you
And your tribe and children's children.

—Fire-Flashed Red Man.

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*From an advertising circular published by the Reese-Hammond Fire Brick Company, Bolivar, Pa.

TABLE OF CONTENTS.

Brickmaking on the Hudson.. 417
Clandestine Correspondence by Girl Employes 419
Brickmaking in the Land of Flowers 420
The Modern Clayworker....... 420
Paving a Country Road With Brick 422
Cost of Production 424
An Up-To-Date Brick Factory. 425
Light and Heat................... 426
Drain Tile for the Arkansas Valley—A Factory on the Plain. 428
A Chat on Brickmaking, Ancient and Modern............. 429
An Unusually Large Cutting Table. 432
Bone Porcelain.................. 432
A Thriving Pottery Town...... 433
Trenton, N.J.—Its Brickmakers and Potters.................... 434
Double-Deck Dryer Car......... 435
Detroit Brick and Building News...... 436
By The Light of the Kiln Fire. 437
Foreign Scrapings 438
Clay Dust...................... 440
Obituary—John A. Day......... 441
Barney Brick Conveyor........ 441
Official Announcement 458
Extensive Clay Deposits Discovered in Wisconsin......... 459
New Jersey's Clay School 459
Arbitration's Victory........... 459

CORRESPONDENCE:

Down East....................... 436
The New York Market.......... 442
St. Louis Brick and Building News. 443
Buffalo's Busy Brickmakers.... 452
Wisconsin Building News...... 452
Pittsburg and Western Pennsylvania Clay Industries..... 453
Capital News..................... 453
Handling Brick from Kiln to Car.............................. 454
Wants More Buttonholes 454
Brick Walls...................... 454
Wants to Start a New Brick Plant............................ 455
Brickyard Beverages............ 455
The Strength of a Brick........ 455
Good Place for a Vitrified Brick Plant 456
Wants to Know How to Make Flower Pots.......... 456
Like Hot Cakes 456
Warrenite Wanted 456
Improved Kilns Wanted....... 456
Pacific Coast News............. 457
Brickmaking Down in Maine. 459
Ex-president F. H. Eggers Given a Verdict 459

EDITORIAL:

Convention Dates................ 458
Current Comment 460
Thanksgiving 460
A Clay-Worker Epoch 490
Convention Thoughts 460
Brickmaking Abroad........... 461
The Folly of Secretive Methods 461
Trade Literature 461
Editorial Notes and Clippings. 464

MISCELLANY:

The Original Porcelain Manufactory. 432
Too Much of a Good Thing is too Much............................ 435
Emperor of Germany Turns Potter 436
The Fire Tax 458
The Force of Repetition........ 458

Index to Advertisements on Front Inside Cover Page.

FOR SALE—One repress horse-power, new; one horse-power tile machine dies 3 to 8 inches; brick die tables. All complete; for sale cheap.
H. H. WRIGHT,
11 1 c Maitland, Mo.

FOR SALE—A good Carnell hand repress which has been used but little and is as good as new. Price, f. o. b. cars Sandusky, O., $35.
D. B. CHAMBERS,
11 1 d k Sandusky, O.

WANTED—One hundred second-hand single or double-deck stiff-mud dryer cars. Latest improved roller bearings and in good condition. Address
DON VALLEY BRICK WORKS,
11 1 d 34 Toronto St., Toronto, Ont., Can.

WANTED.
Position wanted by man practical in enameling bricks, terra cotta, art tiles, etc.; is a good burner. The State of California preferred.
PORCELAIN,
11 1 cm Care Clay-Worker.

NOW OPEN TO ENGAGEMENT—Twenty years' experience as superintendent soft clay and wire cut. Burn wood or coal. Unquestionable references as to character and executive ability. Address
BALTIMORE BRICK COMPANY.
11 1 d Richmond, Va.

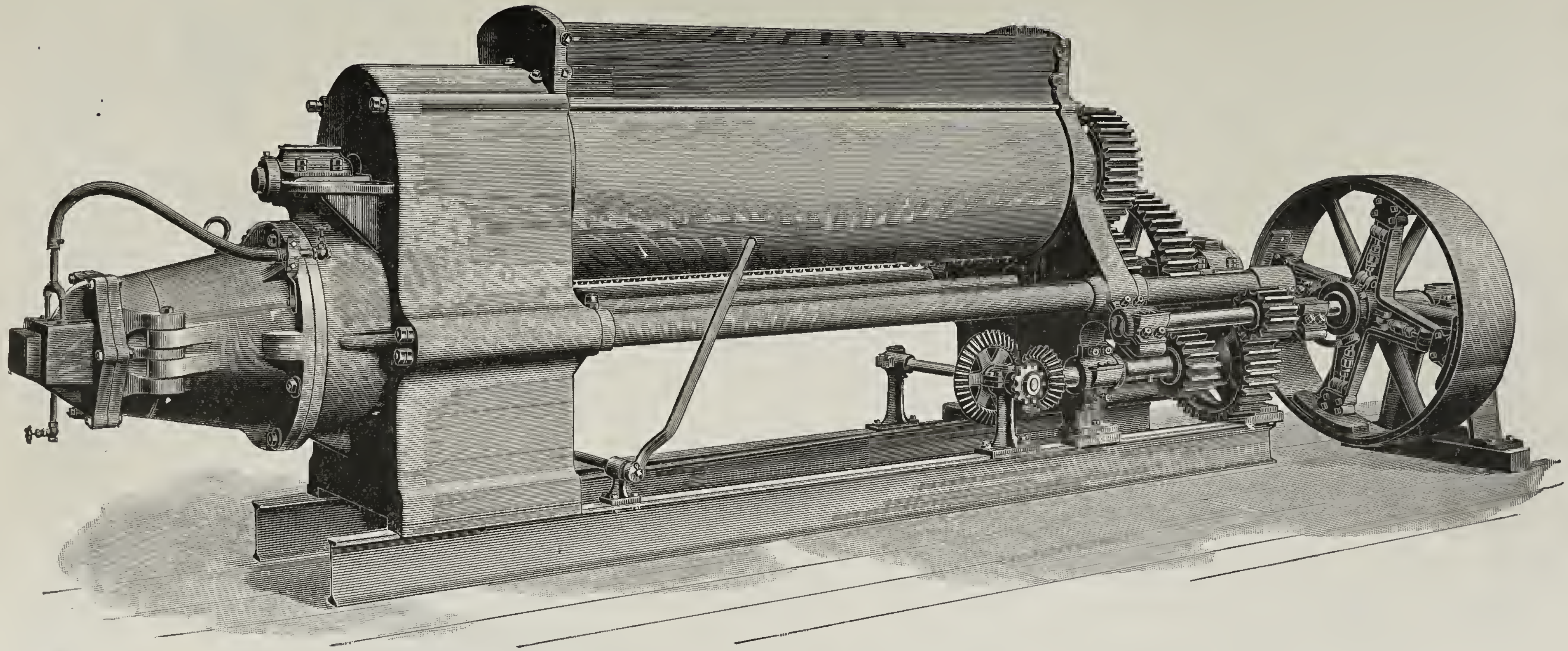
WANTED—Position as superintendent; understands the manufacture of soft and stiff mud brick; also drain tile. Can furnish reference on my personal character as well as my practical knowledge of the brick and tile business. Address
C. B. MAYHUGH,
11 1 c 160 Vine Street, Ravenna, O.

WANTED.
Position as a press brick setter on burner in South and West or Old Mexico. Can give good references.
F. W. S. KING,
2115 East Twenty-seventh Ave.,
11-1-c Denver, Col.

For Sale, Wanted, Etc., Ads. Continued on Pages 468, 469 and 470.

THE HEAVY BRICK MACHINERY

Is made by Raymond. It is not as Cheap as some others, but it lasts. It has Staying Qualities. You Avoid Expensive Break Downs, and Incidentally Break ups by using it.

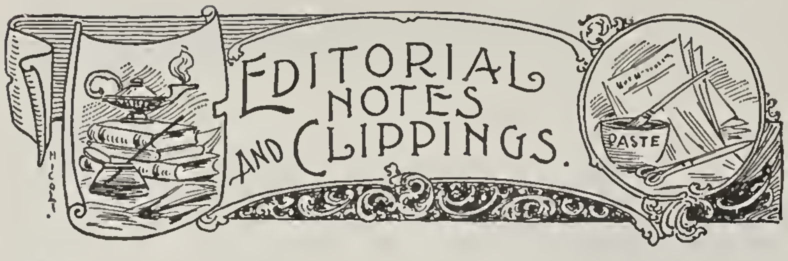


WE DON'T MAKE all the Brick Machinery sold in the U. S., but those who use it say it is the best. We have every reason to believe this is true because that is just what we try to make. We can attribute the unprecedented demand for our machinery to no other reason than the fact that it is strong and heavy and satisfies the trade. Users of our machinery are our friends because they get good value for their money.

The C. W. Raymond Co.

DAYTON, OHIO, U. S. A.

NEW YORK OFFICE: 39 and 41 Cortlandt Street.



EDITORIAL NOTES AND CLIPPINGS.

Walter C. Greening will establish a big brick plant at Danville, Ky.

The Capital City Brick Company has been granted a charter at Atlanta, Ga.

Simon, Botts & Striekert are erecting a new brickmaking plant at Brenham, Tex.

The Bloomville (O.) Brick Company has been incorporated with $13,000 capital stock.

The Montello Brick Company is erecting a large addition to its plant near Reading, Pa.

The tile factory of John S. Welden, at Lebanon, Ind., was destroyed by fire the first inst. The loss is estimated at $3,500.

James M. Alexander, Helena, Mont., writes that he is in the market for brickmaking machinery.

The Tygart Fire Brick Company are making extensive improvements in their plant at Fullerton, Ky.

Edward Van Antwerp writes that he contemplates the establishment of a drain tile factory at Dora, Minn.

Frank Rivenberg has purchased a one-third interest in the Waterloo Brick and Tile Company at Cedar Falls, Ia.

J. Davis Peed and others of Norfolk, Va., have purchased the plant of the Shingle Creek Brick Company, Nansemond, Va.

The plant of the Ogden Brick Company, at Binghamton, N. Y., was slightly damaged by fire recently. Loss was covered by insurance.

M. D. Davis, John D. Norton and M. Cromberg, of Detroit, Mich., contemplate the establishment of a brick plant at El Paso, N. M.

J. C. B. Oskins and others contemplate the erection of a plant at Portsmouth, O., for the manufacture of hollow block for foundations.

The Simons-Fout Brick Company, San Francisco, Cal., sustained quite a severe loss by fire recently. The origin of the fire is not known.

The Rapid City Cement and Brick Company has been incorporated to manufacture brick at Rapid City, S. D. They have a capital stock of $300,000.

Ebensburg, Pa., wants a brickyard, and there is a likelihood of a brick company being organized to build it. Larimer & Davis can give particulars.

The Livingston Brick Company, Livingston, Tex., has been incorporated by W. D. Willis, George T. Savage and S. M. Peters, with $4,000 capital stock.

The Halifax Brick and Tile Company, of Seabreeze, Fla., has been incorporated with $25,000. They have discovered a superior bed of clay about nine miles above Seabreeze, on the Halifax river, and will at once begin the erection of the plant. C. P. Lund, J. D. Marsden and F. A. Mann are interested.

M. L. Archibald, Santa Cruz, Cal., advises us that he would like to purchase a well-equipped brickyard. He is not particular as to location, so there is a good market for the product.

The West Waynesburg Brick Company, Waynesburg, Pa., was damaged to the extent of $800 by fire recently. This is the second fire at the plant this year.

The Elmira Shale Brick Company, of Horseheads, N. Y., has been incorporated by R. G. Eisenhart and H. C. Stowell, of Horseheads, and J. P. Meyer, of Elmira.

Beaumont, Tex., is to have a new brickmaking plant. The company will be known as the Diana Brick and Tile Company, and the plant will have a capacity of 100,000 pressed brick daily.

The Southern Brick and Tile Manufacturing Company has been organized with headquarters at New Orleans, La. They will erect a plant in southern Louisiana of 35,000 daily capacity.

The Euclid Shale Brick Company, of Cleveland, O., has been incorporated by John E. Wheal, H. J. Wheat, J. J. Kelly, T. J. McManus and T. C. Willard. The capital stock is placed at $50,000.

The Saginaw (Mich.) Clay Mfg. Co., Tennessee Paving Brick Co., Chattanooga, and George H. Clippert & Bro. Brick Co., Detroit, are all installing the American Blower Co.'s Waste Heat Dryers.

W. S. Cook, S. A. Norman, J. E. Wright and others have purchased the plant of the Mayfield (Ky.) Vitrified and Pressed Brick Company. The name has been changed to the Mayfield Brick Company.

Articles of incorporation have been filed by the Barton Lumber and Brick Company, of Jonesboro, Ark. The officers are P. C. Barton, president; A. J. Tatum, vice-president, and A. W. Hall, secretary and treasurer.

The Utica Pressed Brick Company, Utica, N. Y., has been incorporated with $500,000 capital stock. John E. Hardman, Montreal, Canada; C. T. Willard, New York city, and Alfred Putnam, Utica, are the directors of the company.

A new company has been organized at York, Neb., to manufacture building and sidewalk brick. The gentlemen interested in the company are George W. Post, E. J. Wightman, George W. Schreck and Thomas W. Smith.

George S. Cox, East Liverpool, O., manufacturer of brick and tile-cutting wire, writes that trade has been splendid the past season, and that he had to enlarge his shops in order to enable him to meet the demand for his product.

The Curtisville Tile and Brick Company, Curtisville, Ind., write that they have had an unusually good season. They are still running full blast and will not shut down until some time in January, and the outlook for the season is the best ever."

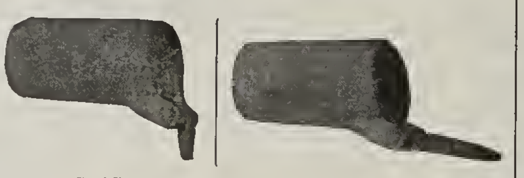
Mr. Antonio G. Canalizo, of Mexico, is now sojourning in New York city. He is investigating the manufacture of sand and lime brick and will be pleased to receive catalogues of machinery, etc., suitable for that process, which may be ad-

[CONTINUED ON PAGE 466.]

The Boss System of Brick Burning

requires no outside furnaces which are expensive to build and maintain; will burn slack and poor grades of fuel which cannot be consumed with success in any other manner.

Peek Hole for Brick Kiln



CLOSED. OPEN.

They are not only very convenient, but will save the cost of themselves at the burning of every kiln.

To users of

Slip Clay.

I have an extra quality of Slip Clay which has been used by potteries for over forty years. It contains known quality. I can fill orders promptly.

Send for . . .
Descriptive Catalogue.

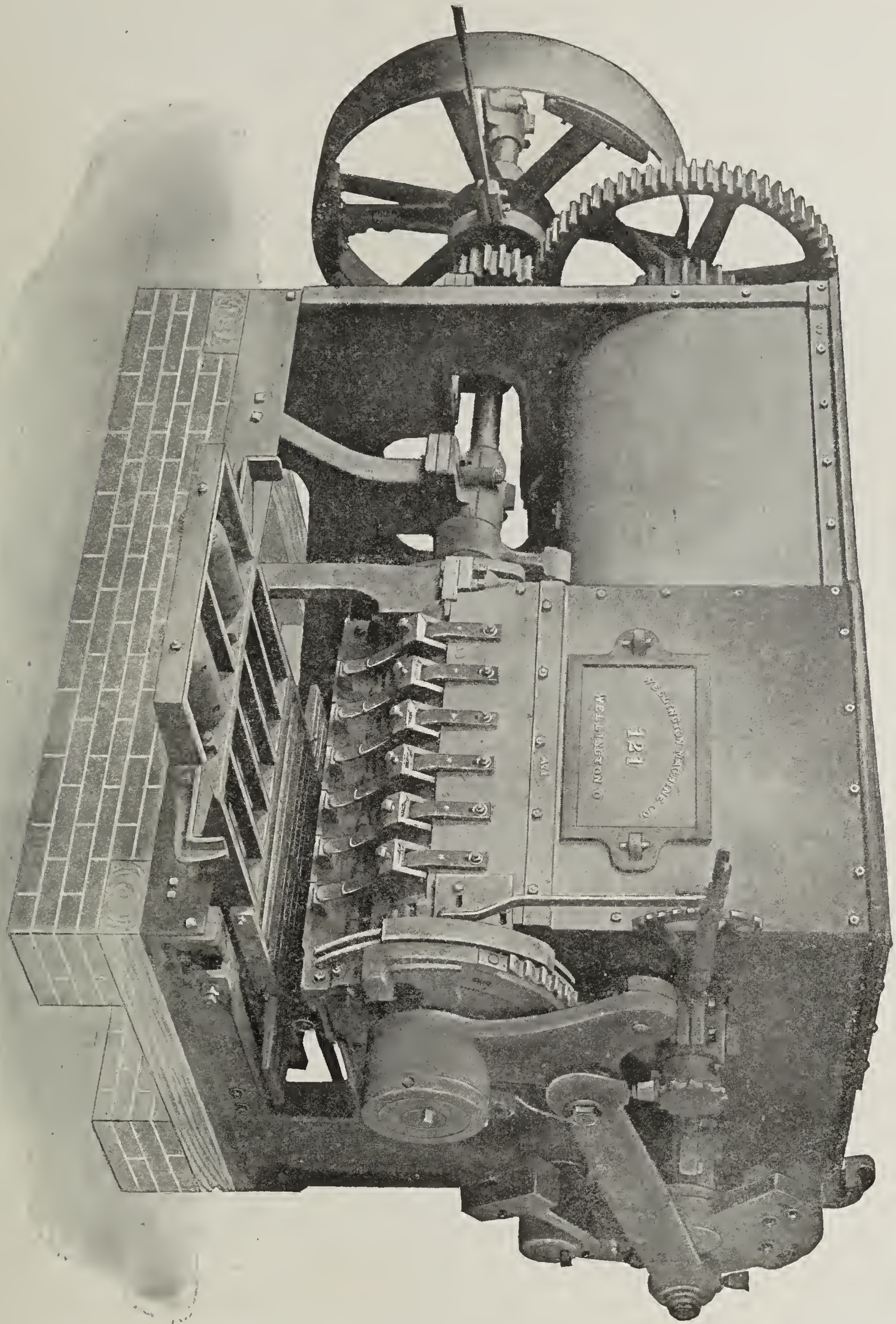
JOHN C. BOSS, Elkhart, Indiana, U. S. A.

The "Big No. 6" "Monarch" Brick Machine.

OVER
175
"Monarch"
Brick
Machines
in use.

OVER
500
"Quaker"
Machines
in use.

WRITE to us regarding Disintegrators, Pug Mills, Mould Sanders, Sand Dryers, Smooth-roll Crushers, Moulds, Barrows, Trucks, Winding Drums, Dump Carts, Elevators, Dump Tables and all kinds of Kiln Castings.



REMEMBER:
You are losing money wheeling brick unless you have our
ROLLER-BEARING BARROWS.

The Wellington Machine Co.,

WELLINGTON,
OHIO.

Send for Catalogue.

EDITORIAL NOTES AND CLIPPINGS.—Continued.

dressed to him in care of the Export Club, New York city. He may also purchase considerable brick machinery for the manufacture of press brick.

We are advised by C. P. Pfaltzgraff, York City, Pa., that he is in the market for a tile machine. Would buy a second-hand machine if in good condition.

N. P. Hale, 2431 Sixth street, Minneapolis, Minn., writes that he wishes to purchase a site for a brickyard. He has all the necessary machinery, but is looking for a desirable location.

T. L. Moore, treasurer of the Raymondville Paper Company, Watertown, N. Y., writes that they have an excellent site for a brick plant, and will be pleased to correspond with parties looking for a desirable location.

The plant of the E. A. Chatfield Company, at New Haven, Conn., was totally destroyed by fire early on the morning of Nov. 8. The loss, which is partly covered by insurance, is estimated at $100,000. The plant will be rebuilt.

The new brick and tile plant at Rockwell City, Ia., is now completed and brick and tile are being turned out at the rate of 20,000 of the former and 10,000 of the latter per day. Messrs. Steinberger & Marriott express themselves as well pleased with the outlook for their product.

The marriage of William H. Fish, president of the Union Brick and Supply Co., Columbus, O., and Miss Bertha Cockell occurred at the Church of the Good Shepherd, Columbus, October 20. Mr. and Mrs. Fish left shortly after the ceremony for a trip to Arizona.

The Paragould Brick Company has been organized at Little Rock, Ark., with $10,000 capital stock. The incorporators are: R. C. Grizzard, president; J. R. Hafford, vice president; Chas. Pratt, general manager; M. F. Collier, secretary, and H. W. Woosley, treasurer.

A charter has been granted the American Brick and Clay Manufacturing Company under the laws of New Jersey. The company is composed principally of men from Pittston, Pa. The plant will be located at Saylorsburg, Pa. W. R. Chapman, of Wyoming, Pa., will be the manager.

The Olive Hill (Ky.) Fire Brick Company have had an unusually prosperous season. They recently had to refuse orders. The brick furnished by the Olive Hill Company are of a very superior grade, refractive to a high degree, and are used extensively in the lining of blast furnaces and in the erection of coke ovens.

The Coffeyville Brick and Roofing Tile Company is the name of a new concern recently incorporated at Coffeyville, Kan., for the purpose, as the name implies, of manufacturing brick and roofing tile. The company has a capital stock of $75,000 and work on the new plant will begin at once. Those interested are J. E. Exner, W. A. Stuckey and Charles E. Munson.

The Berry Brick Company has been chartered by George O., Alfred F. and M. N. Berry to manufacturer brick in Russell county, near Columbus, Ga., where they are erecting a new plant. This brick plant will be operated separately from that of George O. Berry, at Columbus, and will be under the supervision of M. N. Berry.

The plant of the Bennett Brick Company, at Muncie, Ind., was closed down recently for a couple of days on account of a Hallowe'en prank by which a piece of a brick machine was removed, and duplicate parts of the machinery had to be ordered from the manufacturer. Mr. Bennett has had a very good season, running the plant full force and turning out 40,000 brick daily.

The "New South" Brickmaking machinery, manufactured by Messrs. J. C. Steele & Sons, of Statesville, N. C., is fast proving itself better than the best, as indicated by a continued increase of business. These people have recently booked an order for a large outfit to go to Tampico, Mexico; also have received an order for one of the largest outfits, to be shipped to Rock Mount, N. C. Their new automatic end cutter captivates everyone who sees it in operation. It has proven itself a long step in advance of any other.

The immense new plant of the National Drain Tile Company, Terre Haute, Ind., is being pushed to completion as rapidly as possible. They hope to be in full operation by January. When completed it will be the largest drain tile plant in the world, with an output of seventy-five carloads of tile a week. The machinery and equipment throughout the plant will be modern in every particular, and comes from the shops of Taplin, Rice & Co., Akron, O.; Madden & Co., Rushville, Ind., and the J. D. Fate Co., Plymouth, O. The works will be as nearly fireproof as possible to build and will be a model plant in every respect.

S. L. Bigler & Co. have sold their brick plant at Harrisburg, Pa., to the McCormick estate. They will build a new brickyard of 100,000 shale brick per day.

W. A. Twenhoefel, S. A. Alsip and T. C. Hoffman have organized the Standard Brick Company, at Belleville, Ill. The capital stock of the company is $25,000, all paid in.

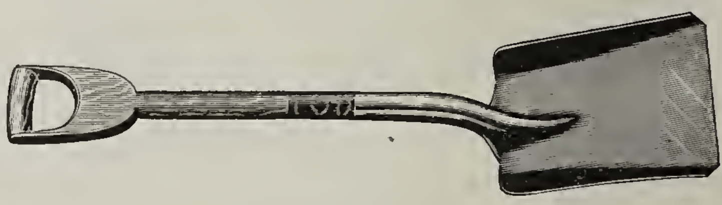
The Crooksville Brick Company, of Crooksville, O., has been organized and has been incorporated under the laws of the State of Ohio, and will erect a plant for the production of pressed brick at once. Excavating has been started and the plant will be erected at once. They will erect one kiln only at first, but will erect three more later on.

The Tennessee pottery, owned by Maxwell Bros., of Macomb, Ill., was burned to the ground November 6, the loss being in the neighborhood of $7,500. The fire is thought to have started from sparks from a locomotive. There was no insurance on the plant. Arrangements had been made whereby the plant was to have been sold to Chicago parties, who were to put in machinery for the manufacture of brick.

The Cleveland (O.) Car Company advise us that they have moved into their new shops at Lorain street and the Lake Shore railway, where they will be glad to welcome visiting clayworkers. Referring to notice of their steel pallets given in the October Clay-Worker, Mr. W. E. Ellenberger, the treasurer and general manager, says: "We wish to thank you for the valuable service rendered through the write-up given in The Clay-Worker on 'Improved Aluminized Steel Pallets.' We have had inquiries for upward of 100,000 since this issue of your paper."

The International Cement Company, of Philadelphia, has purchased a tract of land at Elizabeth, Pa., and will erect a plant at that town for the manufacture of cement from furnace slag under the patents held by Dr. Otto Wuth, of Pittsburg, who is largely interested in the new company. The location of the plant at Elizabeth, Pa., in the Monongahela valley, about thirty miles above Pittsburg, will enable the company to obtain the slag from the nearby furnaces at practically no cost. The company will erect a plant at a cost of $250,000.

The Kells Foundry & Machine Co., manufacturers of the Original Kells Stiff Mud Brick Machines, and who have been located at Adrian, Mich., for over thirty years, have moved their sales offices to Hudson, Mich. The plant at Adrian is to be largely increased to a capacity of over double its present size, this increase being necessary to take care of the very large increase in their business. The "Kells" machine, it is claimed, was the first stiff mud auger machine placed on the market, and has been continually improved from time to time, and judging from the large increase which it has been found necessary to make, we would presume that the machine has been very satisfactory to its users.



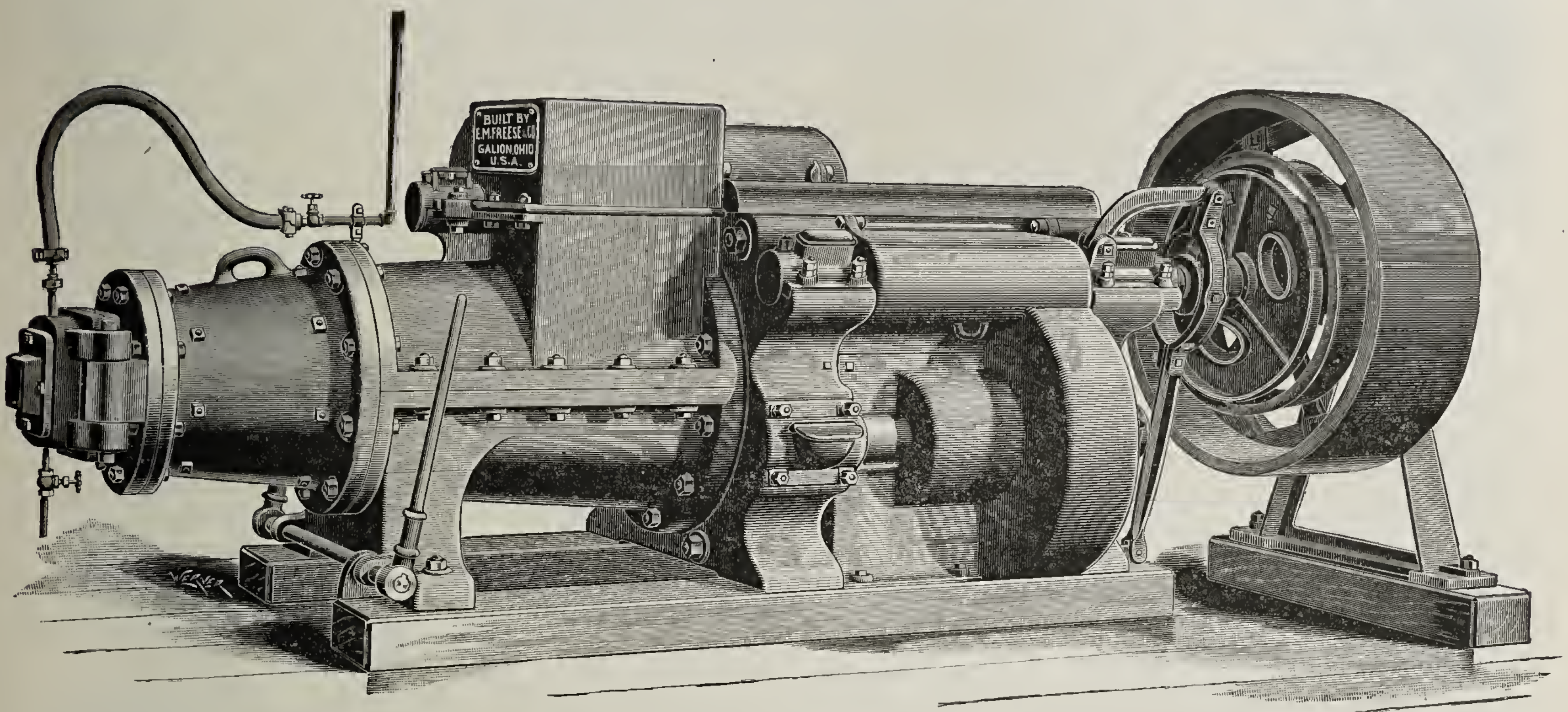
Our Shovels Will Do the Work.

Made Extra Heavy if You Say.

Write to us for circulars and prices on our full line of Cleveland pattern, hollow back goods, which are warranted.

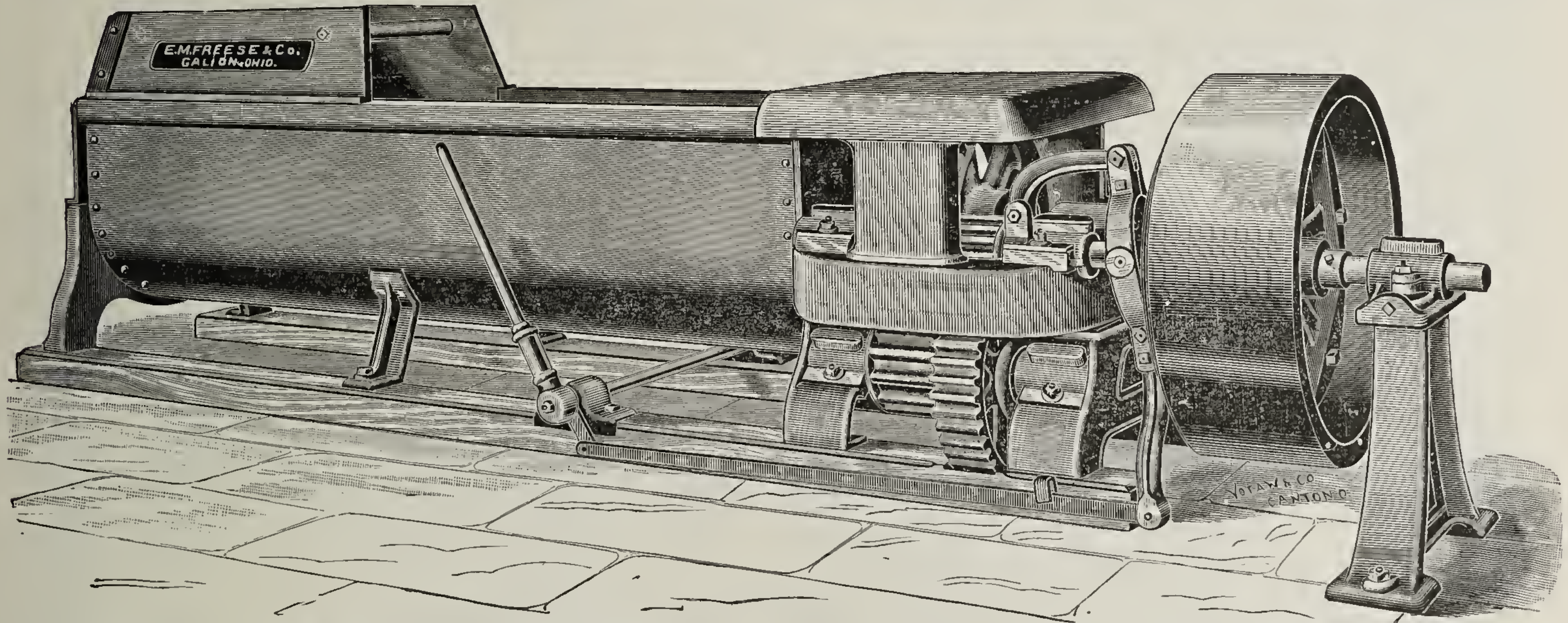
The Avery Stamping Co.,
CLEVELAND, OHIO.

Our Mammoth Brick Machine


BUILT BY
E.M.FREESE & CO.
GALION, OHIO
U.S.A.

THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug-Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.
VOTAW & CO
CANTON O.

THESE PUG-MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitted for making a fine quality of brick.

E. M. FREESE & CO., = = Galion, Ohio.

Mention The Clay-Worker.

See Ads. on Pages 496 and 497.

Written for The Clay-Worker.

POTTERY NEWS.

THE FALL TRADE has begun, and with it comes the usual rush that always comes at this season of the year. All of the potteries in this vicinity are very busy, but not so busy as they will be about a month later.

A great many buyers have already purchased their holiday goods, but there are still a great many unsupplied.

The new addition recently erected by the Knowles, Taylor & Knowles Company in this city has been placed in complete operation and the company are now running their entire works full.

The new kiln being erected at the works of the Edwin M. Knowles China Company, of this city, is nearly completed and it is expected by the company to have the same ready to fire within the next two weeks.

The new stilt and pin pottery being erected in Wellsville by Burgess & Co. is progressing as fast as could be expected. The company has taken the factory formerly occupied by the National Manufacturing Company and is now erecting one kiln, which will be increased, more than likely, later on. All of the machinery for the new works has been shipped from this city and the new works will be in operation within the next two or three weeks. This is the building which has been talked of so much for a white ware pottery, and almost a year ago a porcelain company came almost taking this building and operating same as a large electrical porcelain works.

Several improvements are being made at the works of the East End Brick Works, of this city. Messrs. Gamble and Surles have almost rebuilt this works since taking hold of the same almost two years ago. New kilns have been erected and the works almost entirely rebuilt throughout.

The Maddock Pottery Company, of Trenton, N. J., are making several improvements in the way of ventilation of their pottery in that city. The contracts have been let for the work, which will be done at once.

The largest vase that was ever made was recently turned out at the works of the Trenton Fire Clay and Porcelain Company, of that city. The vase has been offered to the Ladies' Association of the McKinley Hospital for use during the fair to be given under their auspices soon. It is said that the price asked by the manufacturers for the vase is $10,000.

A fire occurred in this city which caused damage which will amount to $15,000 or $20,000, and which will prevent the building which was burned from being occupied for some time to come. The building was owned by H. N. Harker, secretary and treasurer of the Harker Pottery Company, of this city, and was formerly owned by Homer Laughlin, formerly of the Homer Laughlin China Company, of this city. The building was one of the finest in eastern Ohio.

The new pottery being erected by the Logan Pottery Company at Logan, O., is progressing as fast as possible. The plant will have a capacity of two 25-foot kilns, which will be devoted entirely to the production of stone ware specialties. The kilns have both been erected, and the buildings have been completed and are now ready to receive the machinery, which has already been shipped from this city. The company expects to have the entire plant in full operation by the last part of November.

The new pottery which has been built at Crooksville, O., under the name of the Crooksville China Company, for the production of white ware, expects to start up two weeks from the first day of November.

The Keystone Pottery Company, another new concern of Crooksville, O., have their plant completed, but are having trouble in getting their kilns under way. However, by the time they are ready for the same, they yet expect to have them ready.

The Lancaster Pottery Company, of Lancaster, O., has been incorporated and will erect a two-kiln plant at Lancaster, O., at once for the manufacture of stone ware and stone ware specialties. Mr. Lewis T. Jack, formerly vice president of the Curtis Iron and Steel Company, operating the Muskingum Valley Sheet Mills, of Zanesville, O., is at the head of the new concern. Mr. Charles McMann, formerly connected with the same company, is also interested in the deal, and both gentlemen have removed to that city.

The Peters and Reed Pottery Company, of South Zanesville, O., are making several additions in the way of machinery, which they expect to have under full headway by the middle of the present month.

From Marshalltown, Ia., comes the report that the buildings of the new Marshalltown Pottery Company are almost completed, and that the plant will be in operation this year.

The Great Eastern Clay Manufacturing Company, of Trenton, N. J., has been incorporated at that city with a capital stock of $1,000,000. The company's charter gives them the privilege of manufacturing, buying and selling all kinds of clay products.

It is reported that the Sebring China Company, of Sebring, O., who have just completed a four-kiln plant, will add four more kilns to the present complement. The new work is now in operation and it is probable that the entire four kilns will be erected.

The Crown Potteries Company, of Evansville, Ind., are experiencing some little trouble in getting sufficient kilnmen to successfully operate their works in that city. The company have had some trouble for a long while at both the works at Evansville and the ones at Peoria, Ill. However, this is fast being done away with, and the situation is getting better every day, and the shortage of hands is nothing like it used to be in both the above mentioned cities. TOM POTTER.

East Liverpool, O.

WANTED, FOR SALE, ETC.

WANTED—200 double-deck dryer cars; two 9-foot dry pans, either wood or iron frames. Address

SAM'L L. BIGLER & CO.,
Harrisburg, Pa.

FOR SALE—Brick and tile factory; good location and business; as good clay as can be found in State of Illinois. Address

BONHAM & BRIGHAM,
11 1 cm Watseka, Ill.

WANTED—Position by capable single man. Fourteen years in brick business, ten years with one firm. Don't drink nor smoke. Address

PRACTICAL,
11 1 c Care Clay-Worker.

FOR SALE.

New nine-foot dry pan, iron or wood frame.

New nine-foot wet pan, iron or wood frame.

W. H. KNOWLES,
11 1 cm Ottawa, Ill.

FOR SALE—A large number of cast iron and steel, single-deck brick cars. These cars are equipped with anti-friction bearings and are in perfect condition. Of modern construction. Address

CARS,
8 4 d Care Clay-Worker.

FOR SALE—Good dry-pressed brick plant, situated in county seat town in Iowa. Railroad, cheap coal, no competition, good demand for product, in good running order. Correspondence solicited. Inquire of

W. E. BERRY,
11 1 c Guthrie Center, Ia.

FOR SALE—Cheap, one automatic side-cut brick cutter which cuts 18 brick at a time, and 30 feet of off-bearing belt, the Bonnot Company make; it can be attached to any stiff-mud machine. Also have uprights and steel decks to fit up about 250 double-deck cars. Address

C. H. G.,
11 1 d Care Clay-Worker.

Additional ads. under Table Contents, page 462.

Let us quote you prices on Savage Fire Brick **FOR** Bag Walls, Kiln Linings, Boiler Settings.

Savage Fire Brick Co.,

Pittsburg Office, 810 Park Bldg. KEYSTONE JUNCTION, PA.

THE BEST IS THE CHEAPEST in trade journalism as in everything else. The Clay-Worker is the best magazine published in the interest of the Brick, Tile and Pottery trades. It contains more original and valuable matter than all its cotemporaries combined. It is the most widely circulated and best read. $2.00 a year. Every issue worth more.

Willard D. Richardson, A. M.
Clay Technologist. Brickworks Engineer.

Member of American Ceramic Society.
Member and Ex-President of National Brick Manufacturers' Association of the United States.
2717 WARNER ROAD, CLEVELAND, OHIO.

Expert service in exploiting and testing clay deposits, in designing and constructing brick plants and in investigating and correcting faults of manufacture.
Brick Dryers and Brick Kilns to satisfy every requirement.
Correct in principle and design. Most successful in practice.
Send for pamphlet—"Brickworks Engineering."

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than $1.00.

WANTED—A second-hand chaser pan in fair condition. State size and price.
MACBETH-EVANS GLASS CO.,
11 1 cm Pittsburg, Pa.

WANTED—An experienced man in the art of brickmaking to join company now forming to make brick near the city of LaCrosse Wis. Address, W. SMITH GRUBBER CO.,
10 2 d b LaCrosse, Wis.

WANTED—To correspond with some one who understands brick and tile making, with the object in view of starting a plant at this place. J. L. ALDRED,
11 1 c Pulaski, Ill.

FOR RENT—Brick-yard property, about forty acres, centrally located, within Louisville city limits; can be subdivided if desired. Call upon or address
UNION CEMENT AND LIME CO.,
11 1 2 d 421 W. Main st., Louisville, Ky.

WANTED—A practical brickmaker with $10,000 to establish a brickmaking plant in a good location, in the northern part of New York State. Land and building free. References required. Address
11 1 d E. V., care Clay-Worker.

WANTED—A thorough, practical and experienced man to help design and erect a new hot-air drying system. Must have much experience and a good record. None other need apply. Good position for the right man. Address "WASTE HEAT,"
11 tf d Care Clay-Worker.

WANTED.

Thirty-six 8-inch I beams ⅜x14 to 16 feet long.
Four 12-inch channels ⅜x30 feet long.
Six angles 5-16 4x4x20 feet long.
New or second hand. Address
QUEEN CITY BRICK AND TILE CO.,
11 1 d Cumberland, Md.

FOR SALE—A lease, with the privilege of purchase, a tract of land lying near the mouth of the Illinois river, in Jersey County Ills., containing an inexhaustible supply of the finest shale, a vein of Gypsum. and also said to be underlaid with a fine vein of coal. Rail and river transportaition. T. P. PLUMRIDGE.
10 tf d 1119 Missouri Trust Bldg., St. Louis Mo.

FIRE-BRICK MAKER.

WANTED—A young man of good character and habits, with sufficient technical knowledge to make analysis of fire clays, make sample brick for test purposes and follow the testing of same in furnace work. One qualified to act as superintendent of fire-brick works when constructed preferred. CHAMBERS BROS. CO.,
52nd St., below Lancaster Ave.,
11 1 d Philadelphia, Pa.

Continued on Next Page.

DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS

CROWN DRYER

BEST, CHEAPEST—BECAUSE

Simplest. Most durable. Uses one-third fuel of others. Insures better product. Facilitates burning. Operates winter and summer. No danger of fire.

FULLY GUARANTEED. The Crown Dryer Co., New England Bldg. CLEVELAND, OHIO.

DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS DRYERS

WANTED, FOR SALE, ETC.—Cont.

FOR SALE—Swift's Wonder of the Age Grateless Furnace Kilns. Cost of construction less than ½. Write for particulars.
F. E. SWIFT,
7 tf d Washington, Ia., U. S. A.

NO DRY PRESS BRICK PLANT complete without the Carmichael Clay Steamer.
T. W. CARMICHAEL,
Inventor and Manufacturer,
6 d tf Wellsburg, W. Va

FOR SALE — 100 Chambers cage roller-bearing dryer cars, wrought iron and pipe frames, with wooden and perforated pallets. Prices and better information given on application.
ASHEVILLE BRICK AND TILE CO.,
10 3 cm Fletcher, N. C.

WANTED.

One second-hand granulator.
One second-hand conical-shaped crusher.
One belt clay elevator.
One pug mill.
Address B,
9 4 d Care of Clay-Worker.

WANTED—Situation as superintendent of brick plant, a man who has a thorough knowledge of burning paving, building and fire brick; also a machinist by trade and good organizer of men; of successful experience and strictly temperate. Address
FAUL,
11 1 c Care Clay-Worker.

MACHINERY WANTED.

Any one having stiff mud machinery for sale will please communicate with us. We are also in the market for a brick dryer. Address
THE BRANDT CLAY PRODUCT CO.,
9 tf d Binghamton, N. Y.

FOR SALE—A three-mold Boyd brick press which is in good condition. Have given up the dry-press process entirely, else would not sell this press. Will be sold cheap for cash or on time to thoroughly responsible parties. Address
NEW ENGLAND STEAM BRICK CO.,
9 tf d Providence, R. I.

FOR SALE.

One 9-foot Dry Pan, iron frame.
One Arnold Steamer.
One Revolving Screen.
One Miller Hand Press.
One 15-H. P. Portable Engine and Boiler.
THE T. B. TOWNSEND BRICK & CONTRACTING CO.,
10 tf d Zanesville, Ohio.

FOR SALE.

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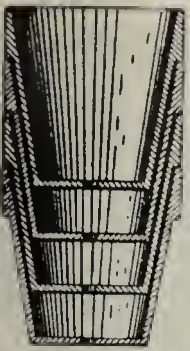

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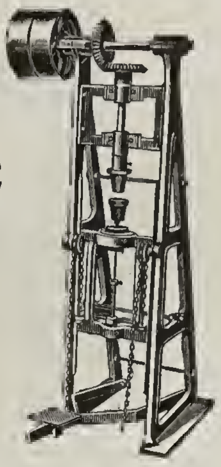

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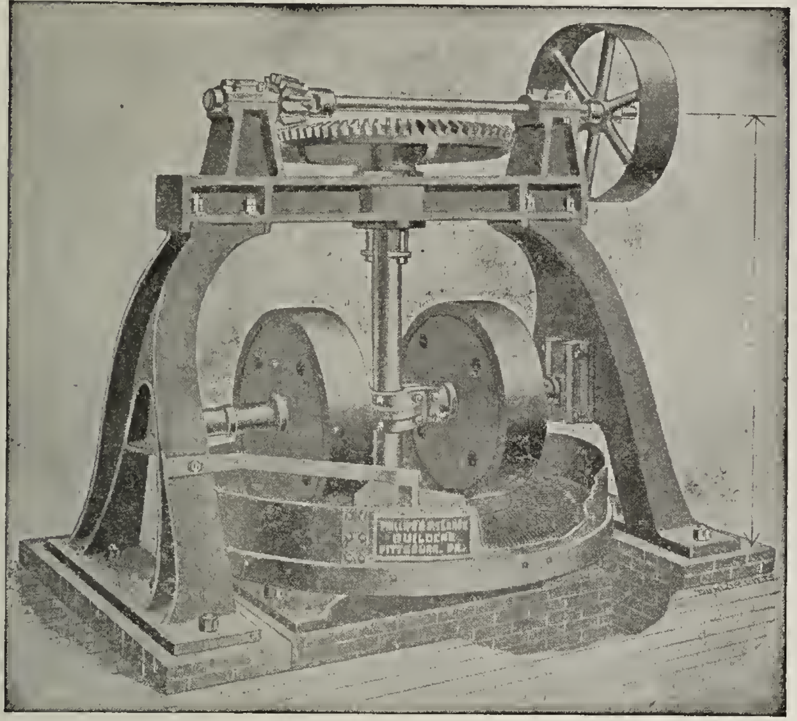

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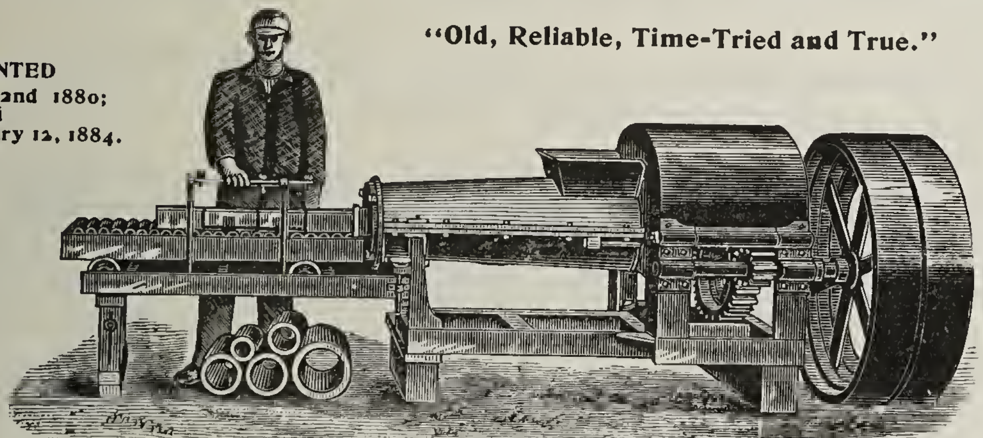

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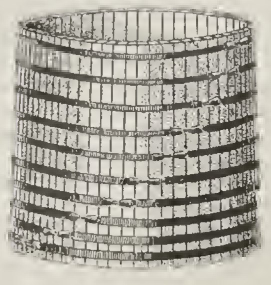

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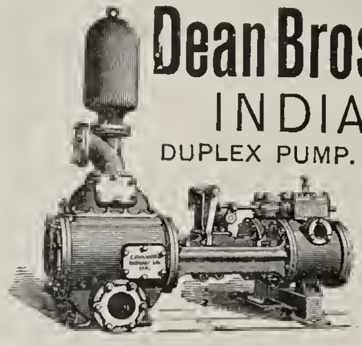
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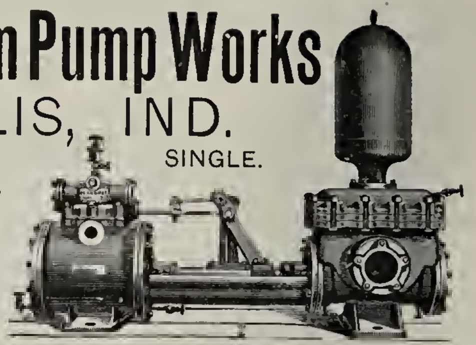
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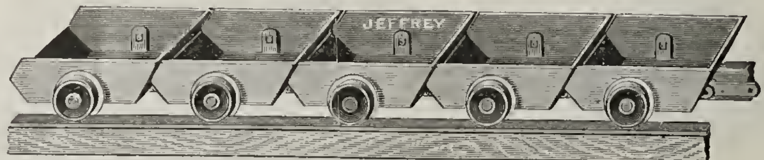

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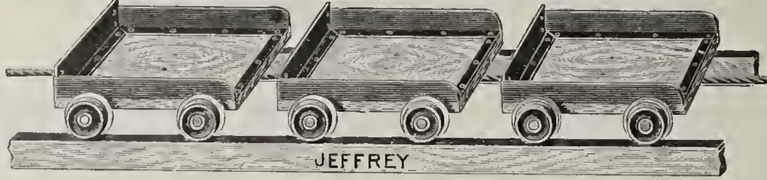

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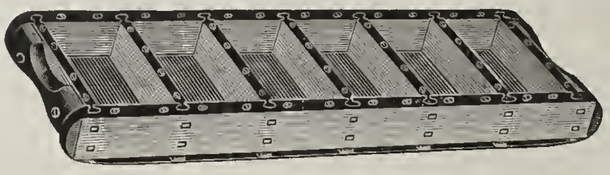

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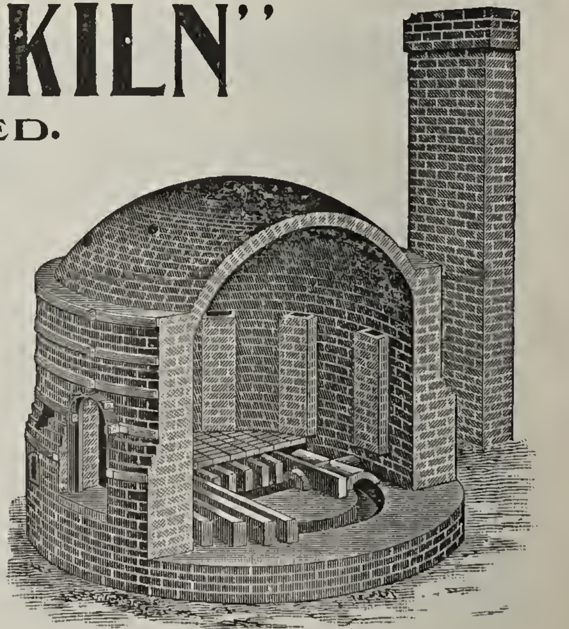

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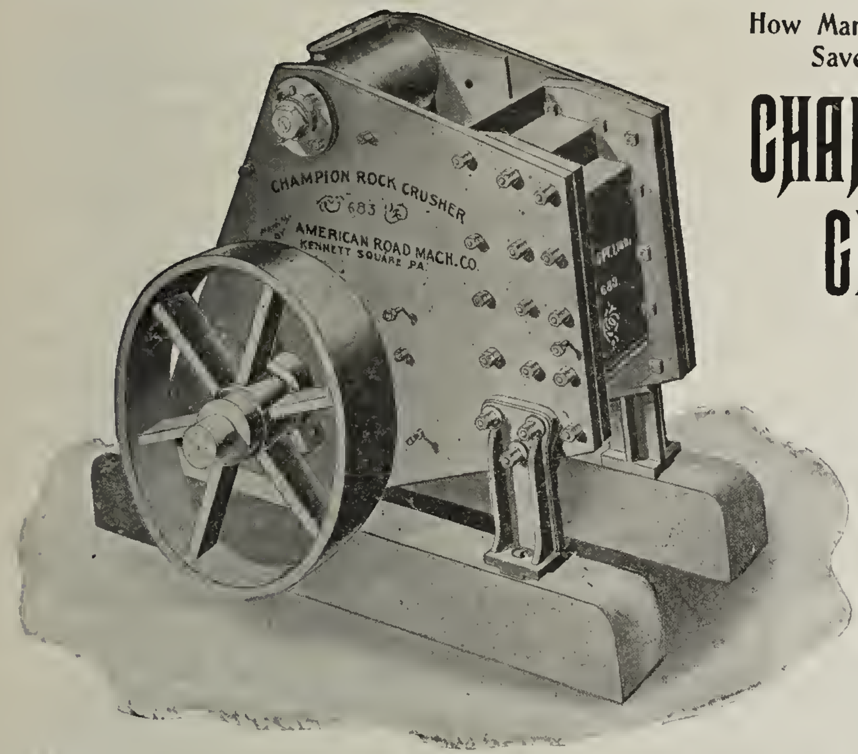
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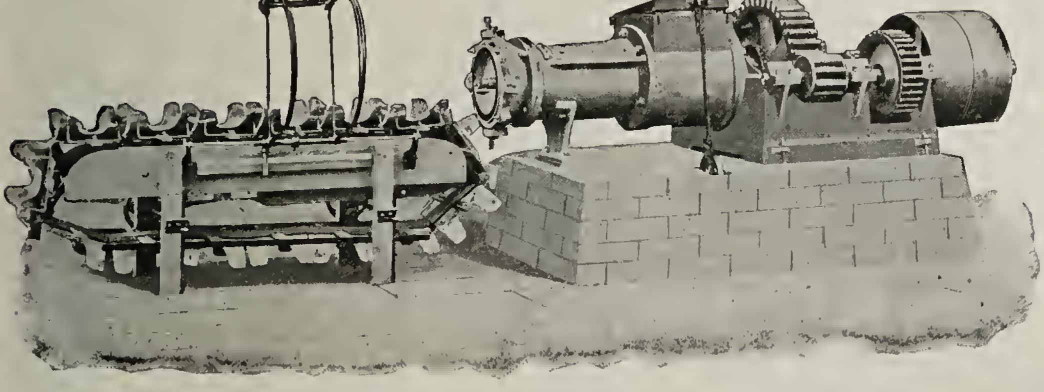

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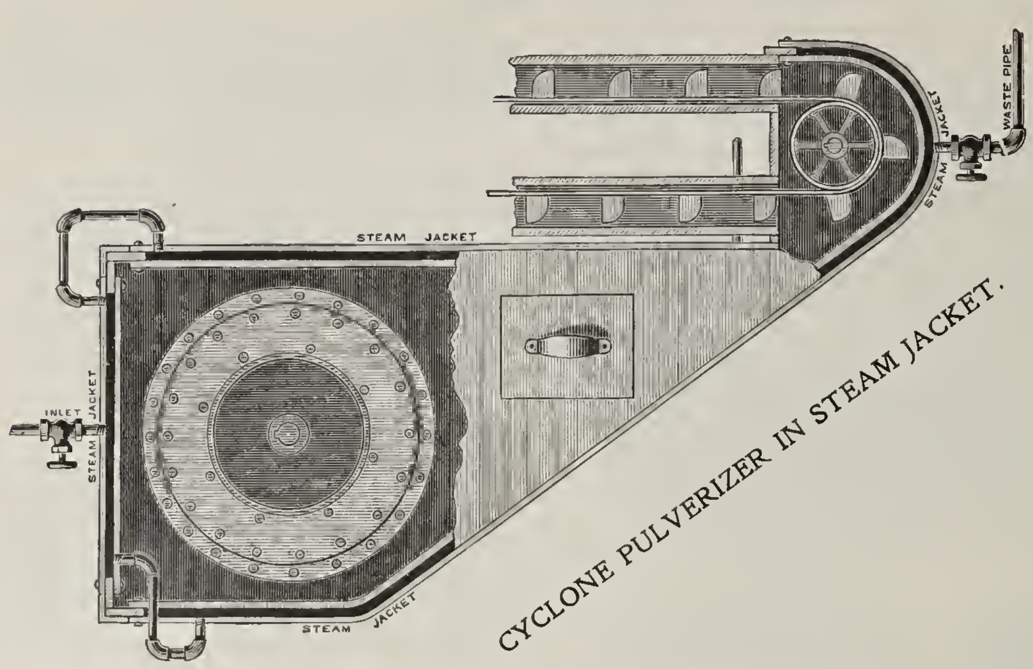

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Patented—Showing shed open to sun and air.

We have THE SIMPLEST, the LEAST EXPENSIVE, THE BEST RAPID BRICK HACKING and TRUCKING SYSTEM in use.

It is equally as efficient in large or small yards. It can be used either for open air or artificial drying. We guarantee that one man can take from 25,000 to 40,000 green brick from the machine and place them upon the hacks in one day of ten hours, and the same amount from the hacks to the kiln, and place them in easy position for the setters to handle them.

It has been thoroughly tested. It costs less than half of the money to equip a yard with our system than any other efficient system. Drying capacity unexcelled. 65,000 brick can be hacked in a space 20x140. If you are using any of the old systems of open air drying, such as the rack and pallet system, for instance, the change can be effected with very little expense.

Write for testimonials and for full information.

Infringements will be prosecuted.

BECHTEL BROS., Waterloo, Ont.

The
ROESSLER-HASSLACHER
CHEMICAL COMPANY,
100 William Street,
NEW YORK.

As a Preventative of Scums Use

CARBONATE OF BARYTES

R. & H. PRECIPITATED.

Oxide Tin,
Oxide Cobalt,
Red Oxide Iron,
Green Oxide Chrome,
White Oxide Antimony,
Black Oxide Manganese
and all Chemicals used by the Clay Trades.

Mention The Clay-Worker.

Standard Steel Music Wire

TRADE MARK.
STRENGTH. QUALITY.
Standard
DURABILITY. TONE.
REGISTERED

Absolutely Highest Grade.

The wonderful tensile strength of Standard Wire specially adapts it

For Brick and Tile Cutting.

The price, too—an important consideration—is moderate.

Although it has been on the market but a short time it is used by many of the largest brickmakers in the business, and wherever it has been once sold it is always demanded.

Put up in 1-lb. and 5-lb. coils.

Let us send you samples and prices.

National Musical String Co.,
New Brunswick, N. J.

THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES CO.,
GRASSY POINT, ROCKLAND CO., N. Y.

These Molding Machines have been in constant use for over 40 years, and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country. Correspondence solicited.

Mention The Clay-Worker.

WHEN BUYING NEW MACHINERY

why not get it strictly UP-TO-DATE? All machines go out of date soon enough without putting in a back number to start with.

Dry Press

Send for our UP-TO-DATE CATALOGUE.

Stiff Clay

UP TO DATE MACHINERY

Soft Clay

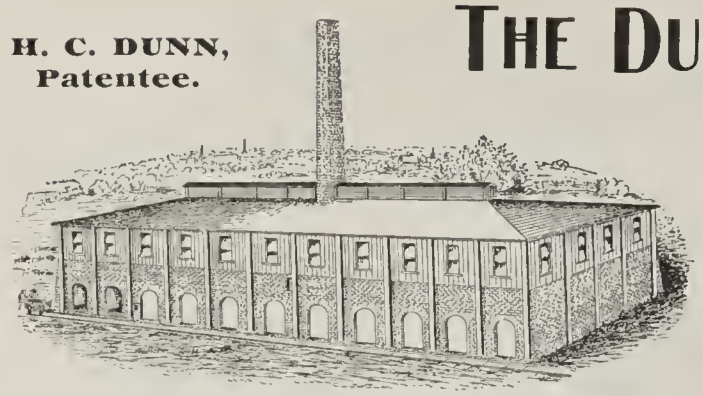
GET OUR PRICES.

Supplies

Chicago Brick Machinery Company,
225 DEARBORN STREET, :: :: :: CHICAGO, U. S. A.

H. C. DUNN,
Patentee.

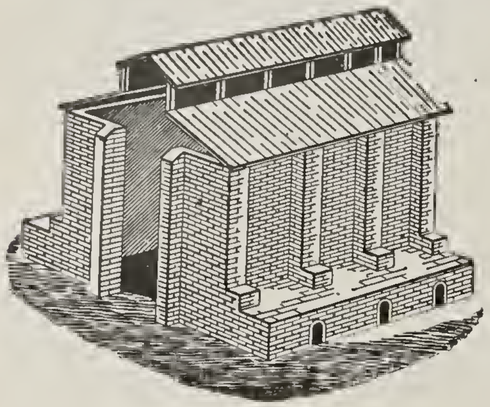
THE DUNN CONTINUOUS BRICK KILN.



Burns 8000 brick with one ton of coal.
Requires only two men to operate it.
Is in full operation daily.
Absolutely the most successful kiln of its class ever offered American Brickmakers.

Write for Description and full Information.

I. M. JUSTICE, Sole Agent, **Derry,** Westmoreland County, **Pa.**

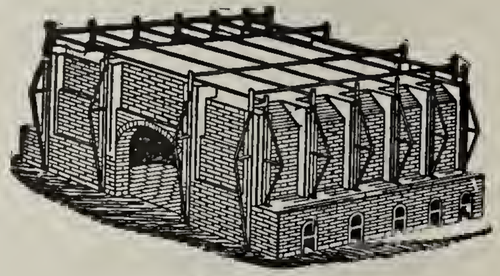


Up-Draft Kiln.

LOUIS H. REPPELL'S

IMPROVED-KILNS

For Burning all Kinds of Wares.



Down-Draft Kiln.

Having had years of practical experience in the management and actual burning of all kinds of kilns, claim it to be THE BEST Up-Draft KILN IN THE MARKET.

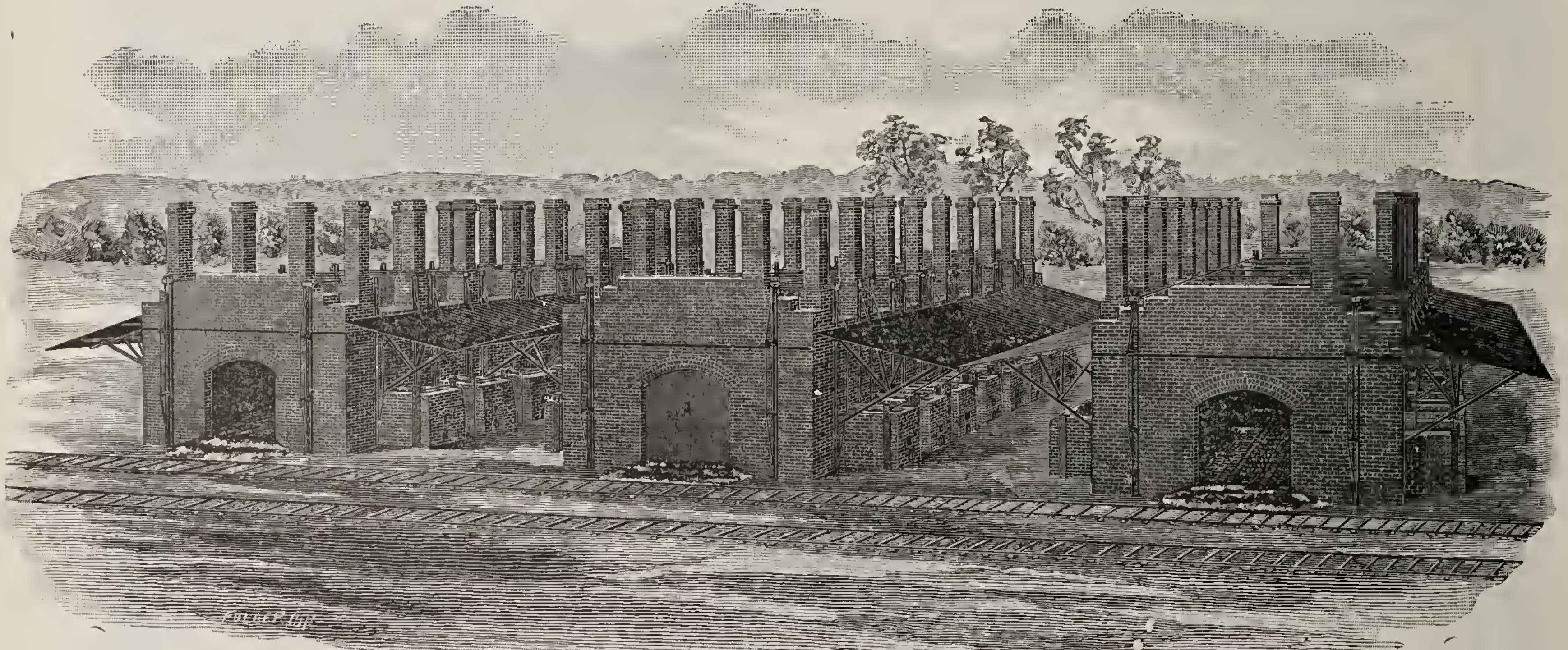
The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns.

For further particulars and full explanation, address

LOUIS H. REPPELL, 2,422 Chestnut St., ***Kansas City, Mo.***

The EUDALY DOWN DRAFT KILNS.

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM.



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant, Burns uniform and all hard. Economical in construction and operation.

The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

W. A. EUDALY, 509 Johnston Bldg. **Cincinnati, Ohio.**

Mention The Clay-Worker.

YOUR KILNS

SHOULD BE ROUND

SAVING FIRST COST REPAIR COST

SHOULD BE THE BEST

TO MAKE THE BEST WARE

SHOULD BE PLATT TRIPLE DRAFT

AND THEN YOU ARE IN THE BUSINESS TO STAY—AND TO MAKE MONEY.
"NOTHING SUCCEEDS LIKE SUCCESS"

Except a Clayworker With an Economical Kiln.

THIS KILN Removes all possible objection to the ROUND KILN of large diameter. It combines with the simplicity of the old types

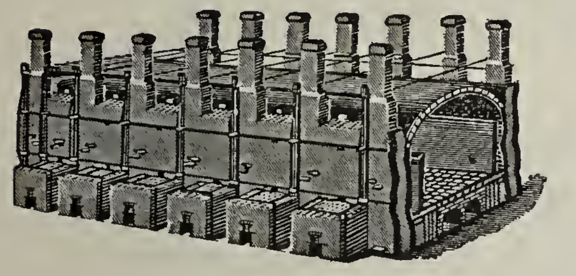
ABSOLUTE EVEN HEAT DISTRIBUTION REGARDLESS OF DIAMETER.

Its three positive floor outlets are distinctly independent, consequently the finest regulation is always obtainable, making the draft force in center area equal with the surrounding area, or giving any section all the draft, if desired. Accomplishing quick, even burns. Giving a kiln of unequalled heat power, and suited to general clayworking uses. Solid or perforated floors.

C. B. PLATT, INVENTOR.

PLATT TRIPLE DRAFT KILN CO., Van Meter, Iowa.

The Bushong Down Draft Kiln.



PATENTED JUNE 1896.

BURNS any kind of fuel.
USES less fuel than any other Kiln.
RESULTS are uniform.
NO damaged wares.
SAVES time and labor.

USED by some of the largest plants.
NO experiment.
IT'S success has been proven.
FULL control of drafts.
ONLY Kiln built that has Double Draft.
REDUCES burning time 24 to 48 hours.
MOST economical in construction.

Streator, Ill., October 3, 1900.

M. M. BUSHONG, Esq.,
Phoenixville, Pa.

Dear Sir:—Answering yours of September the 27th, we have been using one of the Bushong Down Draft Kilns the past fifteen months and are well pleased with it. We get a larger percentage of No. 1 pavers with a little less fuel than any other kiln on the yard.

Yours truly,
THE BARR CLAY CO.,
Per C. C. Barr, Treas.

M. M. BUSHONG, - Phoenixville, Pa.

MODERN BRICKMAKING MACHINERY.

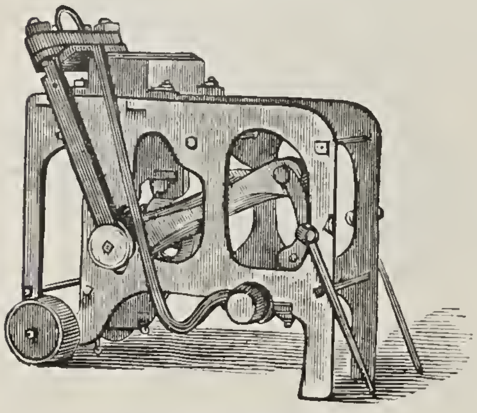
BRICK MACHINES,

(End and Side-Cut). Capacities ranging from 12 to 60 M per day. Complete equipments for the most economical yards. Write for catalogue and prices.

J. C. STEELE & SONS, Mfrs. THE "NEW SOUTH"
Brickmaking Machinery, Statesville, N. C.

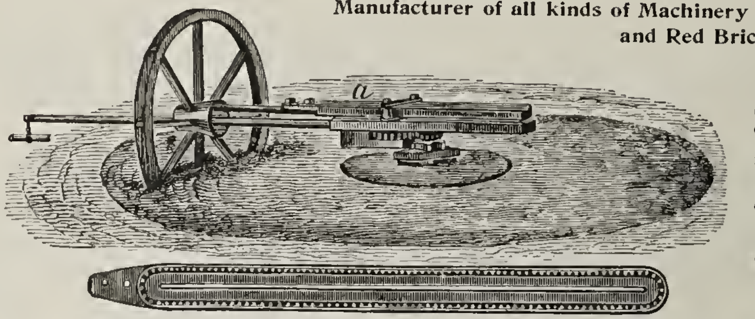
Philadelphia Brick Machine Works.

Fire and Red Brick Presses all Sizes. Machinists and Engineers.



RED BRICK PRESS.

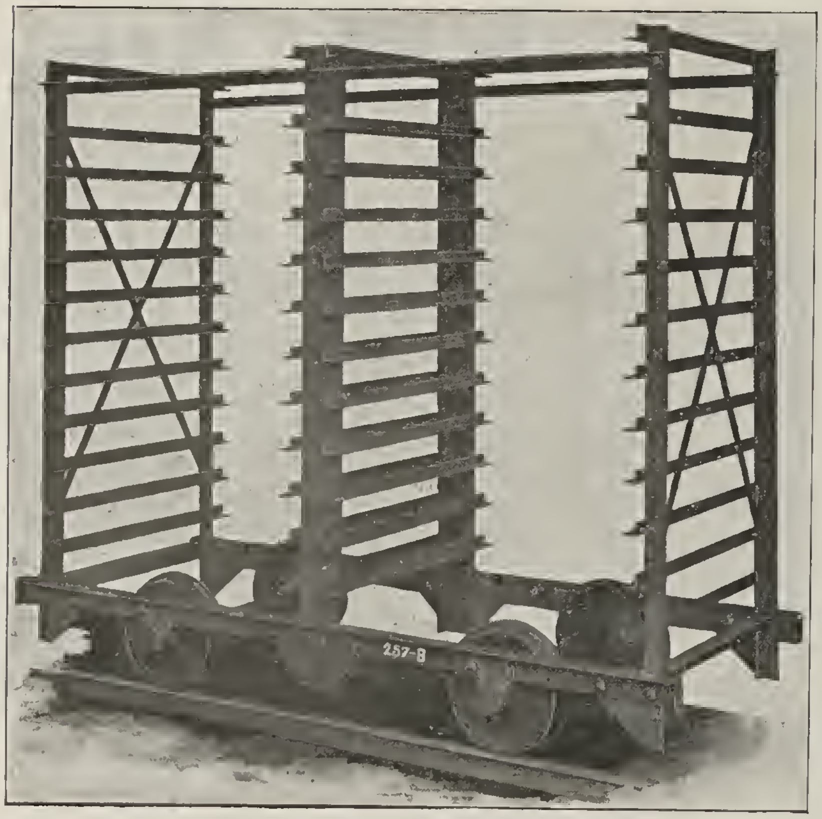
Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

☞ Send for Circular and Price-List.

GEORGE CARNELL, 1819, 1821 and 1823 Germantown Ave. and Fifth St., PHILADELPHIA, PA.



NO. 257 B RACK CAR.

Don't Experiment. Buy the Best.

WE BUILD THEM.

Dryer Cars

Are Our Specialty and we can produce a perfect product for that reason.

Special Cars of all kinds for light use made to order.

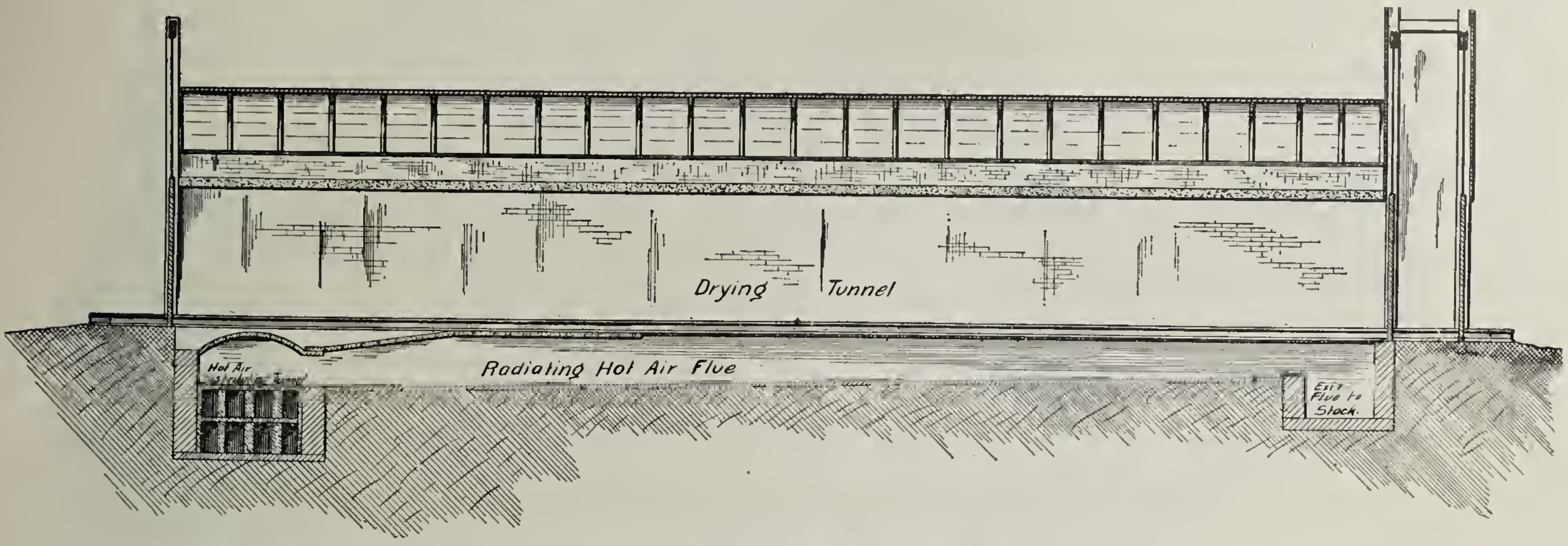
The Cleveland Car Company,

Correspondence solicited.

Lorain Street and Lake Shore Ry., CLEVELAND, OHIO.

Economy Atomizers and Fuel Oil Burning Systems Have NO EQUAL.

Economy Waste and Direct Heat, and Radiating Floor Dryers are Constructed on SCIENTIFIC and UP-TO-DATE Principles.



PRACTICAL CONSTRUCTING ENGINEERS OF CLAY PLANTS.

ECONOMY DRYER AND OIL BURNING COMPANY,

Write for Catalogue. *800 Columbia Bldg., ST. LOUIS, MO.*

The NATIONAL DRIER

Is One of the Best Investments Ever Made at Our Plant.

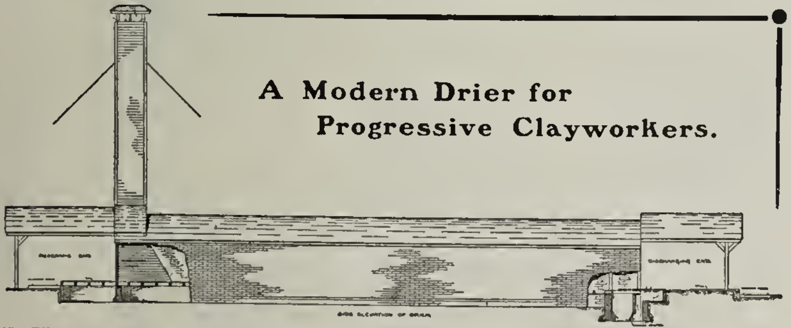
CHRISTY FIRE CLAY CO.
ST. LOUIS.

THE NATIONAL DRY KILN CO.,
33 West South St.,
Indianapolis, Ind.

May 14th, 1902.

GENTLEMEN—We take pleasure in giving you the result of our experience with the Tunnel Drier System recently purchased from you. We find that the use of exhaust steam during the day time with about 40 lbs. pressure of live steam at night, dries our product thoroughly in 48 hours, and in view of the fact that our former system required an average of 120 hours, you can readily imagine that we are very much gratified. The economy of labor, saving of fuel, and increase of capacity resulting from the installation of your system, make the expenditure one of the best investments we have ever made at our plant. Yours truly,

W. C. MORRIS, V. P. & G. M.



A Modern Drier for Progressive Clayworkers.

Is free from complicated Features. If you want IMPROVED METHODS, put in the modern up-to-date

NATIONAL DRIER

Our Steel Roller Bearing Cars are Unequalled.
Let us send you a circular, it will interest you.
Our guarantee protects from all chances.

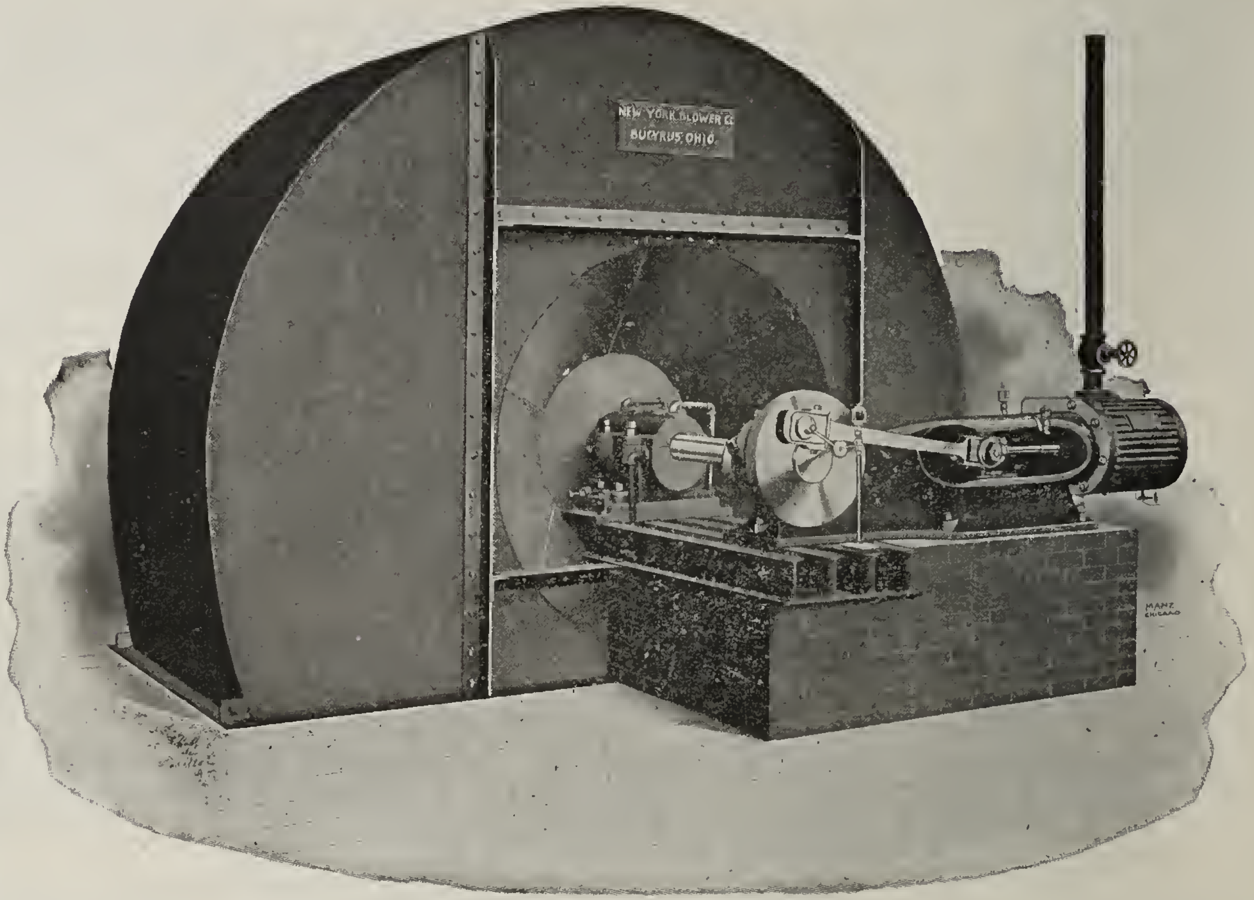
The National Dry Kiln Co.,
1118 East Maryland St., INDIANAPOLIS, IND.

C. H. BEALE, Mangr. Southern States, MONTGOMERY, ALA.
JNO. McKAY, Representative at Large.
J. O. BRADNEY, Pacific Coast Agent, California Bldg. Tacoma Wash.

DRYING ECONOMY.

Our Dryer is superior to others by reason of improved methods, low cost of construction and economy of operation. If you're interested in dryers write for particulars. Ours will prove a good investment.

We also manufacture Conveyors, Exhausters, Heaters, Fans, Engines and Mechanical Draft Apparatus.

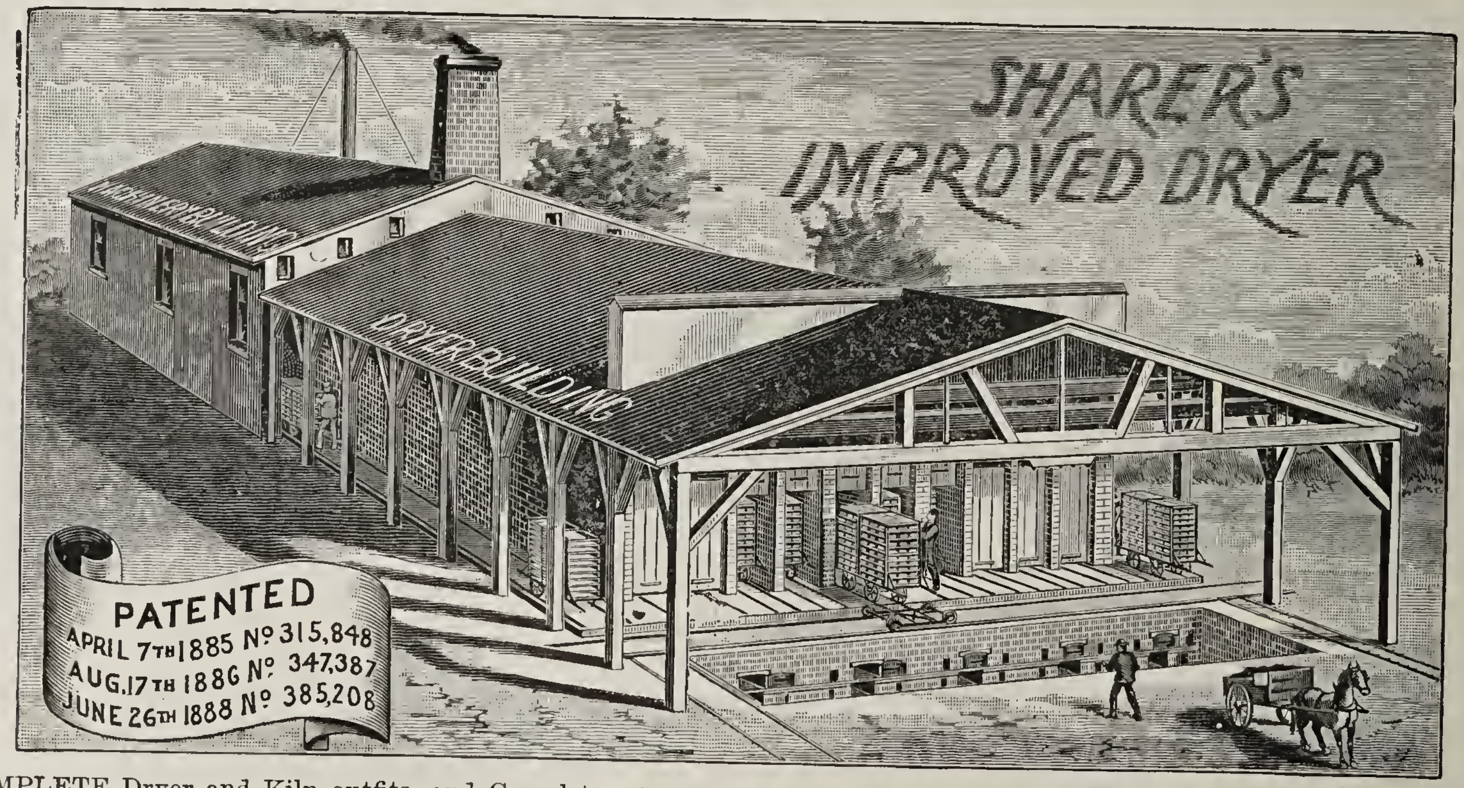

NEW YORK BLOWER CO.
BUCYRUS, OHIO.

The New York Blower Co., Bucyrus, Ohio.

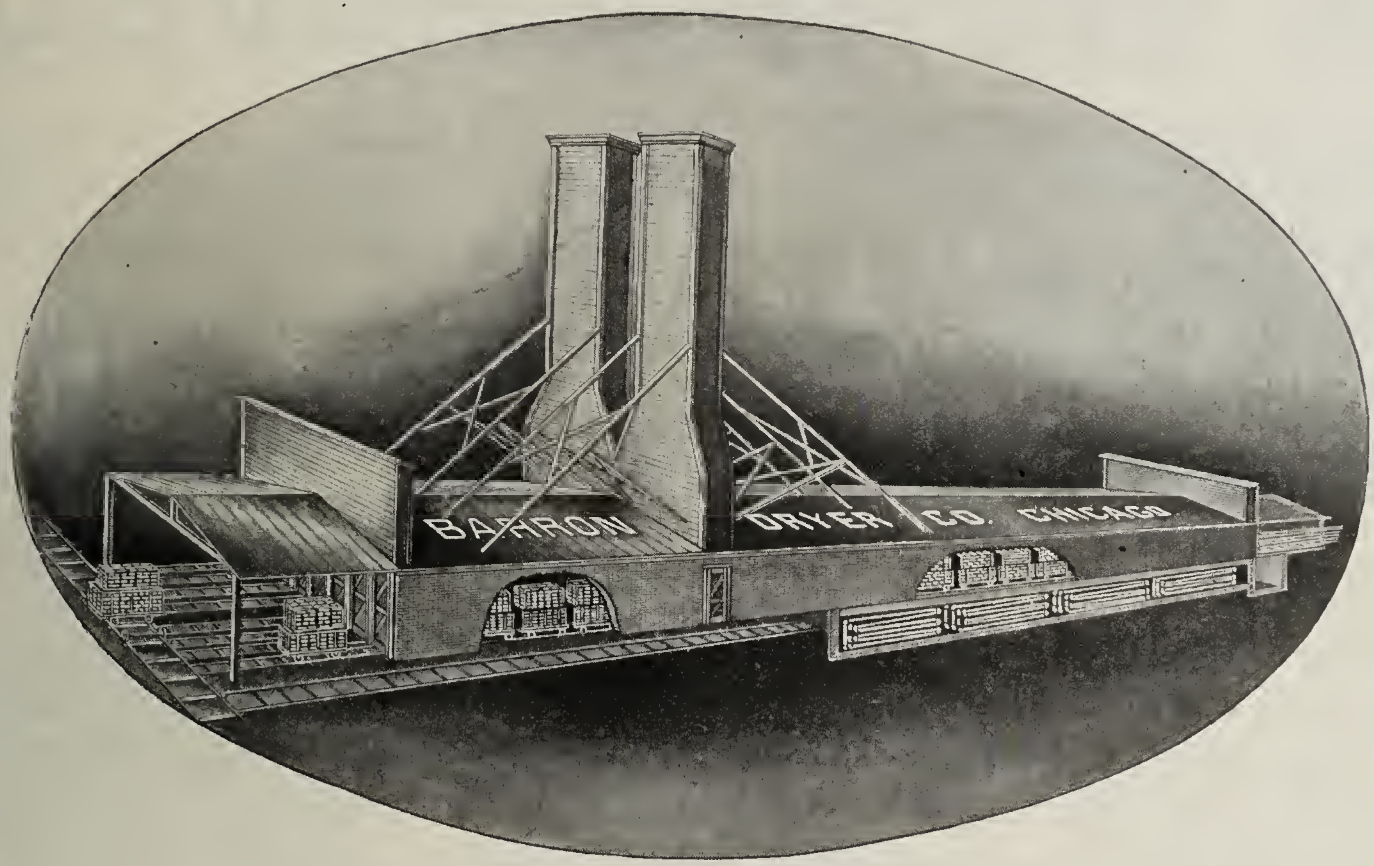
New York Office, 39-41 Cortlandt Street, New York.
Boston Office, 185 Sumner Street, Boston, Mass.
Chicago Office, Merchants' Loan and Trust Building.
European Office, Cathedral Corner, Fennel Street, Manchester, England.

Geo. W. Sharer,

Brick Manufacturing Expert,
Constructing Engineer,
Contractor and Builder.


SHARER'S IMPROVED DRYER
MACHINERY BUILDING
DRYER BUILDING
PATENTED
APRIL 7TH 1885 Nº 315,848
AUG. 17TH 1886 Nº 347,387
JUNE 26TH 1888 Nº 385,208

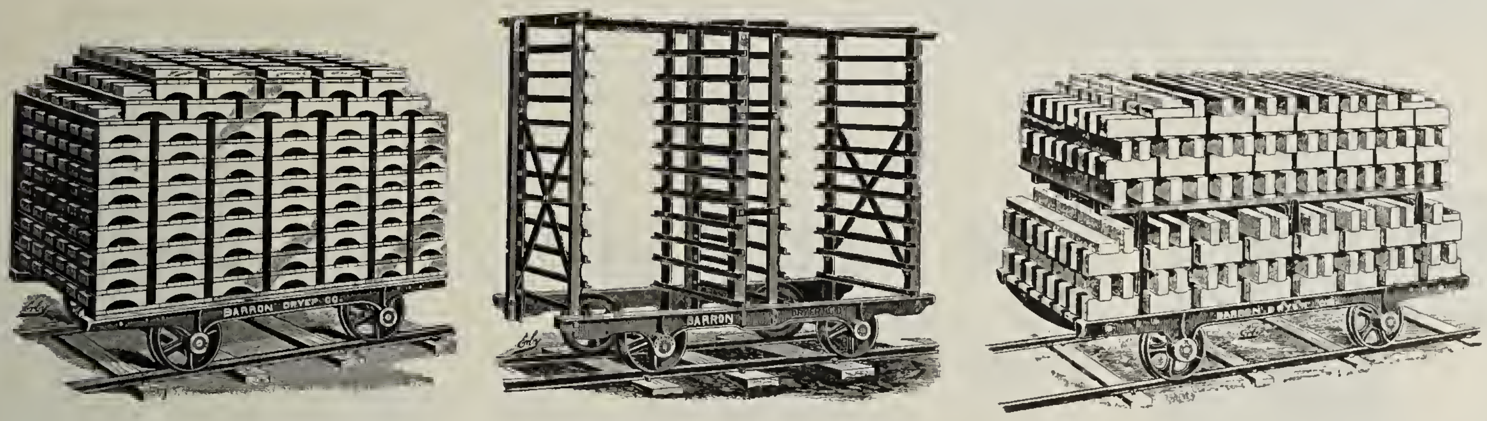
COMPLETE Dryer and Kiln outfits, and Complete Plants a specialty. Address **Geo. W. Sharer,** 2228 Tioga St., **Philadelphia, Pa.**



Barron Tender Clay Dryer.

THIS CUT illustrates an up-to-date Brick Dryer. IT IS THE EVOLUTION OF THE CHICAGO IRON CLAD DRYER, which contains the best known principles for rapid drying. The correct principle of this Dryer has been carefully retained throughout the development of the Tender Clay Dryer, which enables us to construct Dryers to suit all clays and dry the product with the greatest economy. Our Steam Saving Devices are inventions many years in advance of what is generally known in the science of Steam Fitting.

This is the Dryer that enables the largest brickmaking concerns in the world to produce brick at less cost than is possible by any other known process.



Time and wear prove that these cars are the most durable and easiest running. Send for information, estimates, etc.

BARRON DRYER COMPANY,

Temple Court Building, 225 Dearborn St., CHICAGO, ILL.

A STEAM SHOVEL

MODEL "G," 2½ YD

Is the most economical appliance for excavating clay.

Never strikes, and is therefore more reliable than hand labor.

Will work in all kinds of weather, insuring regular supply of material.

More thoroughly mixes the different stratas than is possible to do by hand.

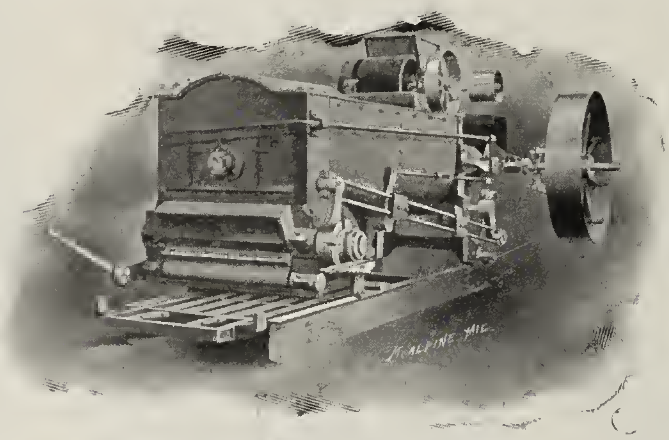
Will prove a paying investment in any yard where the material is taken from a face.

For many years we have supplied Steam Shovels for Brick Yards, and our machines are in successful use in the yards of many of the largest and most succcessful brick manufacturers of the country. We build machines having dipper capacities from ¾ cubic yard up to 4½ cubic yards, and can supply them with friction feed on boom or with independent engine feed.

If interested write us for illustrated catalog.

STYLE 'C," ¾ YD.

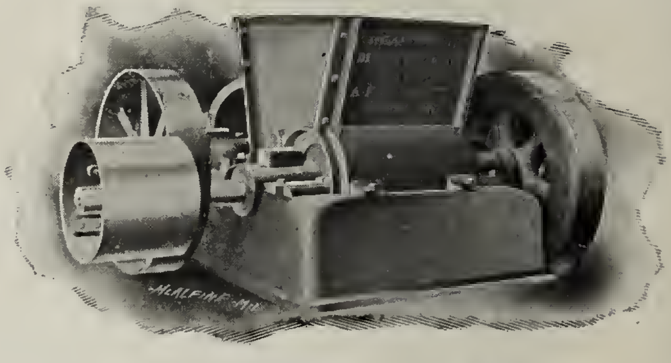
THE MARION STEAM SHOVEL CO., 610 West Center Street,
MARION, OHIO.



Horizontal Anderson Brick Machine.

DON'T PURCHASE UNTIL YOU WRITE US.

We can save you money.



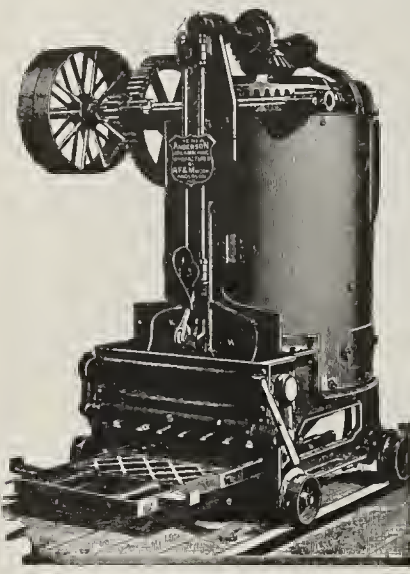
Best Disintegrator on the Market.

MANUFACTURERS OF . . .

New Departure Tile Machine,

The only machine for making Tile from 3 to 24-inch Diameter.

Pug Mills, Molds, Trucks and Barrows,
And all Brickyard Supplies.



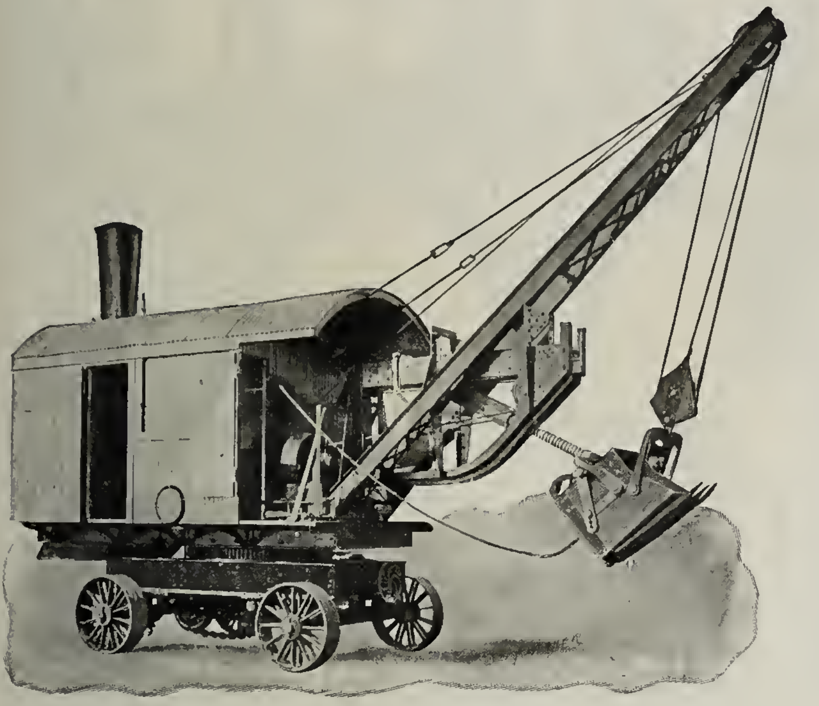
Steel and Iron Upright Stock Brick Machine.

1899 Horse Power Machine.

The Anderson Foundry and Machine Works,
—Anderson, Ind.

Handle Your Clay With One Man and

The Thew Steam Shovel.



The Thew Improved No. 1 Shovel.

●●●●●●●●

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

●●●●●●●●

Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

●●●●●●●●

Made in all sizes.
Mounted on Car Wheels
or Traction Wheels.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 150,000 brick per day.

WRITE US FOR CATALOGUES OR INFORMATION.

The THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.

HAS GIVEN BETTER SATISFACTION THAN YOU CLAIMED IT WOULD.

THE ST. MARY STEAM BRICK WORKS.
Franklin, La., Sept. 20, 1902.

Messrs. Leader Manufacturing Company, Decatur, Ill.:

Gentlemen—The Leader No. 25 which you sold me last spring has done even more work, and has given me better satisfaction than you had claimed it would, and in justice to you, and as evidence of my appreciation, I take pleasure in attesting its merits.

Very truly yours, EUG. BODIN, per Thos. Bodin.

Leader Machines Are Not Better Than the BEST

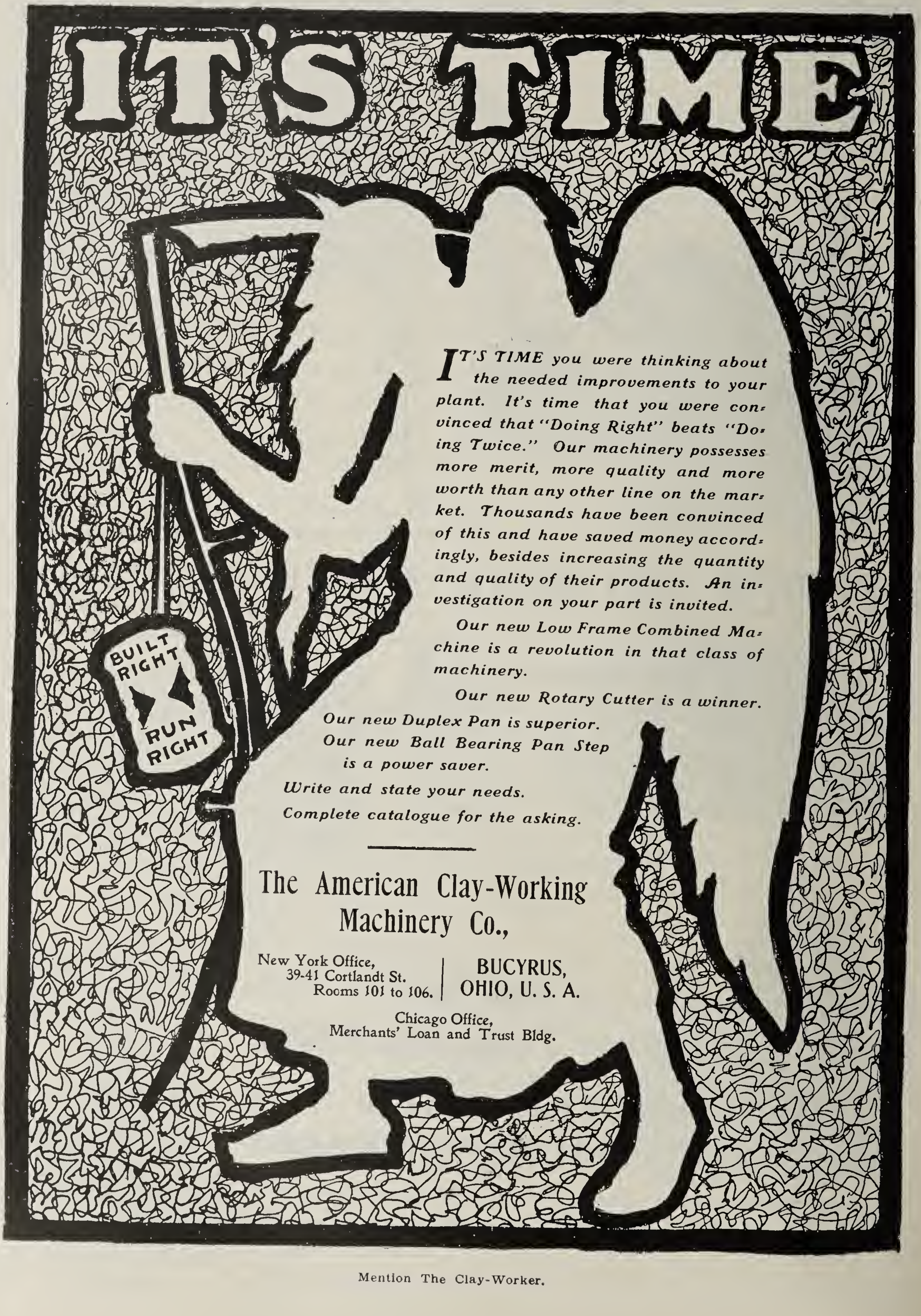
BUT BETTER THAN THE REST,

And the Price is Right!

For further words of praise and little book of "opinions," write to

LEADER MANUFACTURING COMPANY, = Decatur, Ill.

Mention The Clay-Worker.



IT'S TIME you were thinking about the needed improvements to your plant. It's time that you were convinced that "Doing Right" beats "Doing Twice." Our machinery possesses more merit, more quality and more worth than any other line on the market. Thousands have been convinced of this and have saved money accordingly, besides increasing the quantity and quality of their products. An investigation on your part is invited.

Our new Low Frame Combined Machine is a revolution in that class of machinery.

Our new Rotary Cutter is a winner.

Our new Duplex Pan is superior.

Our new Ball Bearing Pan Step is a power saver.

Write and state your needs.

Complete catalogue for the asking.

The American Clay-Working Machinery Co.,

New York Office,
39-41 Cortlandt St.
Rooms 101 to 106.

BUCYRUS,
OHIO, U. S. A.

Chicago Office,
Merchants' Loan and Trust Bldg.

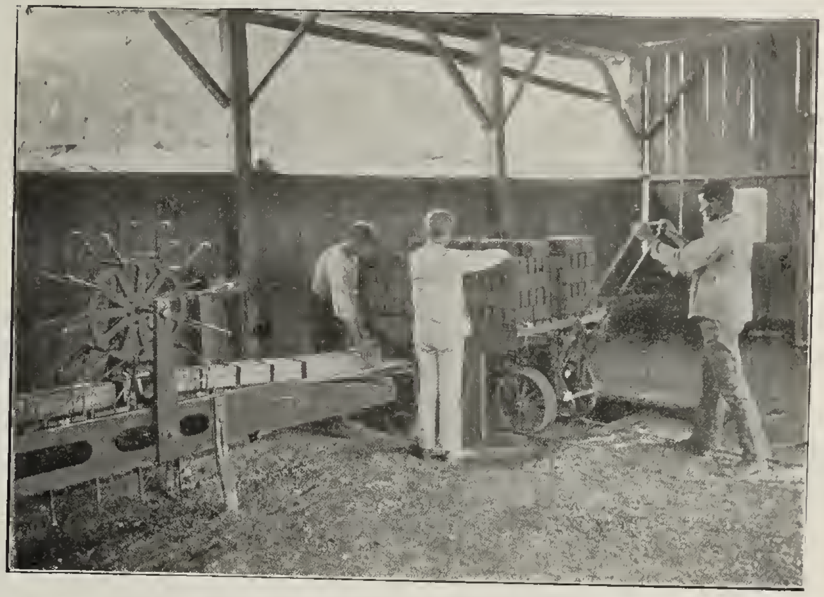
A PERFECT CAR SYSTEM

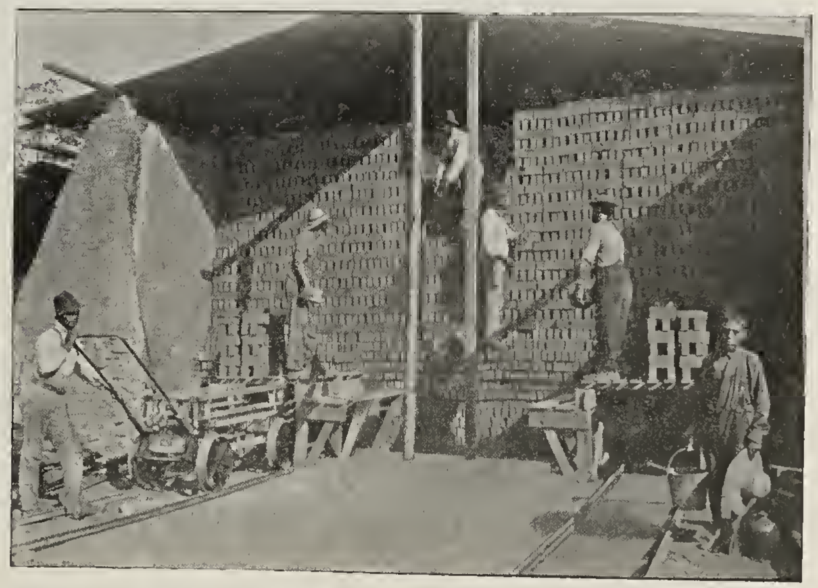
For Either Soft or Stiff Mud.

With only TWO CARS

One man will handle 40 M brick per day.

No Fan to Run. No Boiler to Steam.
No Pipes to Burst. No Fireman to Pay.
No Dryer. No Fuel.





We Guarantee This to be the best, cheapest and only out-door car system ever offered the brick maker. We guarantee to handle from the machine and put on the yard in good condition, from thirty to forty thousand green brick per day, with one man, and same amount to kiln. We guarantee our patent car and system to perform the work for which they are built, and all the workmanship and quality of material to be first class. Our new portable canvas covers give absolute protection from rain and storms and also protect tender clays.

THE SYSTEM consists of two elevating and lowering brick cars for a thirty to forty thousand capacity brick plant; these take the place of several hundred common cars. The car is made of channel steel, with movable deck, which is raised and lowered by a compound lever. From two to five hundred brick are taken from the machine and placed on a pallet, the lever lowered, raising pallet off the rests. The load is then on car, which is run on the yard to the rests along each track; the lever is again raised, thus lowering deck of car which places load on the rests, where the brick are left to dry, after which they are taken to the kiln in the same way.

The above cuts also show our new portable canvas covers, which are cheaper in first cost than wooden covers, and one man or boy can cover and uncover a yard of 200,000 brick in ten minutes.

We handle both soft and stiff mud brick. Write for further information and nearest place where you can see this system in operation.

Scotts Patent Brick Car Co.,

Mention The Clay-Worker.

Knoxville, Tenn.

See Opposite Page

If the machinery you have been using the past season has not been satisfactory as to quality and quantity of brick made.

If your machinery is worn so that it causes you annoying delays and expense because of breakage, which you know your competitor does not have.

DONT

attempt to start with this machinery next season.

REMEMBER

the old adage what is worth doing at all is worth doing right.

DONT

fail to investigate the merits of machinery shown on

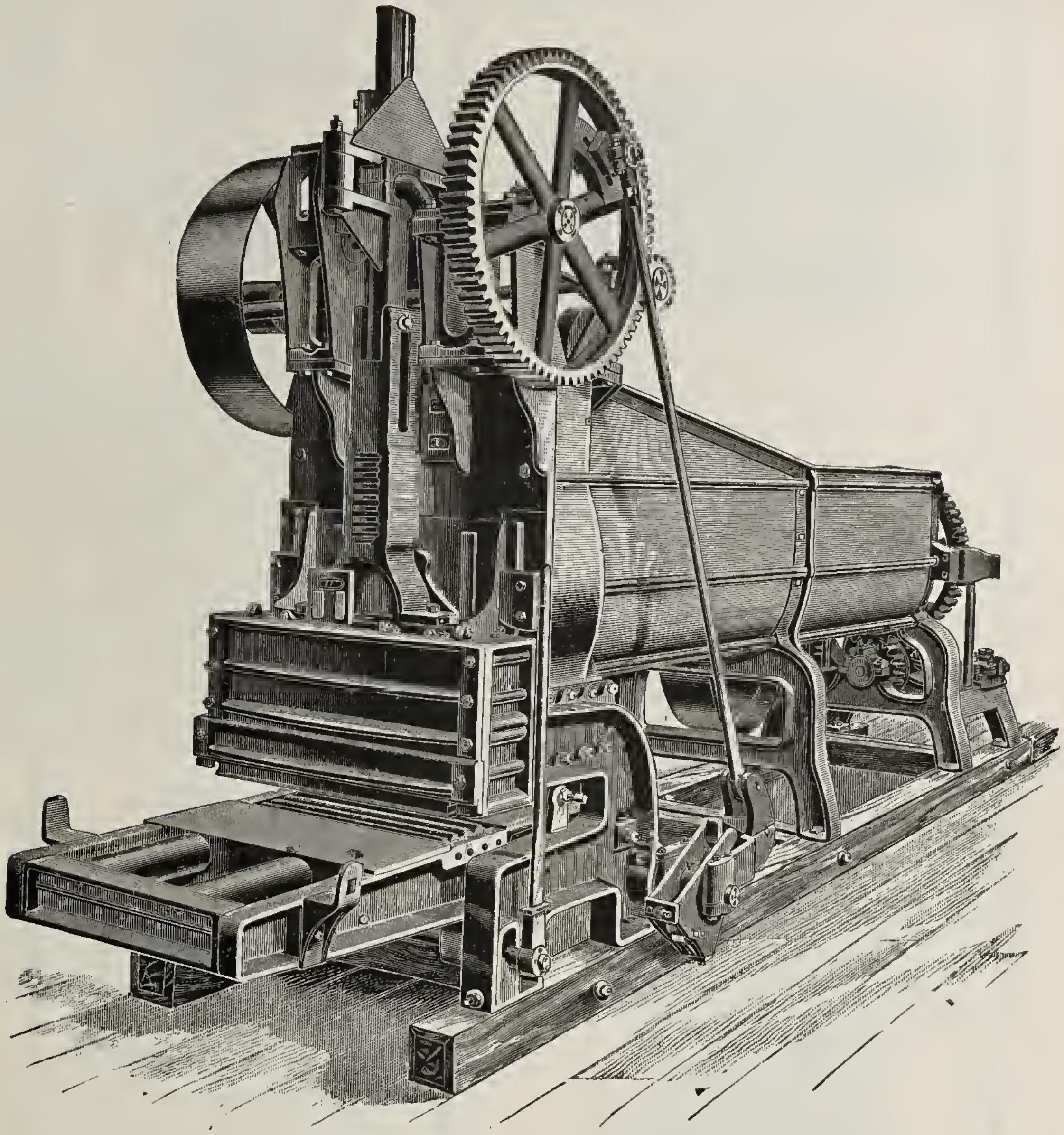
OPPOSITE PAGE.

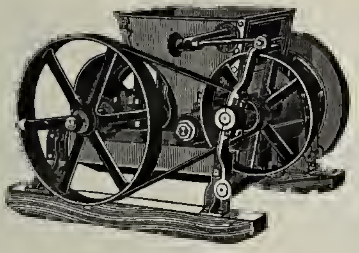
It is the largest, heaviest and best constructed on the market. It will make more and better brick, with less labor and power than can be done with any other machine of this class.

See Opposite Page

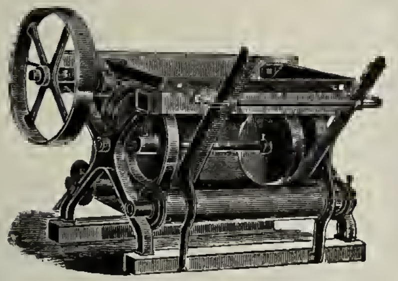
A POTTS
Horizontal
Brick Machine

Having steel gear and shafts with ample tempering capacity to thoroughly temper the clay, with strength to work the clay stiff as practicable.





A POTTS DISINTEGRATOR
to grind the clay and separate the stone.



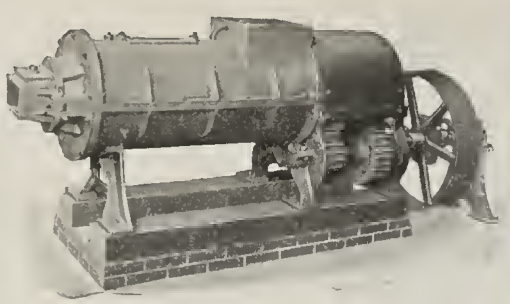
A POTTS MOULD SANDER
to sand the moulds and save labor.

With these three machines you can make better brick for less money than your competitor. Let us figure with you. Our prices will be found to be right.

C. & A. POTTS & CO.,

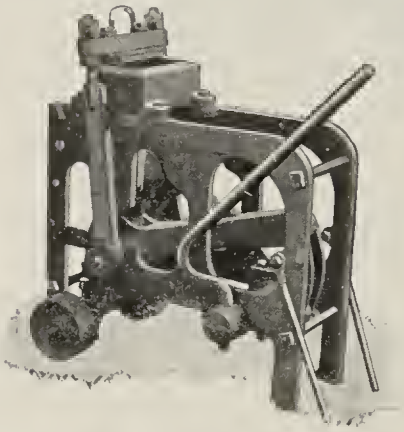
Southern Agents for Potts Disintegrators
ATLANTA BRICK MACHINERY CO., Atlanta, Ga.

Indianapolis, Ind.

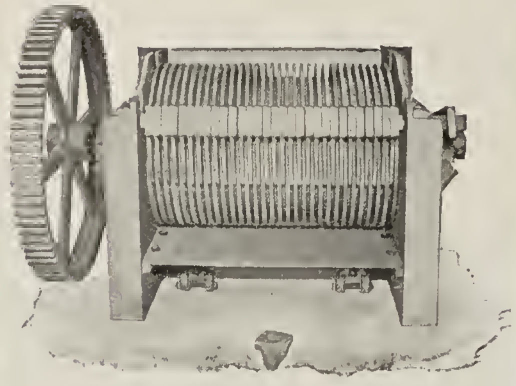


No. 1 Auger Machine
(Capacity 20,000 brick daily.)

Double Deck Spring Truck
(For Pallet Yards.)



Hand Represses
(Made Single or Double Lever)



Soft Mud Clay Screen
(Renders Clay Fine as Silk.)

BRICK Machinery

OF
ALL
KINDS.

**SOFT MUD,
WIRE CUT,
DRY PRESS.**

* * *

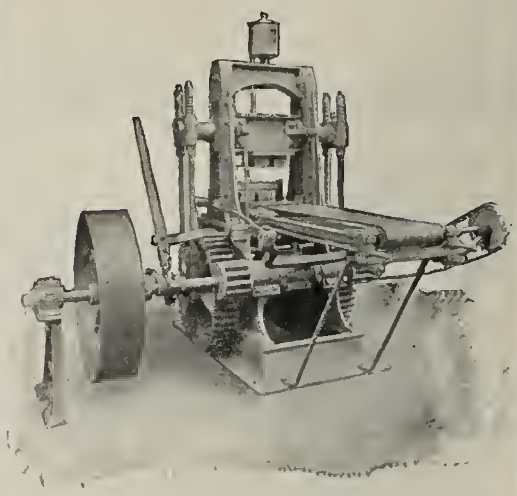
**WE
EQUIP
PLANTS
COMPLETE,**

Including
Brick Machines,
Disintegrators,
Tempering Mills,
Elevators,
Dryers,
Engines,
Boilers, etc., etc.

In fact,
EVERYTHING
A
BRICKMAKER
NEEDS.

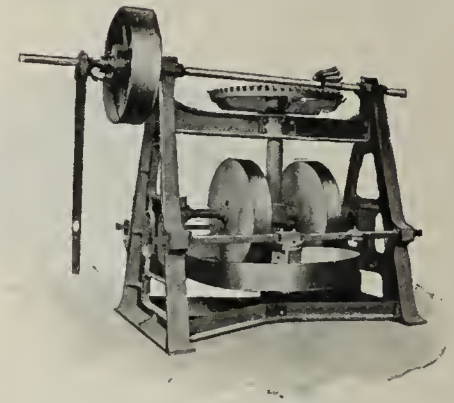
* * *

SEND
FOR
CATALOG.



Steam Repress
(A Splendid Machine.)

Single Deck Barrow
(A Great Favorite).



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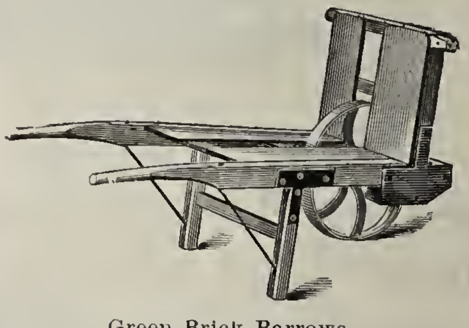
(5, 7 and 9 Ft.)

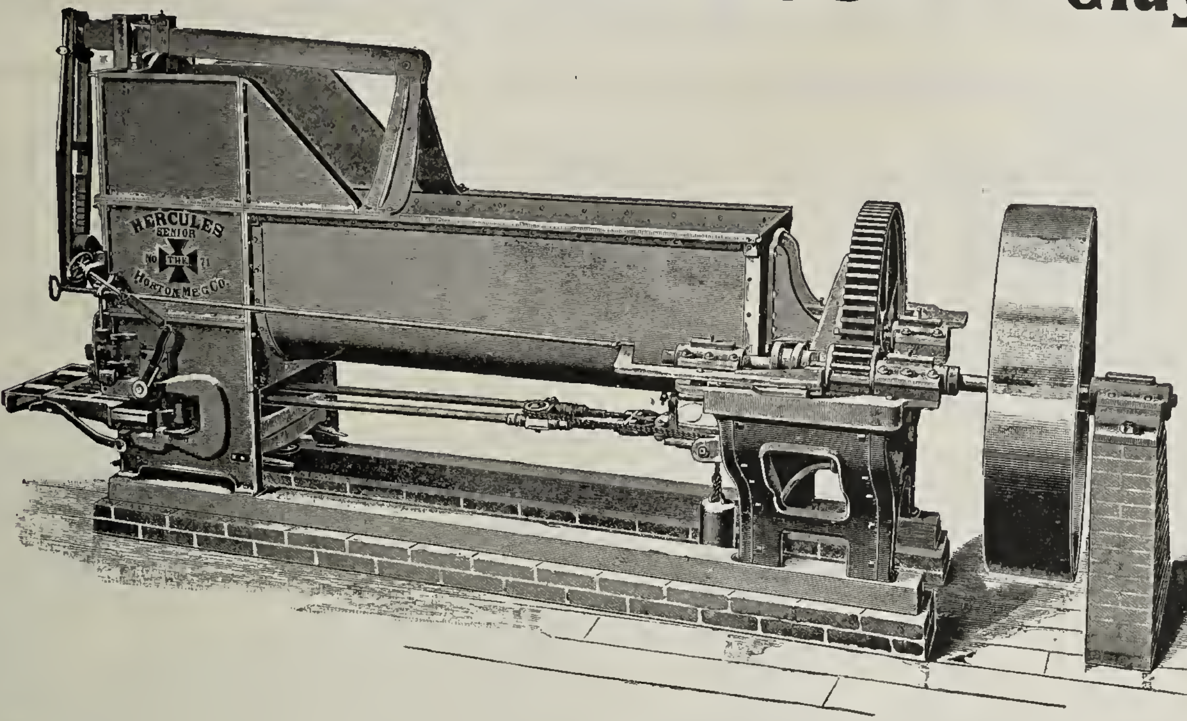


Green Brick Barrows
(Hundreds in Use.)

THE HENRY MARTIN BRICK MACHINE MFG. CO., Inc.

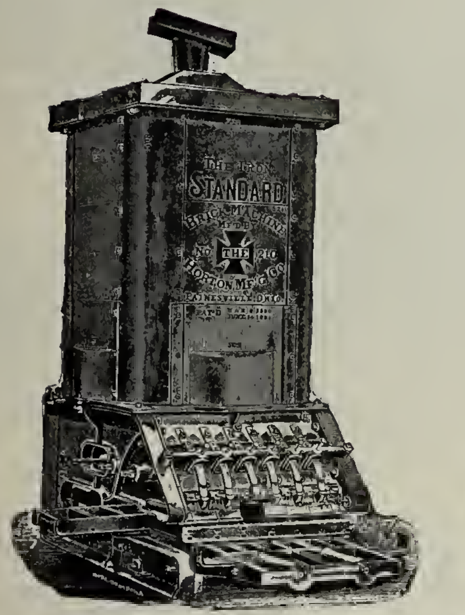
LANCASTER, PA., U. S. A.

The HERCULES Works the Clay Stiff.

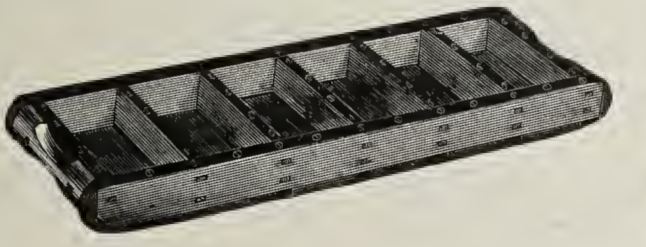


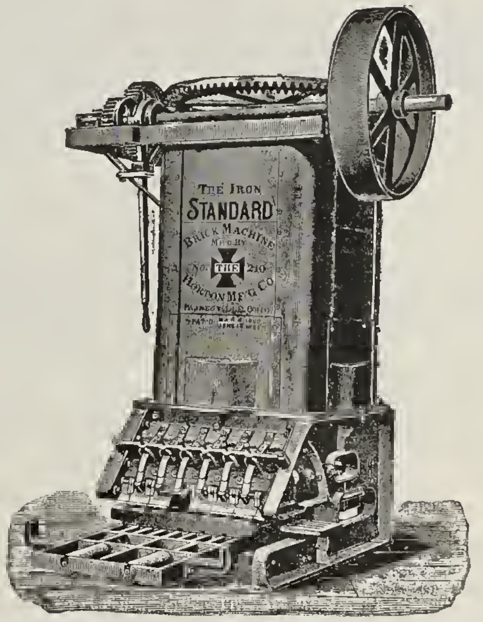
MOLDS.

Is one of our Specialties. Either Hand, Machine or Shapes. We have a shop full of Special Machinery for the Manufacture of these as well as Trucks of all kinds, Wheelbarrows. Dump Cars, and Carts. In fact everything used on a Brickyard.



Iron Standard Horse Power Brick Machine—The Leader of all Horse Power.

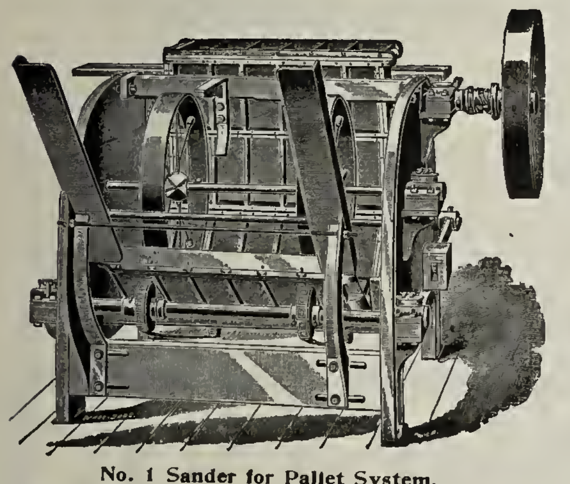




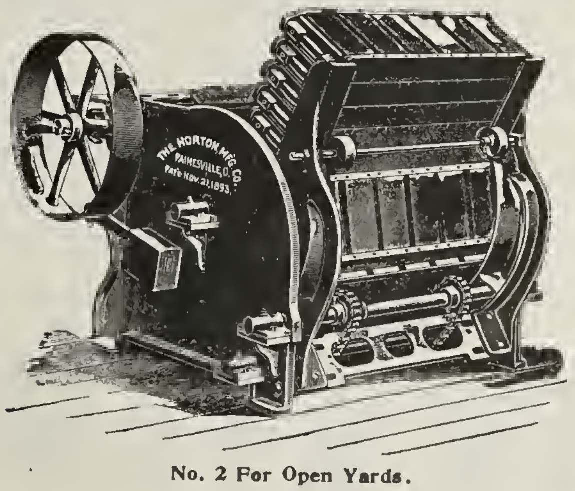
Standard Steam Power Brick Machine—Just the Machine for Medium Sized Yards.

The Mold Sanders That "Sand"

TWO
STYLES.



No. 1 Sander for Pallet System.


THE HORTON MF'G CO.
PAINESVILLE, O.
PAT'D NOV. 21, 1893.

No. 2 For Open Yards.

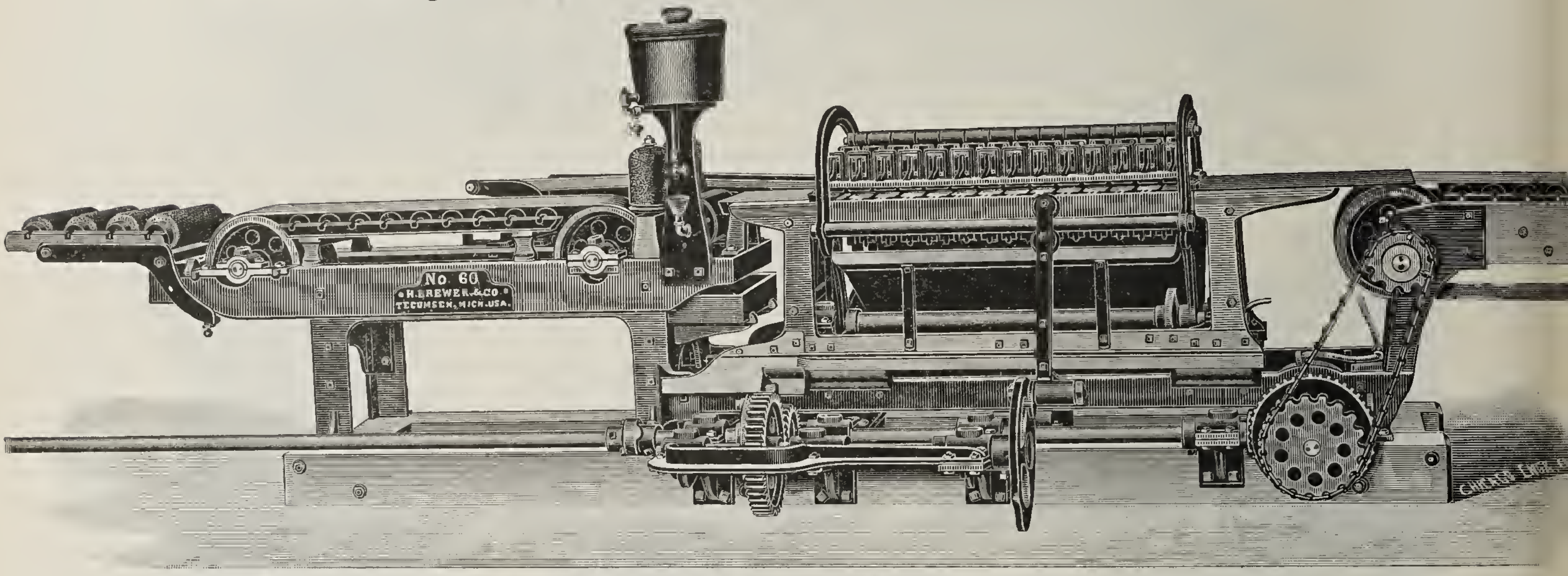
THE HORTON MANUFACTURING CO.,

Mention The Clay-Worker.

Painesville, Ohio, U. S. A.

SIMPLICITY

A feature most essential to an automatic brick cutter is simplicity. Complicated mechanism has no place upon a brickyard.



THE BREWER NO. 60 AUTOMATIC BRICK CUTTER.

THIS ONE IS SIMPLE

and most efficient as well. Cuts every inch of the column into brick as rapidly as you please without strain or apparent effort. Sold under any fair guarantee the purchaser desires.

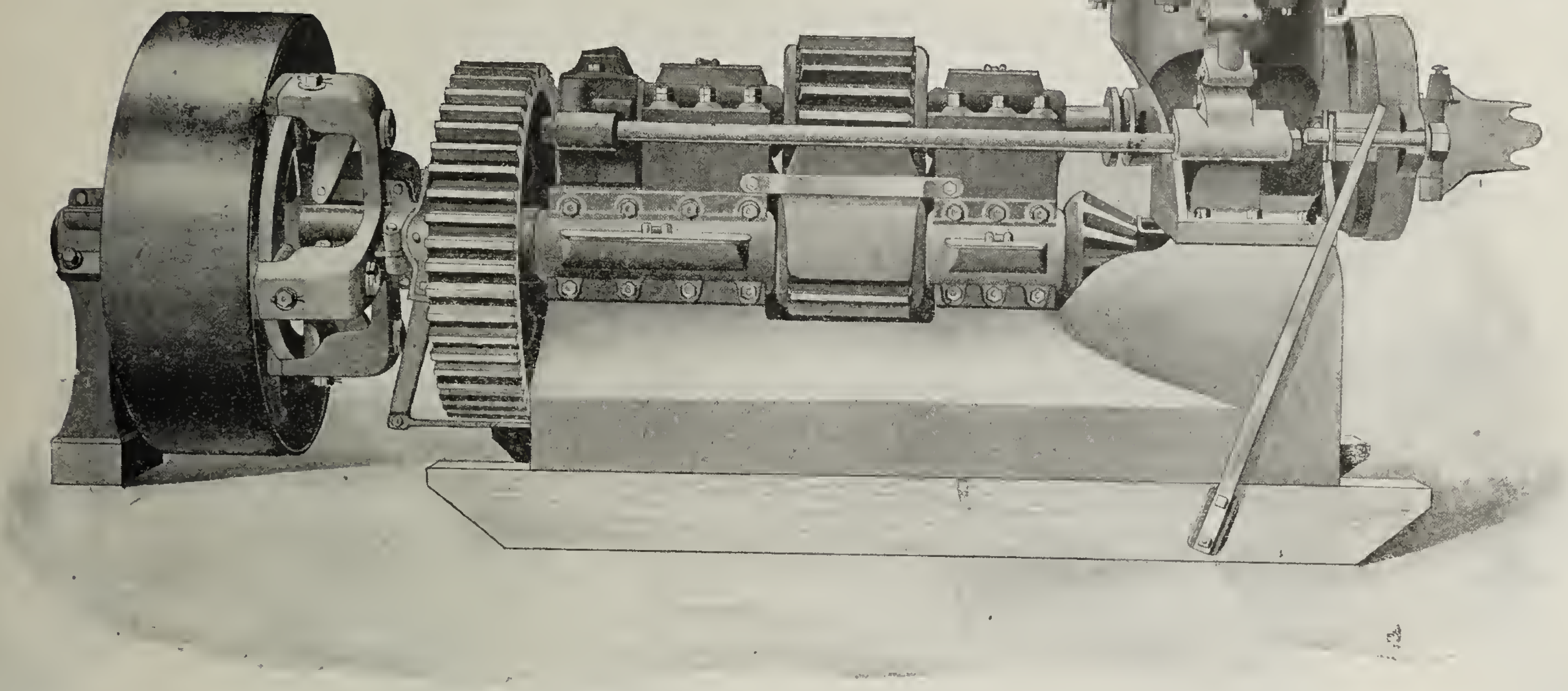
H. BREWER & COMPANY,

Tecumseh, Michigan.

An Objection to the Wonder Machine.

It Makes Brick and Tile too Fast.

WONDER BRICK MACHINERY



BROWNSBURG, IND., October 7, 1902.

THE WALLACE MFG. CO., Frankfort, Ind.:

Gentlemen—We would have written you earlier, but our new Little Wonder has been making tile so rapidly that it has kept us busy caring for them. We had some trouble at the start with the 4-inch tile die, but after following your directions, the machine now makes 4-inch tile at the rate of 20 to 25 per minute.

There may be better tile machines then the Little Wonder, but it is good enough for us, and we have no desire to make any exchange.

Yours very truly, LINGEMAN BROTHERS.

This is only one of the many complaints of this kind that we are receiving daily. This letter pertains to the Wonder Machine as a Tile Maker. We have others that are equally as complimentary for this machine as a Brick Maker, as it makes brick equally as rapidly as tile.

The Wallace Mfg. Co.,

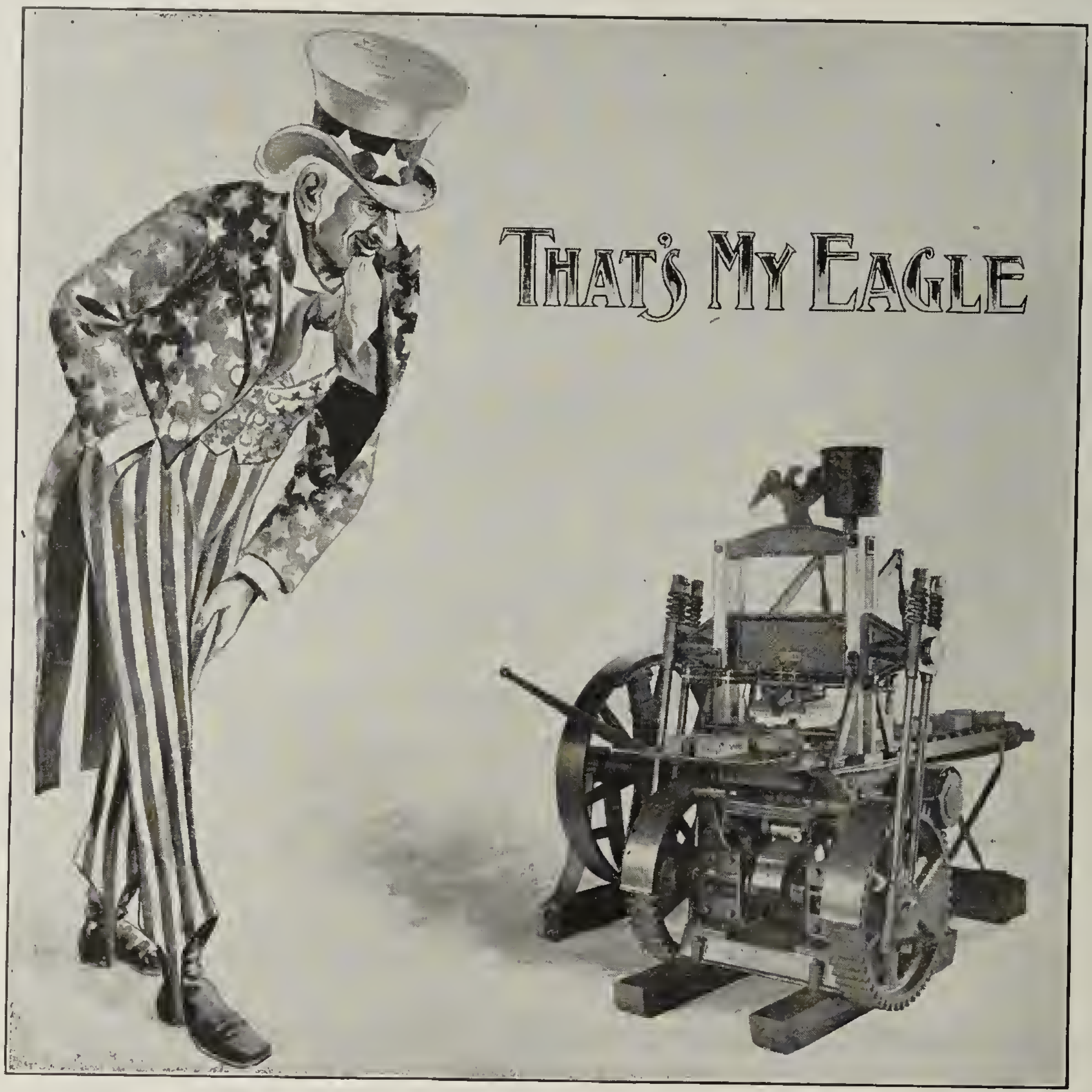
FRANKFORT, IND., U. S. A.

SOUTHERN AGENTS:
Atlanta Brick Machinery Co.,
403 Prudential Building, ATLANTA, GA.

WESTERN AGENTS:
Chicago Brick Machinery Co.,
225 Dearborn Street, CHICAGO, ILL.

Mention The Clay-Worker.

UNCLE SAM is proud of the Eagle. So are we. So are all the clayworkers who have bought Eagles. Why is it? People are never proud of a poor thing or a disappointing investment. They all like the Eagle because it is a fulfiller of guarantees, because it stands for quality, because it's a willing worker, because it saves its cost in repair bills, because when the whistle blows it's ready and able to run, and is willing and able to run overtime, or all the time, without complaint. If you're going to buy a repress and are willing to buy on a business basis of economy, you'll be safe in investigating the record of the Eagle. We'll send you facts and figures for the asking, and a list of users. Wire or write.



We also build the only complete line of clayworking machinery in the various processes. Every machine a winner because it's **"Built Right and Runs Right."**

The American Clay-Working Machinery Company,

Bucyrus, Ohio, U. S. A.

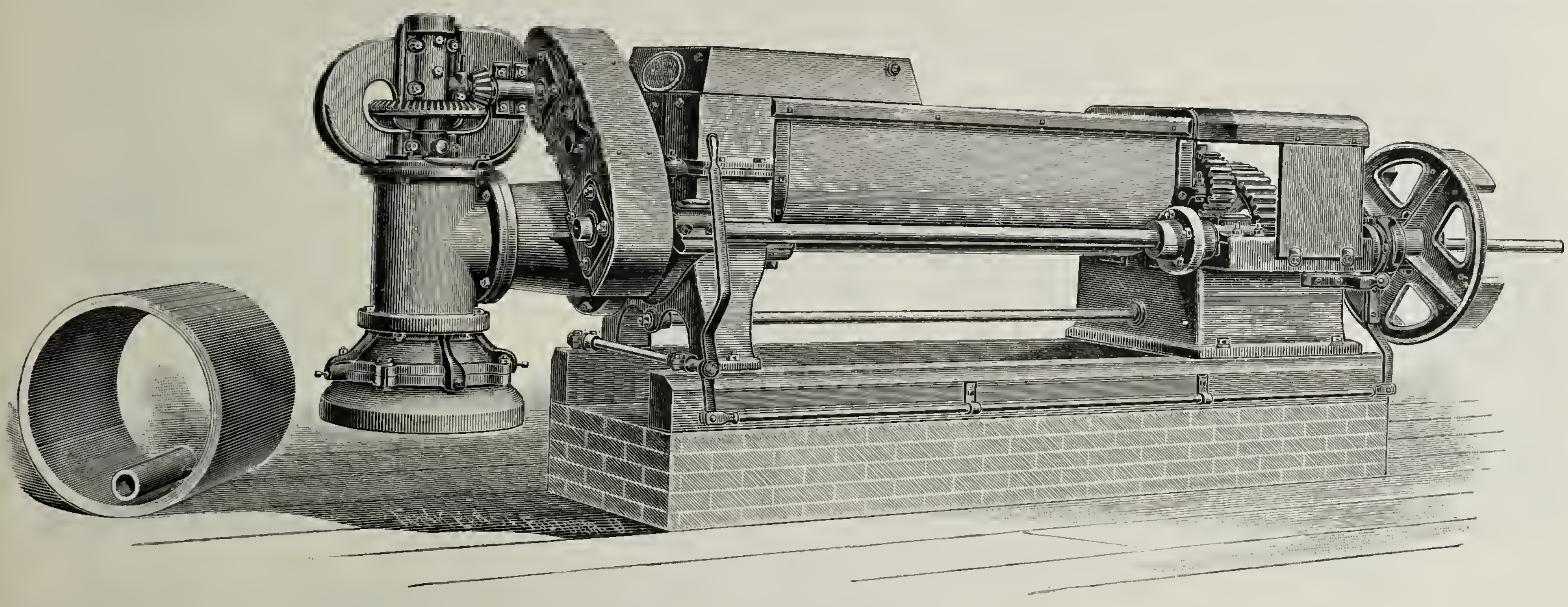
New York Office,
39-41 Cortlandt St.
Chicago Office,
Merchants' Loan and Trust Bldg.
European Office,
3 Gore St., Picadilly, Manchester, Eng.

See Ad. on Page 486.

A NEW COMBINATION.

◆◆◆◆◆◆◆◆◆◆◆◆◆

INVESTIGATE IT THOROUGHLY.



Recognizing the fact that the average tilemaker does not sufficiently pug the clay he uses we have arranged our famous "Hummer Combined" Brick Machine so as to make all sizes of drain tile from 2½ inches to 24 inches.

Sizes 2½ inches to 8 inches, delivered horizontally and the larger sizes vertically. This machine, with a "Bensing" Automatic Tile Cutting Table, makes the most complete outfit for the manufacture of drain tile and hollow building blocks on the market.

We would like an opportunity to make you thoroughly acquainted with the good qualities of this Machine. A postal card from you will bring the information.

The J. D. FATE CO.,

B. E. LaDOW, Western Agent,
1210 Chamber of Commerce, Chicago, Ill.

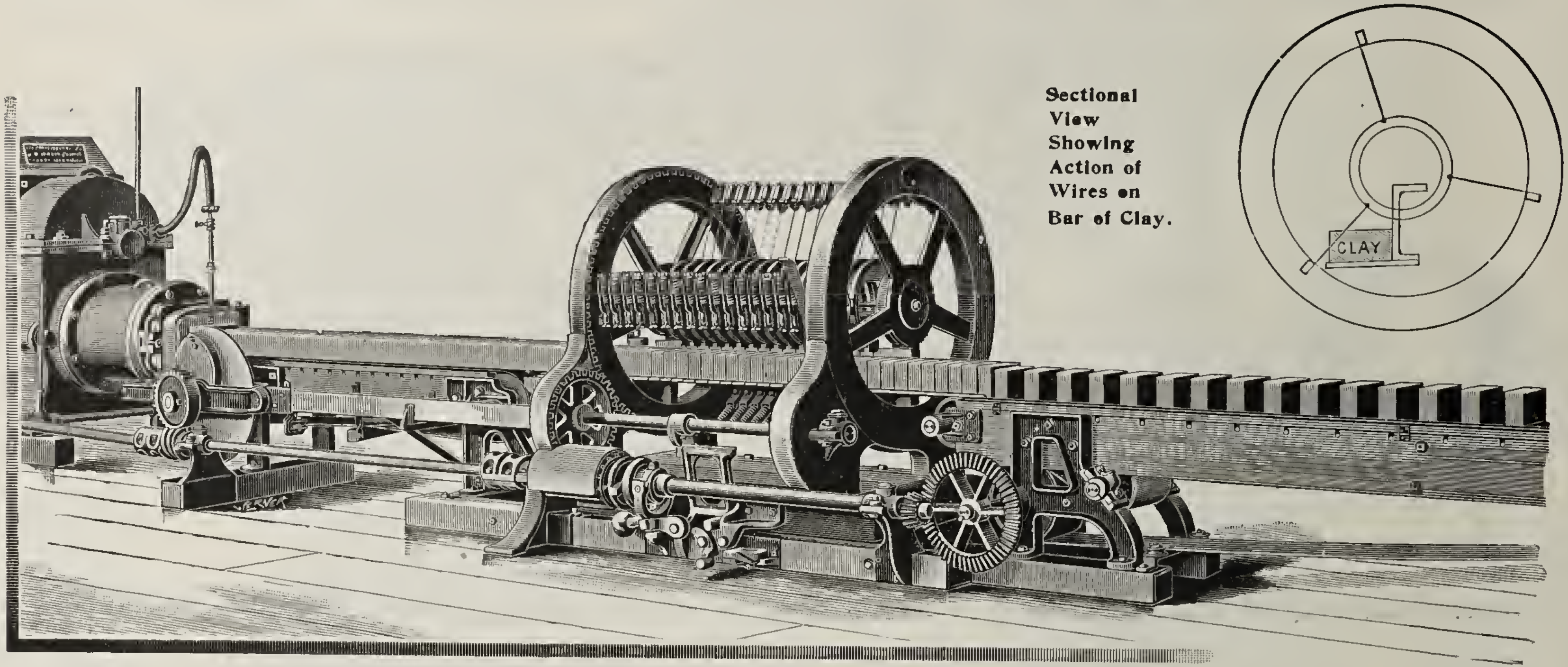
Plymouth, Ohio.

Mention The Clay-Worker.

NO OTHER

AUTOMATIC CUTTER

Is "Just as Good" as This.


Sectional View Showing Action of Wires on Bar of Clay.
CLAY

ROTATING AUTOMATIC CUTTER. Patented.

Why waste time and money using Cutters which are frequently out of order and cannot be depended upon to do good work?

Why not produce brick of **finest quality** when it can be done with less expense?

A multitude of others have found it profitable to use this Apparatus.

Why should you not use it also?

You will be satisfied with it.

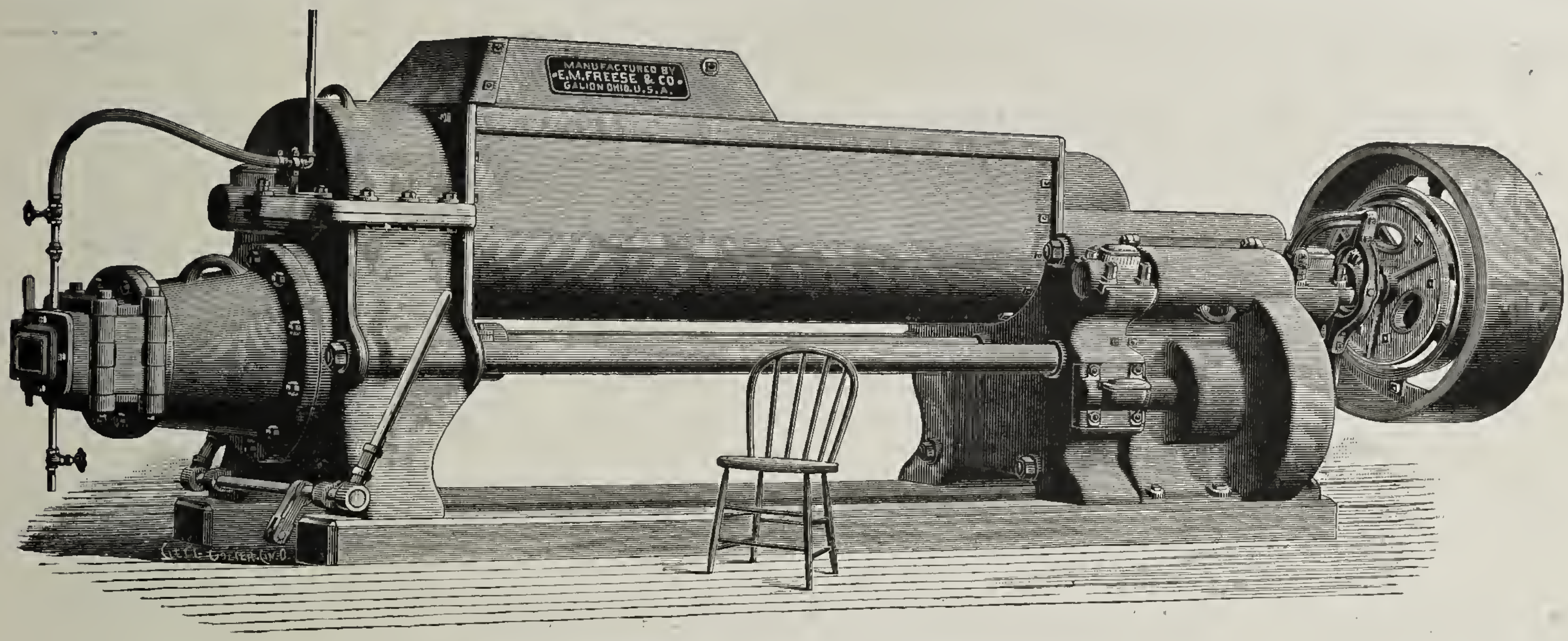
We will prove this statement if you will give us opportunity.

E. M. FREESE & CO.,
Galion, Ohio.

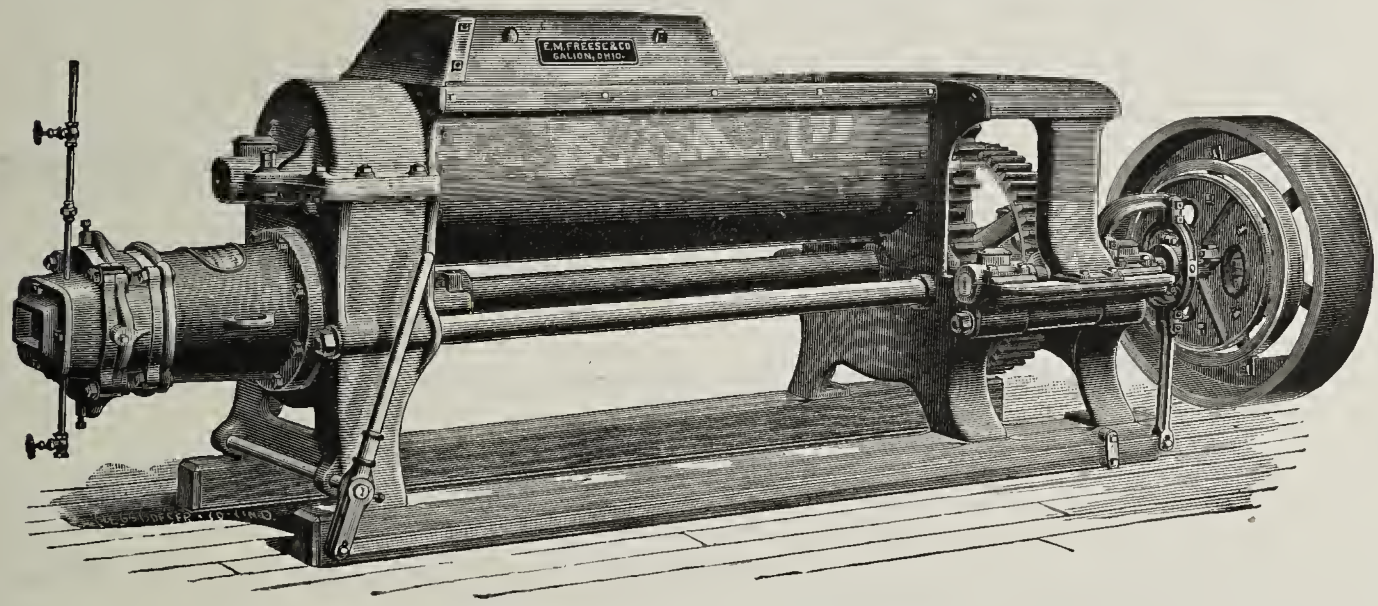
Mention The Clay-Worker.

Union Brick Machines

With Pug Mill Combined.


MANUFACTURED BY
E.M. FREESE & CO.
GALION OHIO. U.S.A.

UNION BRICK MACHINE. (SPECIAL SIZE.)



UNION BRICK MACHINE. (No. 1 SIZE.)

We build these Machines in five (5) sizes.

Their reputation for convenience, enconomy and satisfactory service generally is established by their use in scores of the best Brick Plants.

E. M. FREESE & CO.,
Galion, Ohio.

Mention The Clay-Worker.

SOME OF THE ARTICLES WE MAKE

Horizontal & Vertical Brick Machines

Clay Granulators,
Clay Elevators,
Clay Cars, Pug Mills,
Revolving Dump Tables,
Tempered Steel Brick Strikes,
Kiln Castings,
And other castings.

◆ ◆ ◆

Friction Winding Machines,
Friction Clutches,
Friction Clutch Pulleys,
Friction Cut-off Couplings.

◆ ◆ ◆

Power Freight Elevators,
Hoisting Machines,
And Some Other Things.

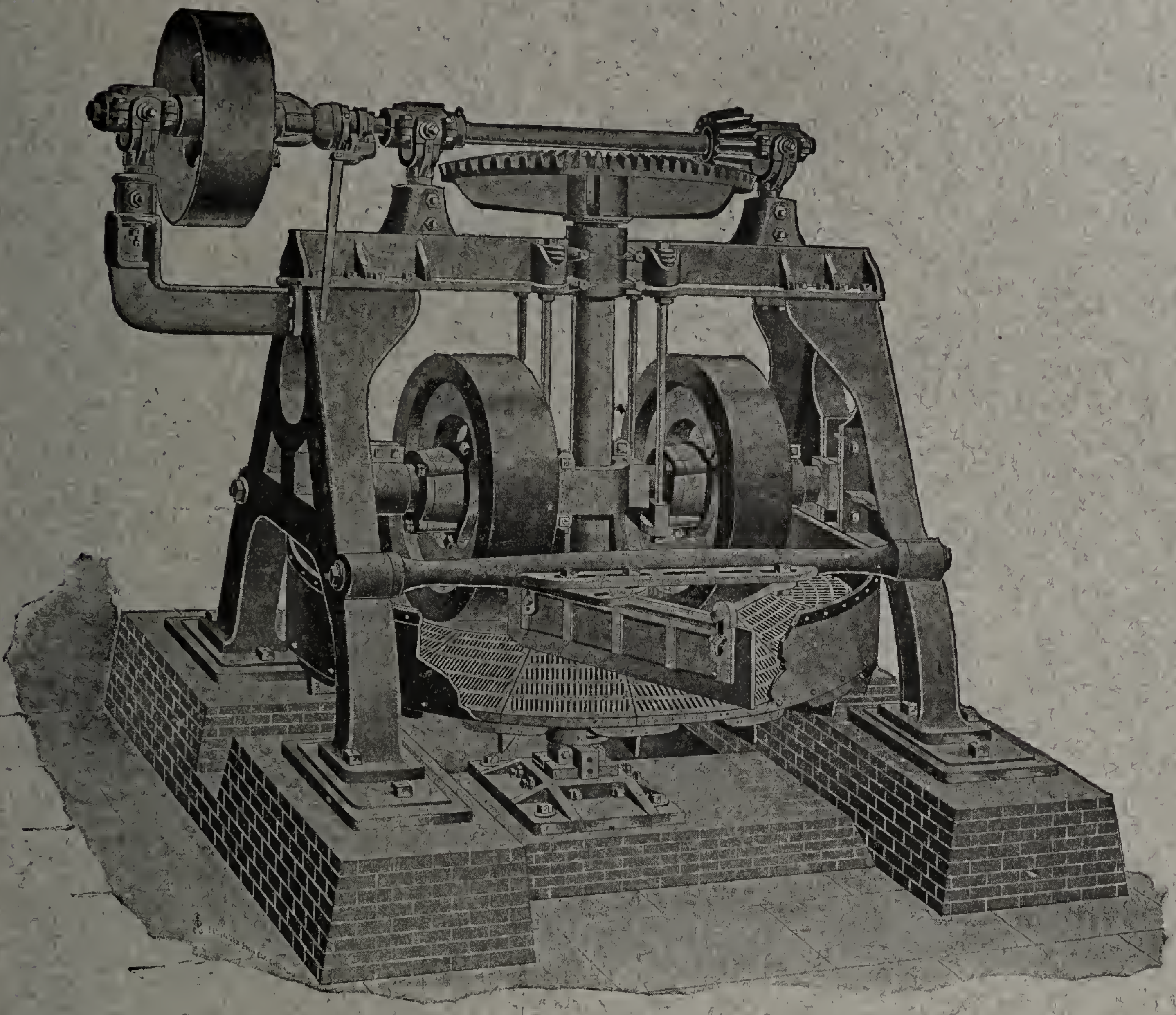
Have printed descriptive sheets describing many of these articles, which we will be happy to furnish, with prices on application.

It's not our aim to build the cheapest but we do try to build the best. Better Investigate Them.

The Eastern Machinery Co.,

Mention The Clay-Worker.

NEW HAVEN, CONN.



The FROST DRY PAN.

The ORIGINAL and BEST Dry Pan in the market. More of these Dry Pans in use to-day than all others combined. All sizes: both Wood and Iron Frames. Used by every Prominent Brick Manufacturer. ☞ Less repairs are required for the Frost Dry Pan than any other make. This is a very important fact. High Grade Automatic and Throttling Steam Engines, Horizontal Tubular Boilers and Plain and Submerged Tube Vertical Boilers. ☞ Send for Illustrated Catalogue.

The Frost Manufacturing Co.,

WORKS:
GALESBURG, ILL.

SALES DEPARTMENT:
135 Adams St., CHICAGO, Ill.

ABC ABC

Expense and Annoyance
Eliminated With the
"A B C" Waste
Heat Brick
Dryer.

Gentlemen—We have installed the waste heat system at our works, conducting and distributing the hot air from the center of our kilns through underground ducts with your fan.

We do not hesitate to say that there is a very great saving in fuel, and that it works very satisfactorily indeed. The simplicity of, and the little machinery required in operating, the fan eliminates an immense trouble, expense and annoyance incident to either steam or direct heat system of drying

Yours very truly,
TERRE HAUTE BRICK AND PIPE CO.
(Will P. Blair, Sec.)
Terre Haute, Ind.,
Oct. 29, 1902.

The results obtained by others can be duplicated in your plant. Note the experience of the Terre Haute (Ind.) Brick and Pipe Co.

New York, Chicago, London. **American Blower Co.,** Detroit, Mich.

LL C LINE ADV. DET

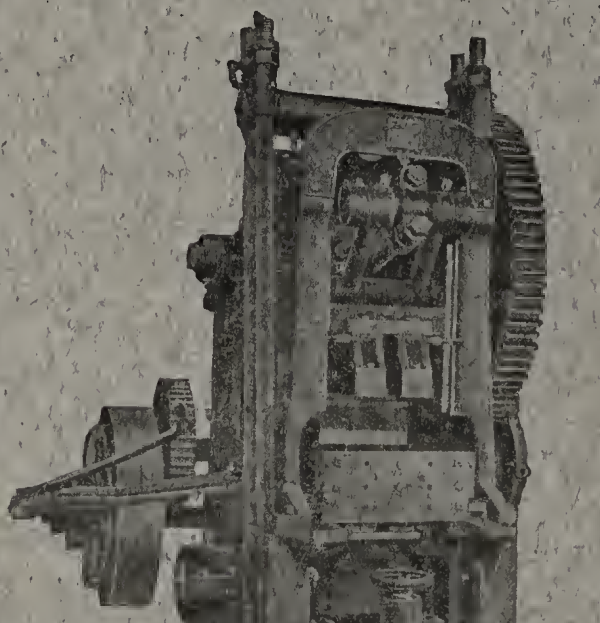
Looking for Trouble

That is we want to help you out of your trouble in screening your clay.

WE CAN DO IT

LET US TRY AND CONVINCE YOU.

DUNLAP MFG. CO.,
BLOOMINGTON, ILL.



TWO MOULD STEAM DRY PRESS.

OF INTEREST TO "DRY PRESS" BRICKMAKERS.

THIS PRESS will make brick on edge or in the usual way, standard or Roman size.

It is of special value in plants where a large number of shapes or sizes are made.

It can be run on the odd orders, and large presses kept for regular sizes.

We would be pleased to hear from you.

ALSO STEAM AND HAND REPRESSES, STEEL DRYER CARS, SWORD BRICK MACHINES.

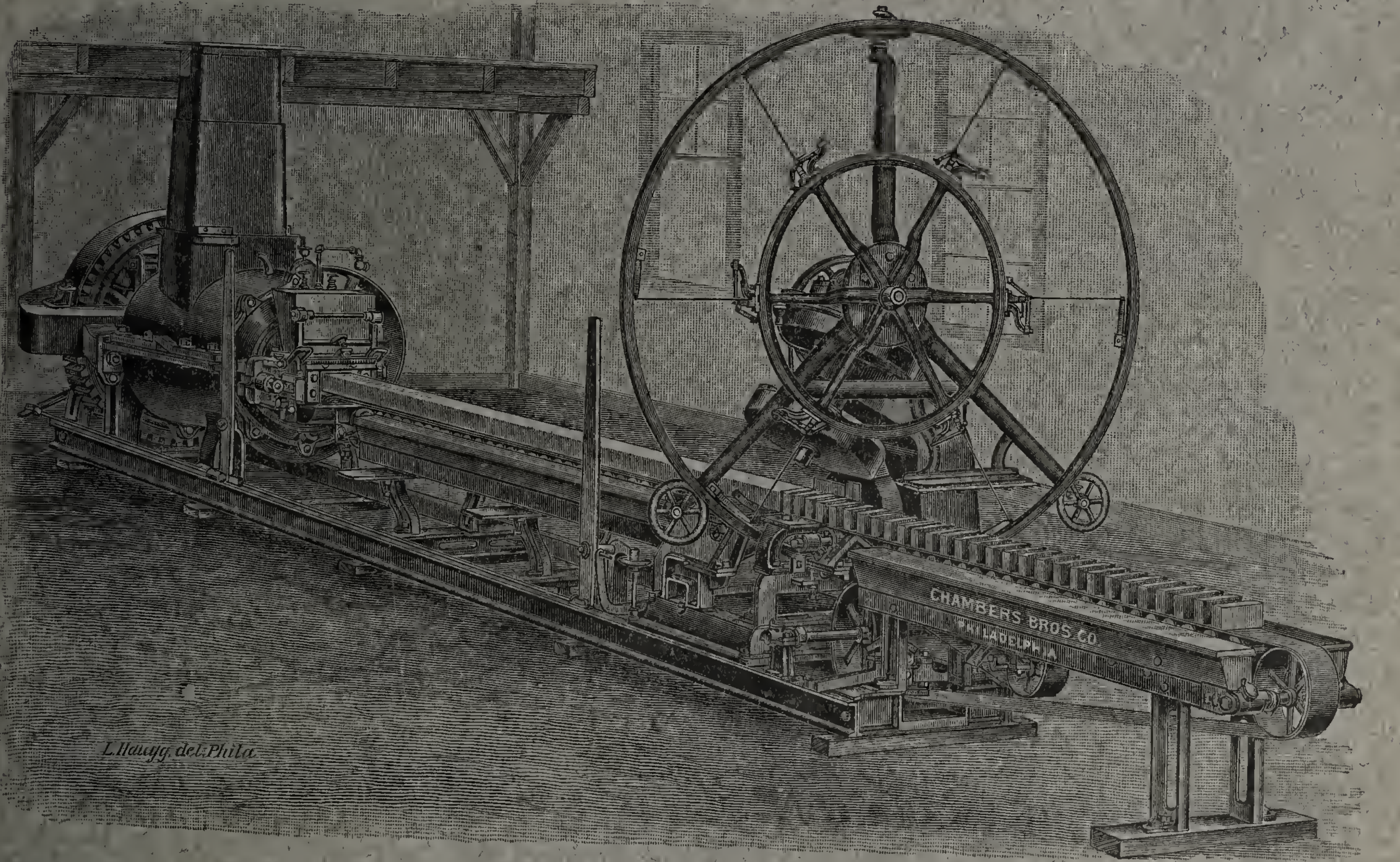
The Ohio Ceramic Engineering Co.,
CLEVELAND, OHIO.

Table of Contents, Page 556.

CHANDLER EG. CO. INDPLS.

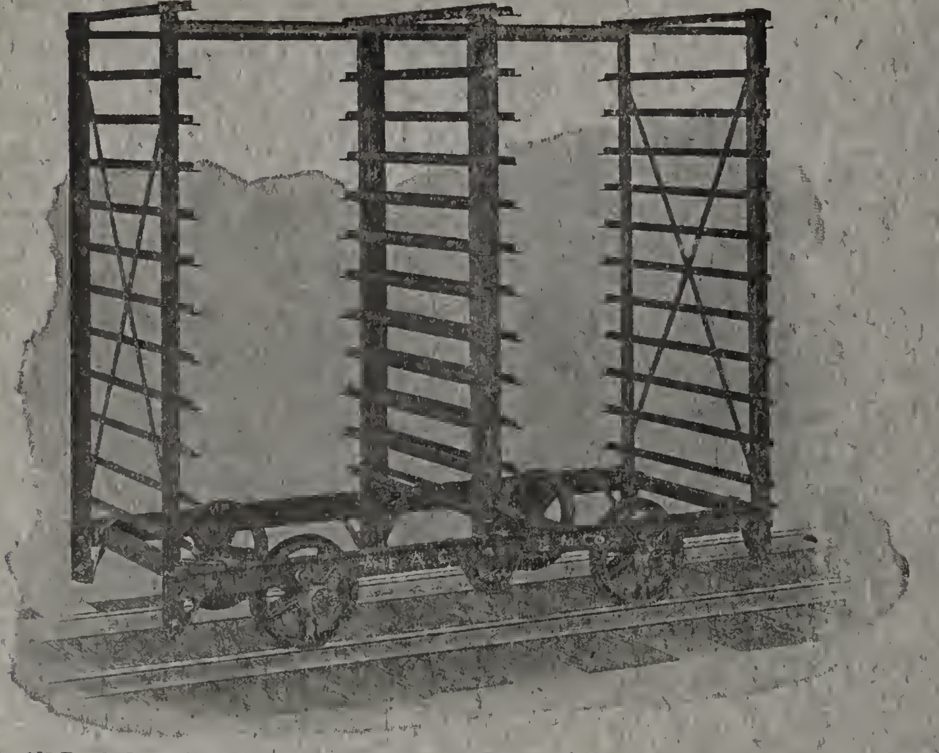
THE CLAY WORKER
A JOURNAL DEVOTED TO ALL CLAY WORKING INTERESTS.
INCLUDING BRICK TILE TERRA-COTTA SEWER PIPE POTTERY ETC.
T. A. RANDALL & CO., PUBLISHERS.
THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.
VOL. XXXVIII, No. 6. INDIANAPOLIS, IND., DECEMBER, 1902. $2.00 a Year in Advance.

Automatic Side-Cut and End-Cut Brick Machines.


CHAMBERS BROS. CO.
PHILADELPHIA
L. Haugg, del. Phila.

CHAMBERS BROTHERS COMPANY,
FIFTY-SECOND STREET, BELOW LANCASTER AVE.,
PHILADELPHIA, PA.

DAVIS BROWN, Chicago Agent,
59 West Jackson Blvd.



No. 137 Rack Car with Wright's Patent Malleable Corner and Center Upright Brackets.

We also make a full line of

Dump Cars, Turn Tables, Transfer Cars, Track Switches, Etc.

Write for Circular.

The ATLAS CAR AND MFG. CO.,

(THE ATLAS BOLT & SCREW CO. PROPRIETORS.)

Cleveland, Ohio.

CARS!

WE ARE THE LARGEST MANUFACTURERS OF

Dryer Cars

Of every description in the World.

We do not confine ourselves to standard styles and sizes, but build anything in the way of cars to suit the requirements of our Clients. Our long experience in the manufacture of cars, enables us to design and build the strongest, lightest and easiest running car on the market.

Don't Buy until you see What we have to offer.

INDEX TO ADVERTISERS.

Brick Machinery Dry Press Process.

Name. Page.
Anderson Foundry and Mach. Works 510
Chicago Brick Machinery Co.. 578
Chisholm, Boyd & White Co.... ....504, 505, 506, 507

Name. Page.
Fernholtz Brick Machinery Co. The 509
Ill. Supply & Construction Co. 511
Ross-Keller Brick Machine Co 508

Brick and Tile Machinery.

American Clay-Working Mach Co., The 586, 594
Anderson Foundry and Mach. Works........510, 584
Brewer, H. & Co........ 592
Chambers Brothers Co........ 501
Chicago Brick Machinery Co... 578
Eastern Machinery Co, The.... 598
Fate & Co., The J. D........ 595
Freese, E. M. & Co........561, 596, 597
Henry Martin Brick Mach. Mfg Co., The 590
Hensley, J. W........ 503
Horton Mfg. Co., The........ 591
Ill. Supply & Construction Co. 511

Kells Foundry and Machine Co........ 571
Leader Mfg. Co, The........ 585
Madden & Co........ 575
Ohio Ceramic Engineering Co., The........ 600
Potts & Co., C. & A. 588, 589
Raymond Co., The C. W........ 557
Stedman Foundry and Machine Works........ 513
Steele & Sons, J. C........ 578
Wallace Mfg. Co, The........ 593
Wellington Machine Co, The... 559
Wiles Co., A. M. & W. H........ 577

Brick Kilns and Dryers.

American Blower Co, The........ 600
Boss, John C........ 564
Barron Dryer Co........ 583
Bushong, M. M........ 565
Crown Dryer Co., The 577
Economy Dryer and Oil Burning Co........ 581
Eudaly, W. A........ 565
Haigh, H........ 579
Illinois Supply and Construction Co, The........ 511

Justice, I. M........ 579
Morrison & Co., R. B........ 574
New York Blower Co., The 582
National Dry Kiln Co, The..... 581
Phillips, S. G........ 570
Pike, E. M........574
Platt Triple Draft Kiln Co. 574
Reppell, L. H........ 579
Sharer, Geo. W........ 580
Standard Dry Kiln Co, The..... 516

Brick Yard Supplies.

Arnold-Creager Co., The........ 513
Atlas Car & Mfg. Co. 502
Bechtel Bros........ 576
Cleveland Car Co........ 580
Caldwell & Son Co., H. W........ 575
Carnell, Geo........ 578
Central Iron Works 573
Cox, Geo. S........ 570
Dunlap Mfg. Co 600
Fernholtz Brick Machinery Co., The........ 509
Frost Manufacturing Co........ 599
Gandy Belting Co., The........ 573
Gray, S. B........ 570
Harrington & King Perforating Co, The 503

Henry Martin Brick Machine Mfg. Co., The........ 590
Horton Mfg. Co, The........ 591
Jeffrey Manufacturing Co, The. 572
Kendall & Flick........ 573
Marion Steam Shovel Co........ 584
Main Belting Co 572
Mershon, Schuette, Parker & Co 573
National Musical String Co.... 577
Phillips & McLaren 571
Rockwood Mfg. Co, The........ 571
Scotts Patent Brick Car Co..... 587
Thew Automatic Shovel Co, The 585
Williams & Co., M. F........576
Williams Patent Crusher and Pulverizer Co 512

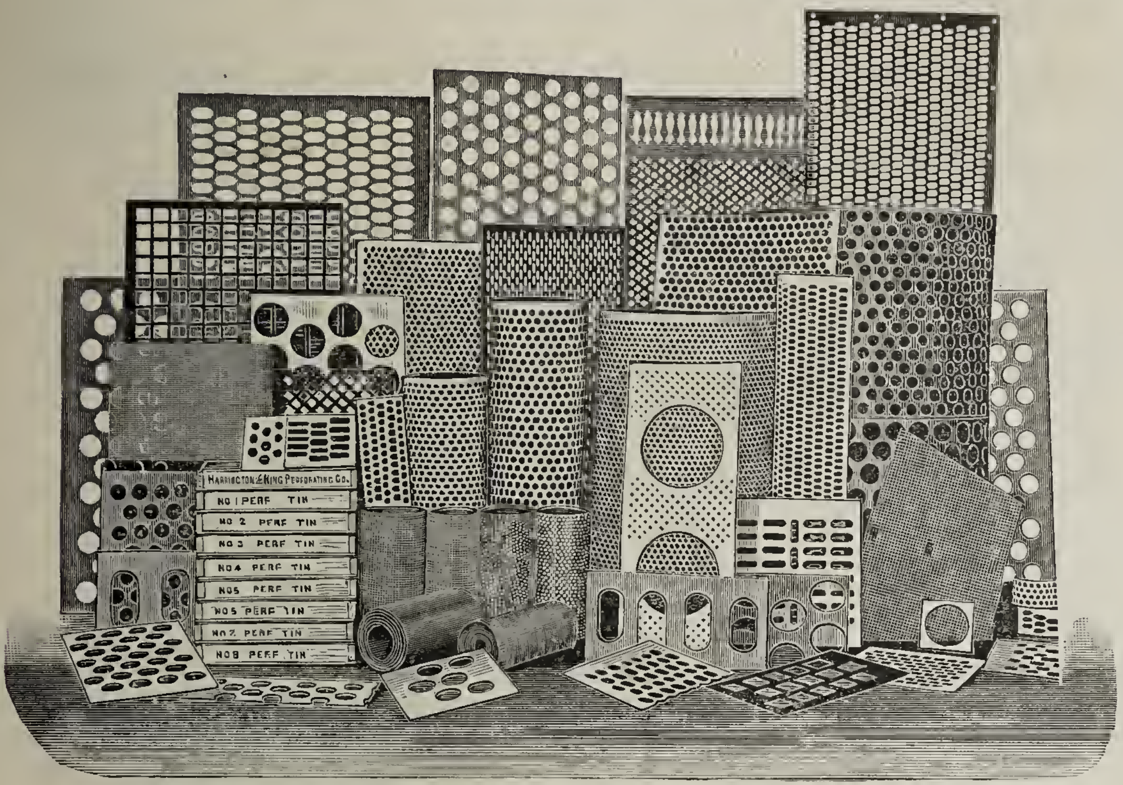
Miscellaneous.

American Ceramic Society 514
American Brick and Clay Mfg Co........ 514
American Road Machine Co... 575
Audel, Theo. & Co........ 571
Avery Stamping Co........ 566
Big Four Route........ 574
Bloomfield Clay Co........ 514
Boss, John C. 564
Caldwell Co., W. E........ 570
Caspar Co., The 567
Clinton Paving and Building Brick Co., The........ 515
Crown Fire Clay Co., The 569
Dean Bros. Steam Pump Works 572
Evens & Howard 569
Evert, H. C. & Co........ 575
Gabriel & Schall........ 573
H. C. Bauer Engraving Co...571, 572
Indianapolis Engraving and Electro Co........573, 575
Indiana, Decatur & Western ... 574
Johnsonburg Vitrified Brick Co 514

Killen, Wm. H........ 570
Koch & Ritterskamp........ 571
Lake Erie & Western........ 574
Lake Shore & Mich. Southern.. 563
McAvoy Vitrified Brick Co 515
Miller Oil and Supply Co 572
New York Brick and Paving Co 514
Ohio State University........ 573
Pennsylvania Line 575
Purington Paving Brick Co, The 515
Perrine & Son, H. C........ 571
Reese-Hammond Fire Brick Co 569
Richardson, W. D........ 570
Roessler-Hasslacher Chemical Company, The 576
Sangamo Brick Co. 515
Savage Fire Brick Co........ 569
Southern Railway and Mobile & Ohio R. R........ 572
Terre Haute Brick and Pipe Co. 515
Vandalia Line 575
Wabash Clay Co., The........ 515
Ads., Small Wanted, For Sale, etc.

PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.



For —

CHUTE OR GRAVITY SCREENS.
SHAKING OR VIBRATING SCREENS.
REVOLVING SCREENS.
DRY PAN SCREENS.

For Cleaning and Grading

CLAY, SHALE, SAND, CEMENT, COAL, STONE, Etc.

For —

PALLETS or TRAYS, CAR BOTTOMS, DRYING FLOORS, CONVEYOR BOTTOMS, SEPARATORS, Etc.

The Harrington & King Perforating Co, No. 231 North Union Street,
CHICAGO, ILL., U. S. A.

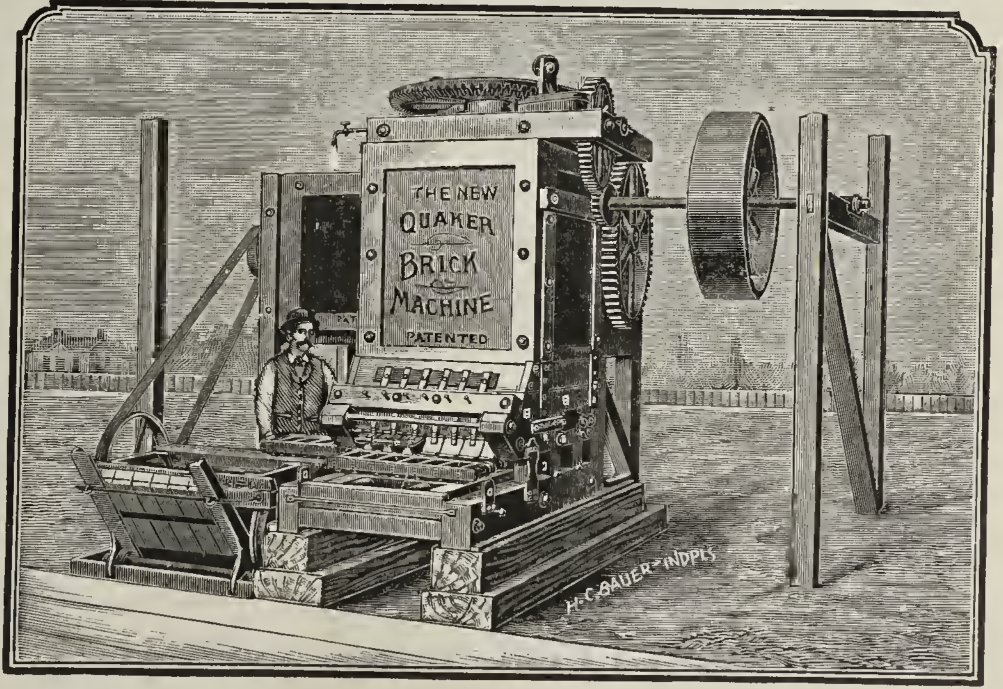
The Best for the Least Money.

Complete Combined Outfit, Consisting of the Extra Heavy Iron Quaker, Spiral Pug Mill and Mold Sanding Machines.

THIS OUTFIT is intended for fire brick, common brick, or street pavers. Its capacity is only limited by the ability to handle the product.

As will be seen, the manner of gearing has been simplified to the utmost extent, thus reducing the power required, so that a fifteen to twenty horse-power engine will run it with ease. No line or counter shafting necessary. No extra pulleys or belting.

I carry in stock a full line of first-class brickyard supplies at a very reasonable price.


THE NEW QUAKER BRICK MACHINE
PATENTED
H.C. BAUER INDPLS

No. 1 Spur Geared Style, Capacity 40,000 or More per Day.

JAMES W. HENSLEY,

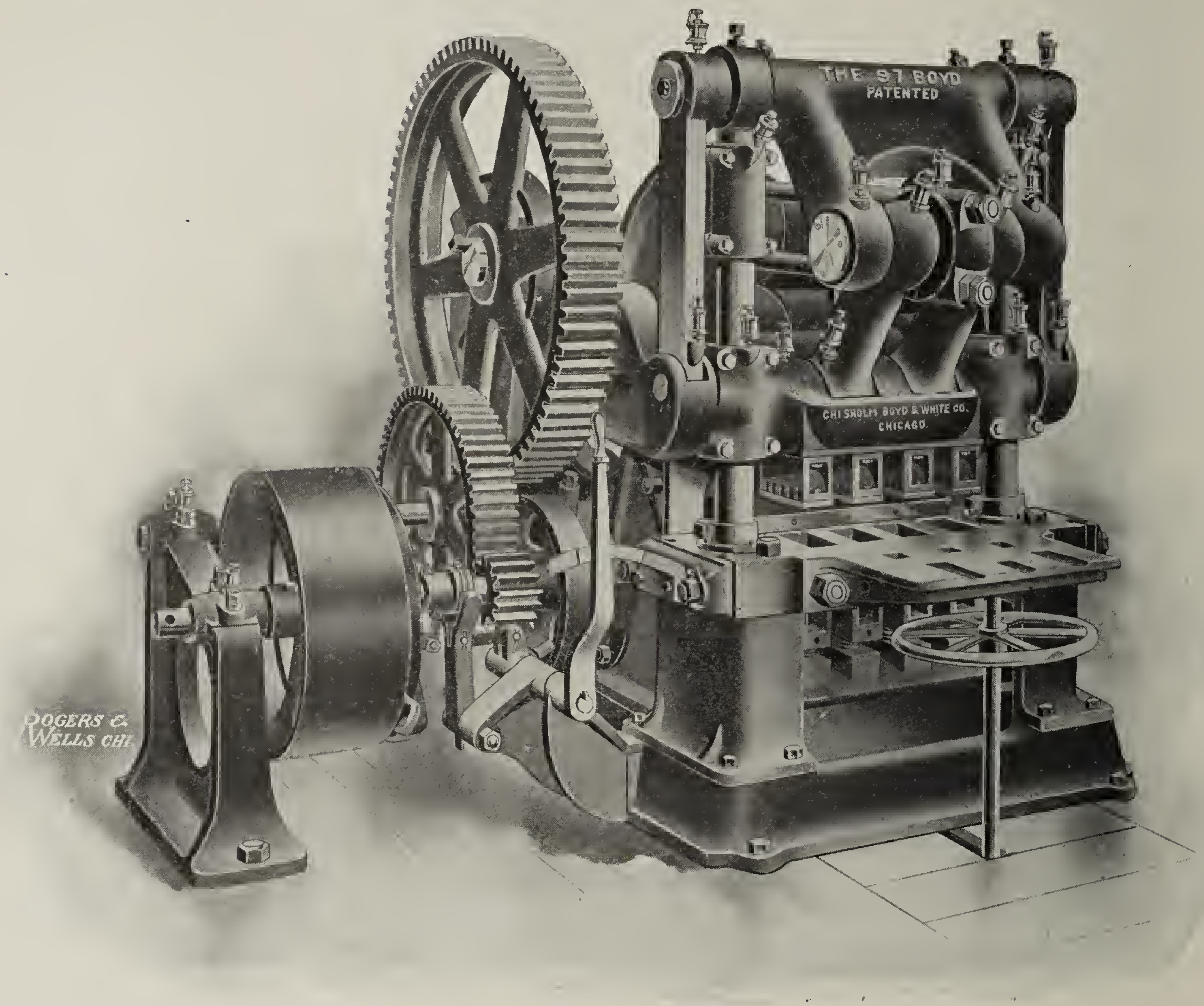
Successor to
S. K. FLETCHER.

Indianapolis, Ind.

The Improved Boyd Brick Press.

The '97 Model.

IT'S NAME A GUARANTEE.



The '97 Boyd Brick Press has Enormous Strength and Great Durability: It is Compact; the Adjustments are Convenient; it Operates Quietly and Smoothly; The Workmanship and Material are of the best; the Design Ingenious, and shows the most perfect Application of Scientific and Mechanical Princibles to the Art of Brick-making.

Sent on trial and subject to purchase after the making and burning of one or more Kilns of Brick.

Sixty Presses of this Pattern Now in Use.

Can not be broken in pressing brick. Fully guaranteed.

Write for Descriptive Catalogue, No. 9.

CHISHOLM, BOYD & WHITE CO.

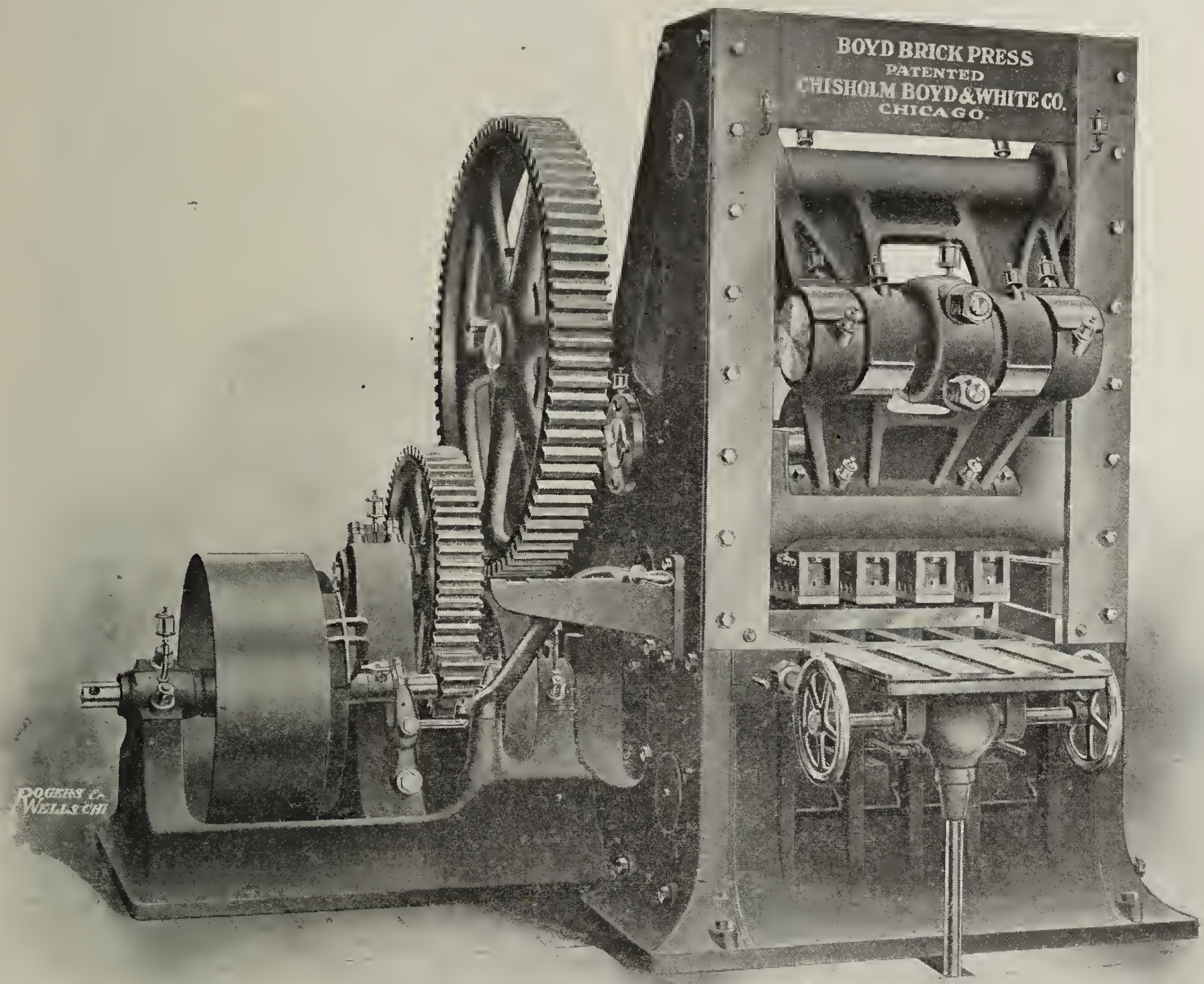
CHICAGO, U. S. A.

OFFICE AND WORKS:
57th and Wallace Streets.

Cable Address; CHISHOLM, CHICAGO.
A. B. C. and Liebers Code.

Mention The Clay-Worker.

The BOYD BRICK PRESS.



The Boyd Brick Press will make Better Brick from Clay or Shale than can be made from the same material by any other press.

Especially adapted for Working Shales; and is the only Successful Machine for Making Fire Brick.

Its Record: More Boyd Presses in Actual Operation than of all other Press Brick Machines Combined.

Brick Plants of any desired capacity designed and constructed complete, Under Guarantee of Producing Satisfactory Burned Brick.

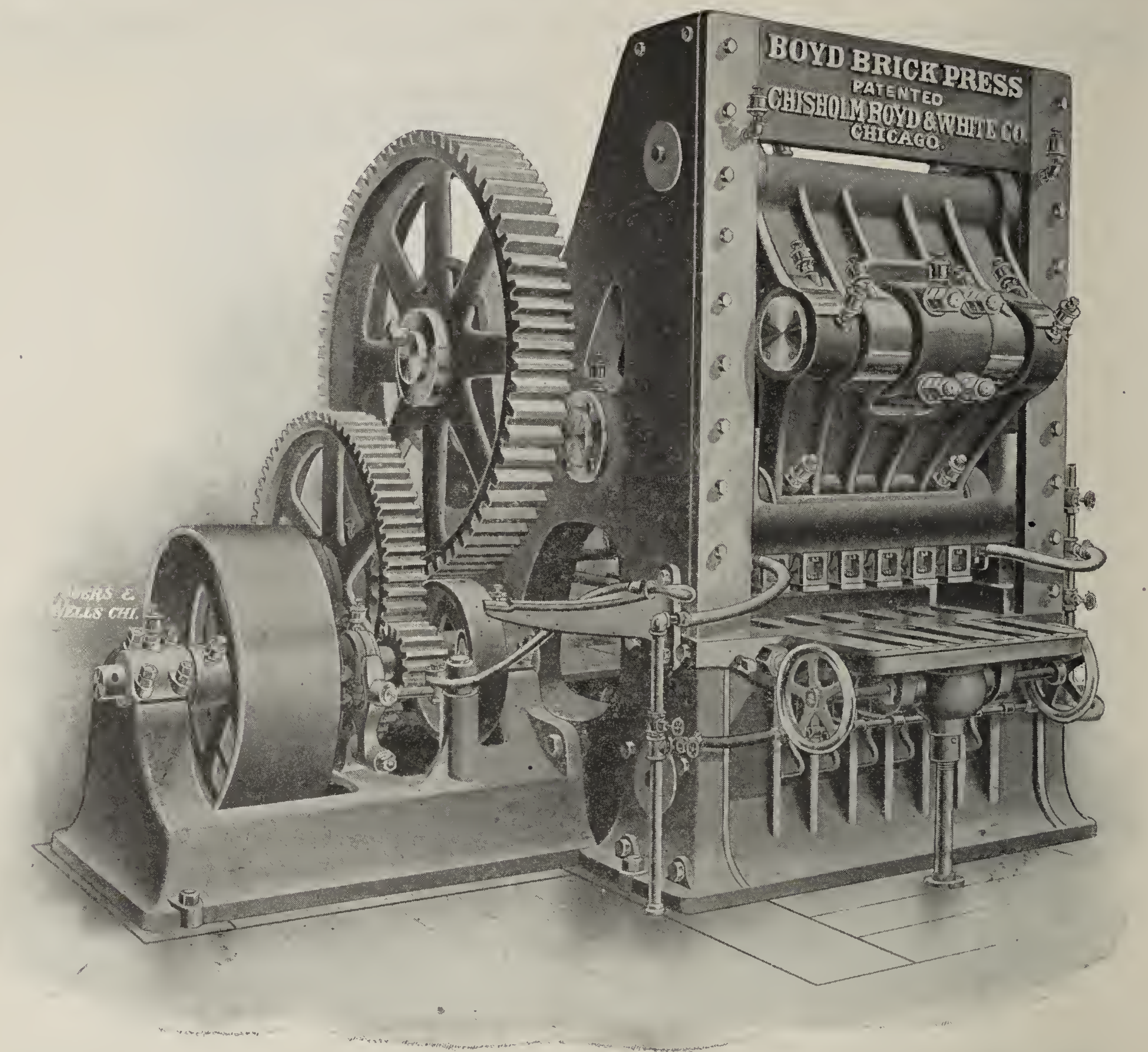
Write for General Catalogue No. 10.

CHISHOLM, BOYD & WHITE CO.,
CHICAGO, U. S. A.

OFFICE AND WORKS:
57th and Wallace Streets.

Cable Address; CHISHOLM, CHICAGO.
A. B. C. and Liebers Code.

America's Greatest Brick Press.



Another Record for the Boyd Press!

Six of our Six-Mold Presses in use **on one yard** since 1892. Average cost of repairs for each machine $1.00 per year.

The Boyd Press exerts greater pressure than any other machine made. It is the only Press in which the lower plungers are independent of the lower crosshead. This feature positively ensures equal pressure and finish on both sides of the brick, and no granulated or soft centers.

The mold liners are made of the hardest and toughest known metal. The movement of the Boyd Press is noiseless and without jar or shock; no rubber or air cushions, hooks, latches or other uncertain and unmechanical devices are employed. Guaranteed for two years. Write for General Catalogue No. 10.

CHISHOLM, BOYD & WHITE CO.,
CHICAGO, U. S. A.

OFFICE AND WORKS:
57th and Wallace Streets.

Cable Address; CHISHOLM, CHICAGO.
A. B. C. and Liebers Code.

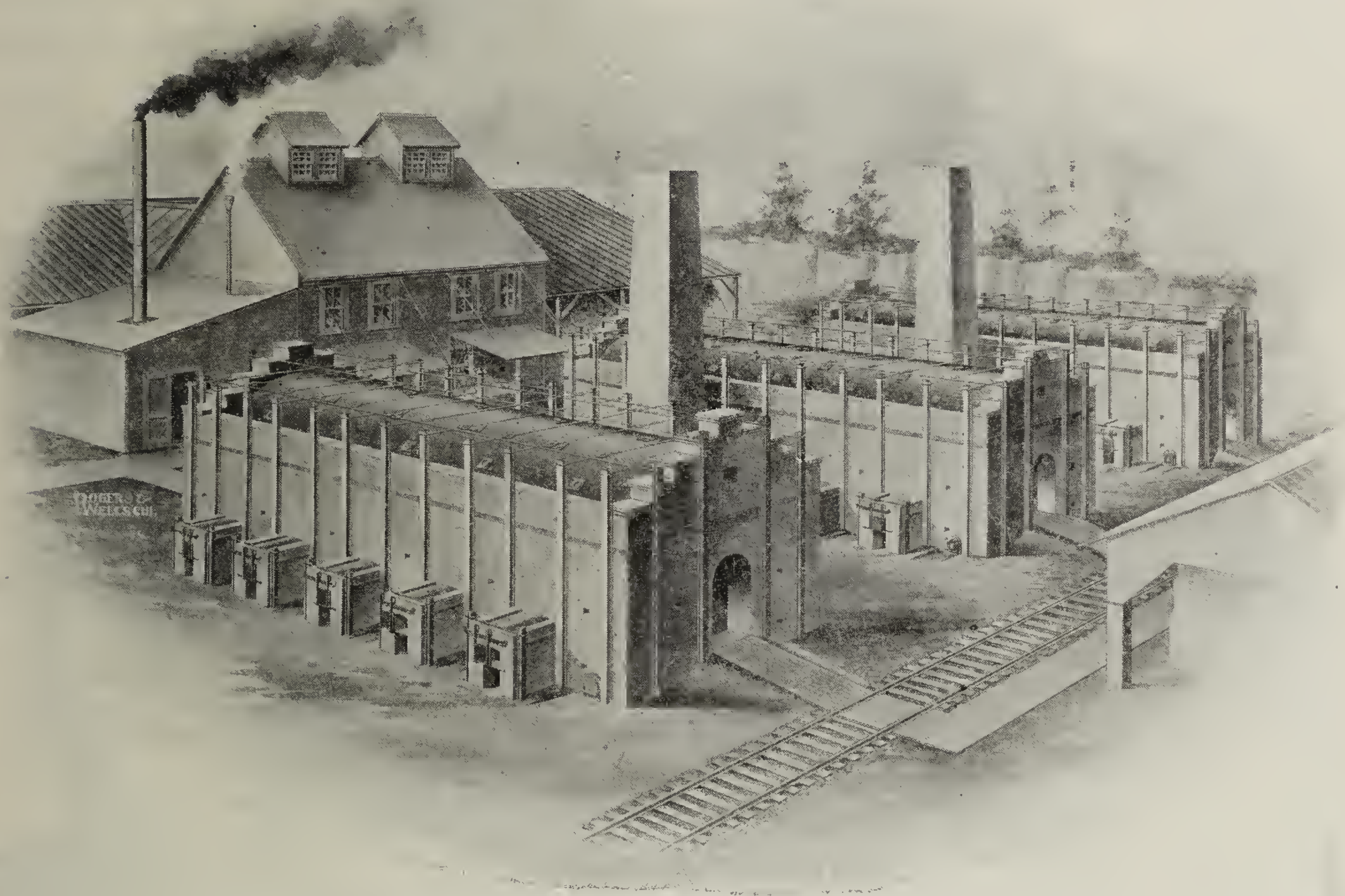
Mention The Clay-Worker.

Chisholm, Boyd & White Company,

ENGINEERS AND CONTRACTORS FOR BRICK PLANTS.

MANUFACTURERS OF

The Boyd Brick Press.



A MODERN BRICK PLANT—As Equipped by Us.

A Sure Thing—We are prepared to construct and equip a Brick Plant of any desired capacity, furnishing the brickmaking machinery and power plant, erect the necessary buildings and kilns, and turn the plant over to the purchaser in proper working order, under guarantee of satisfactory results.

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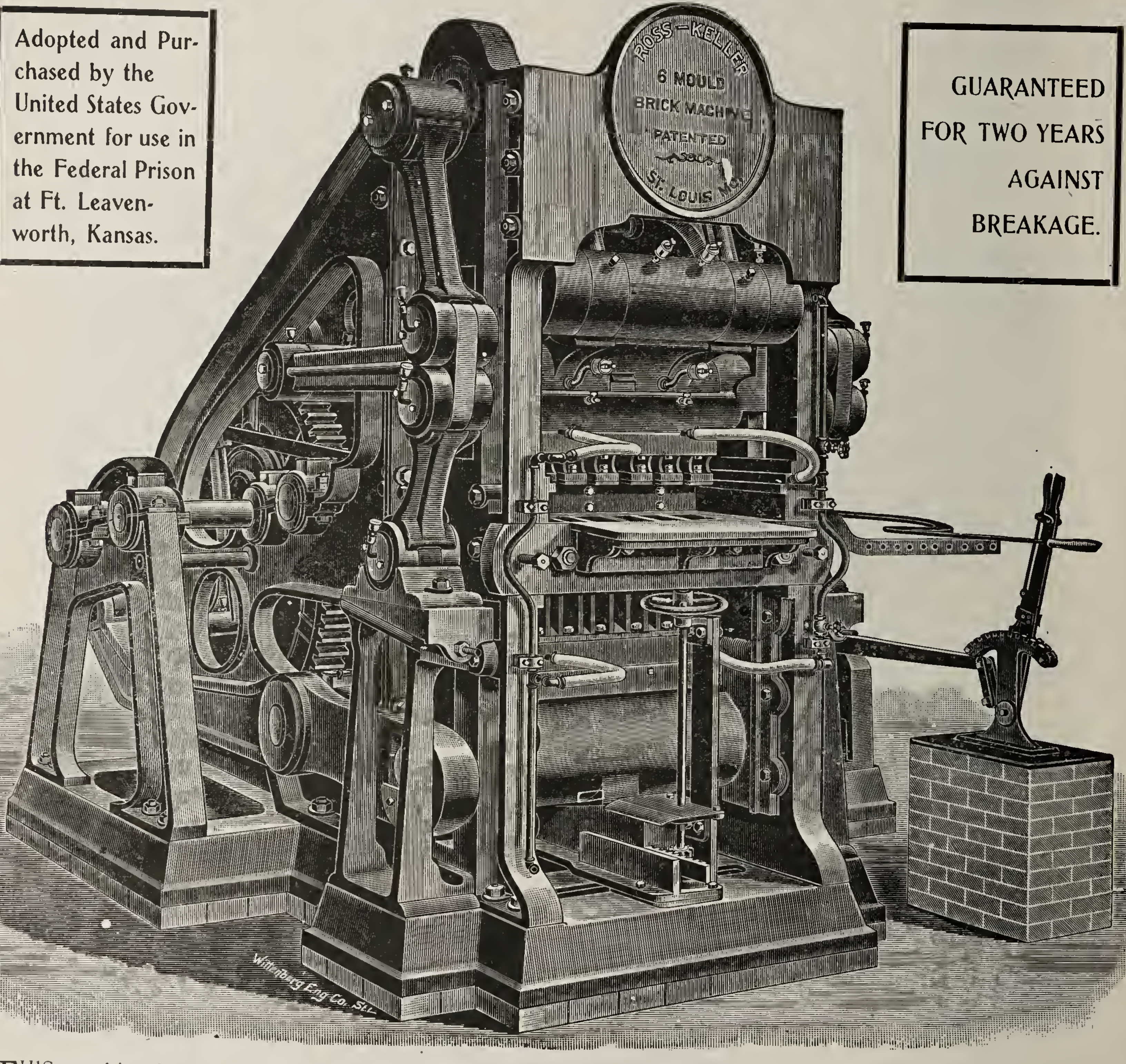
Manufactured in four and and six-mould sizes. Weight of four-mould machine 58,000 pounds; capacity 24,000 brick per day. Weight of six-mould machine 75,000 pounds; capacity 35,000 to 40,000 brick per day.

BRICK SET IN KILN DIRECT FROM MACHINE.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

GUARANTEED FOR TWO YEARS AGAINST BREAKAGE.



THIS machine has an unbroken record of success. It is used on a number of the best equipped brick plants in the United States. It has never failed to give entire satisfaction and we are perfectly safe in guaranteeing that it will work any clay of which pressed brick can be made, and make them better and cheaper than any other press. It makes better brick because the pressure is greater and is applied in a way most effective. It makes brick cheaper because it is unbreakable and hence there are no repair bills or expensive delays and stopping of work which brickmakers know are more costly than the repair bills themselves. If you want to make the best brick at the least expense the season through don't fail to investigate this machine, with it you can "put money in your purse." Let us tell you more about it and give the address of those now using it. Remember "the proof of the pudding is in the eating of it."

For prices and full particulars address **ROSS-KELLER BRICK MACHINE CO.,** Fullerton Bldg., St. Louis. Mo., U. S. A.

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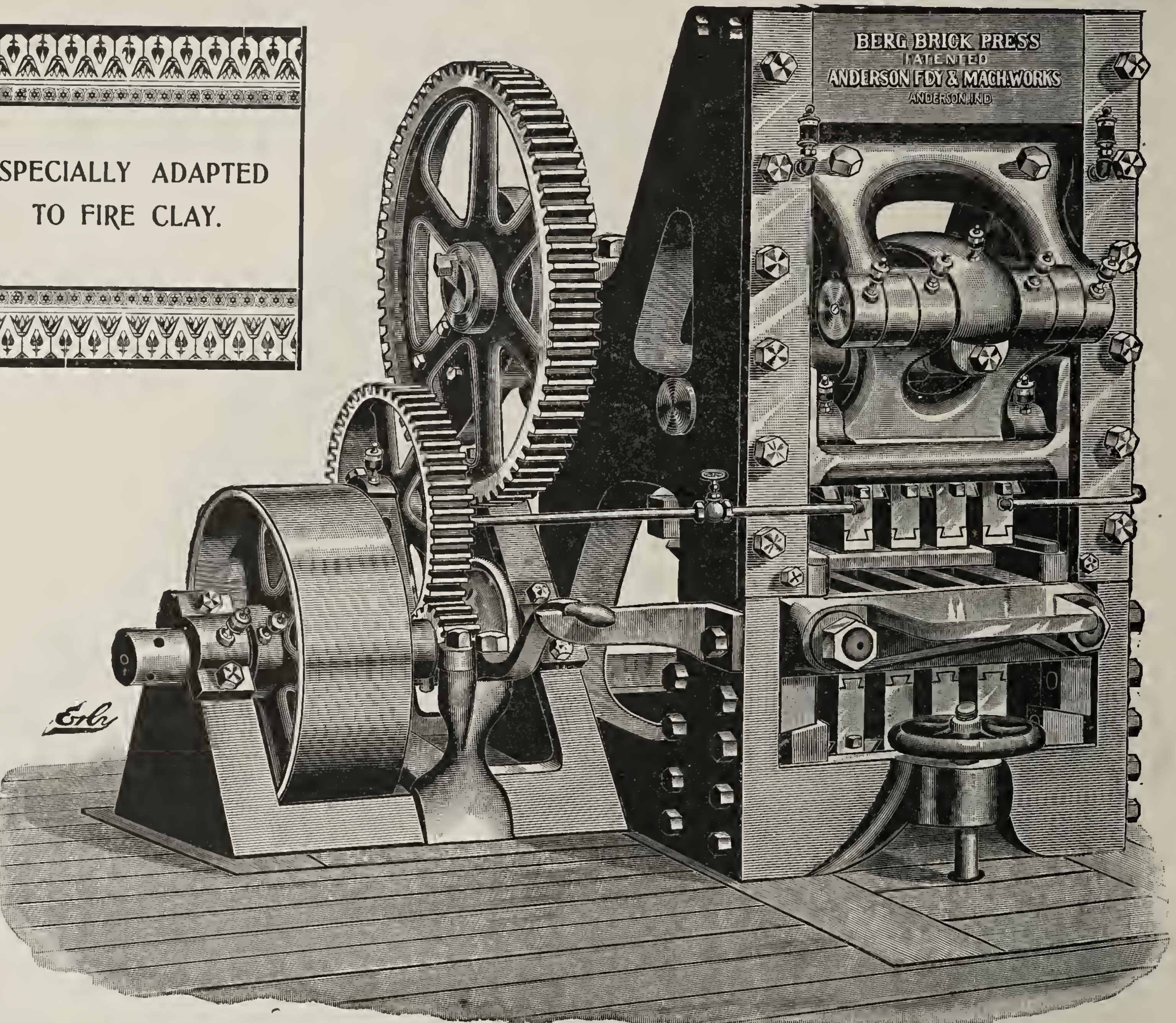
ESPECIALLY ADAPTED TO FIRE CLAY.



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Three distinct pressures.
Greater Pressure than any other machine.
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Will put more clay into given space than any other machine
Less working parts than any other machine.
No Plunger Stems, eye rods or Springs.

Mold Liners Made of Tempered Tool Steel.

Makes all size Brick and Tile from 2 to 24-inch.

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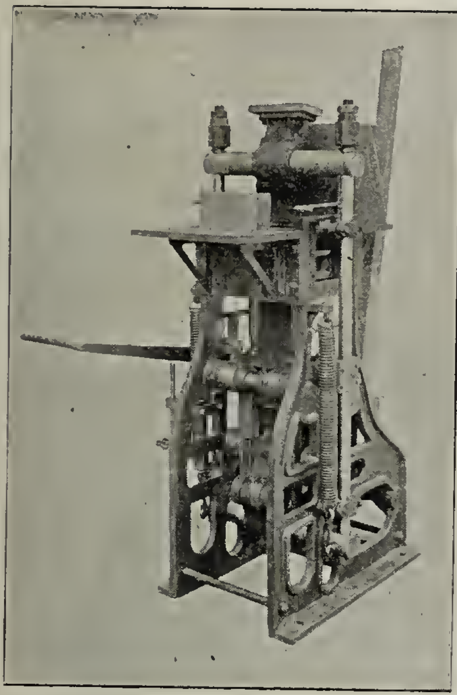
Mention The Clay-Worker.



The New Grath Hand-Power Brick Press.

FOR MAKING PLAIN AND ORNAMENTAL PRESS BRICK FROM SEMI-DRY CLAY.

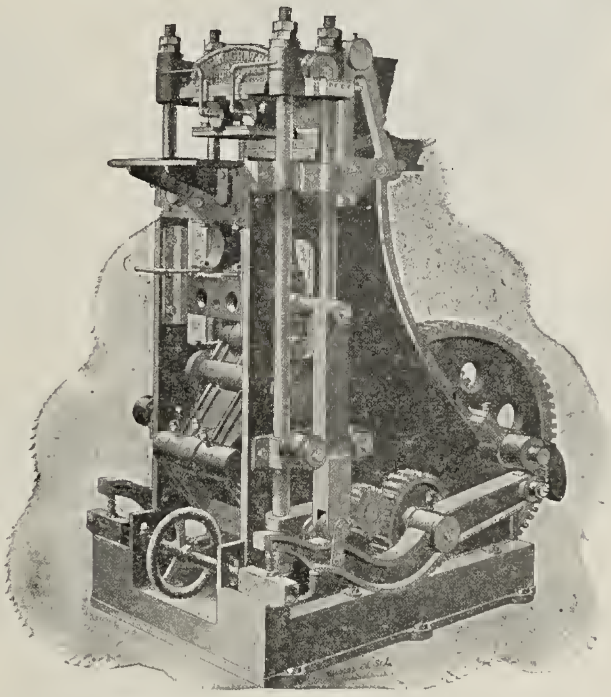
The accompanying cut shows the only successful **HAND POWER PRESS** for pressing brick direct from the clay. The brick made on same are equal to those made on any steam power or hydraulic press. They have a polished face and perfect edges and corners. As will be seen, the press is equipped with charger and feed box. Two men can easily make 2,000 best quality press brick per day. By simply changing the liners and die plates, brick of any size up to 12½ inches long, 8½ inches wide and from 1 to 4¼ inches in depth can be pressed. In making brick on edge the mould is 9 inches deep. No brickyard is complete without a press of this sort. It is also recognized as the only successful press for making plain press or front brick for small yards that are making brick by the plastic process.

The Coffeyville (Kansas) Vitrified Brick & Tile Co. were the first one to order one of these presses, and to show what they think of same, they have only recently placed an order for two more of them.

FOUR HAND POWER PRESSES SOLD IN OCTOBER.

The Grath One and Two Mould Steam Power Press.

The accompanying cut shows the latest improvement in Brick Presses which are built in two sizes. The One Mould, which has a capacity of 5,000 best quality press brick per day; the Two Mould having a capacity of 10,000 best quality press brick per day. This press is so constructed that all shapes and sizes of ornamental brick on flat can be made on same by simply changing moulds and die plates, and is the cheapest as well as the simplest and most powerful Press of its kind in the market. The brick made are very dense with perfect edges and corners. The Press is guaranteed against breakage for one year. All parts subject to strain are of steel.



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The "Grath" New Down-Draft Continuous Chamber Kiln

For burning all sorts of clay ware of any description, with any kind of fuel desired. This is the **PERFECT KILN,** will burn uniformly throughout, without any soft material, and will burn for less cost than the cost in ordinary up-draft kilns, and for one-half of the cost in ordinary down-draft kilns. Can be built any size desired, and guaranteed to give **better** satisfaction than **any other** single or continuous kiln in the market. For further particulars apply to

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The Williams Patent Crusher and Pulverizer Co.

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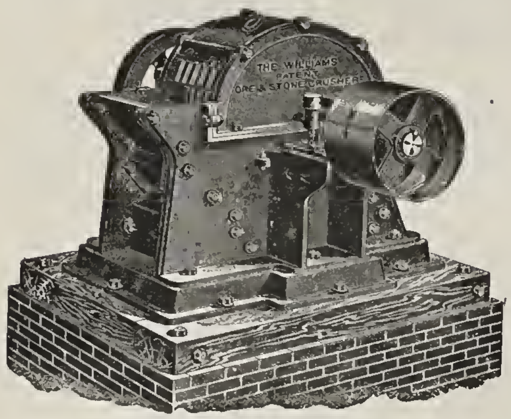
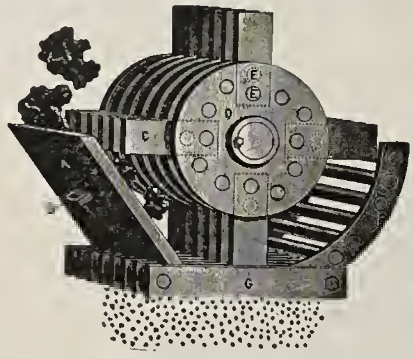
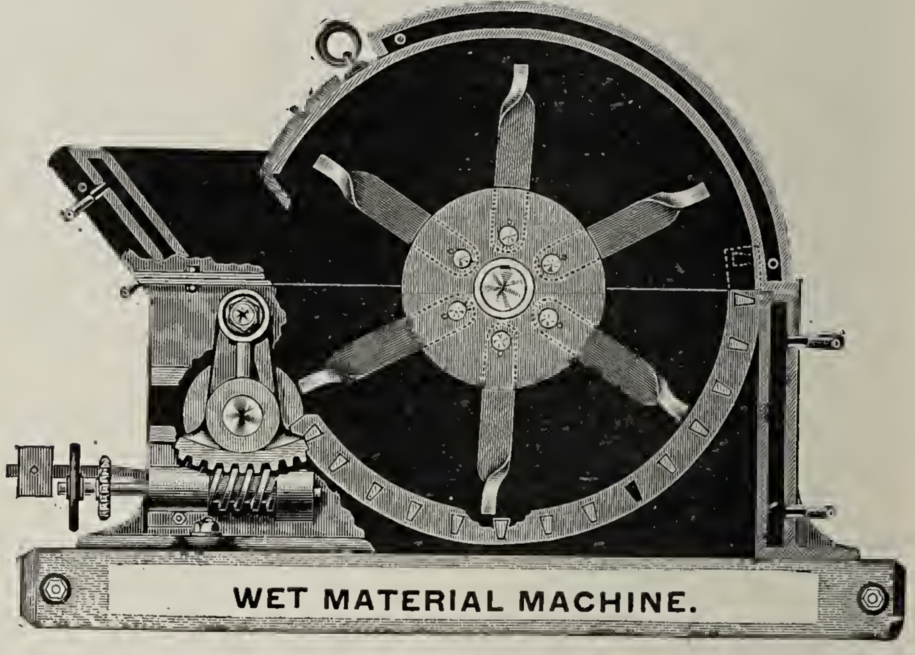


SHALE CRUSHER ahead of a Pan. 5 Sizes.

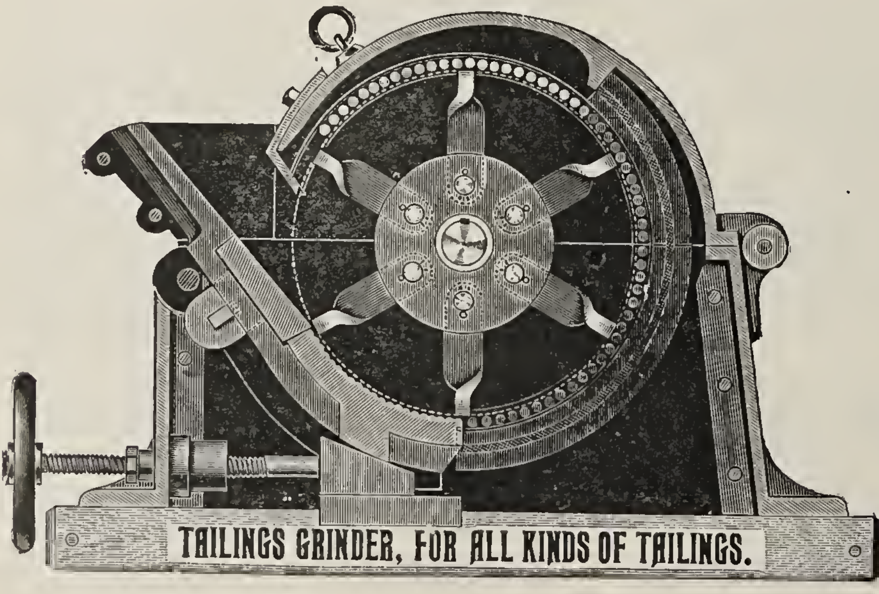


Interior of Same.



WET MATERIAL MACHINE.

W E NEVER FOLLOW BUT ALWAYS LEAD. Our Steam Screen leads them all. We guarantee to work satisfactorily any clay that will make a Brick, wet or dry, with less cost than any other machine on earth. : : : : : :



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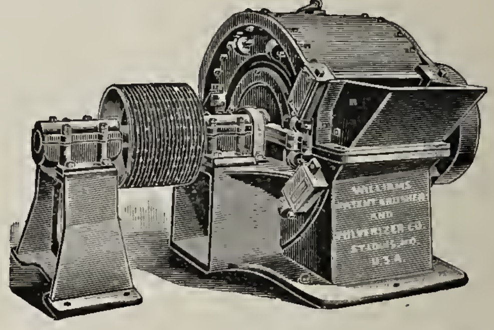
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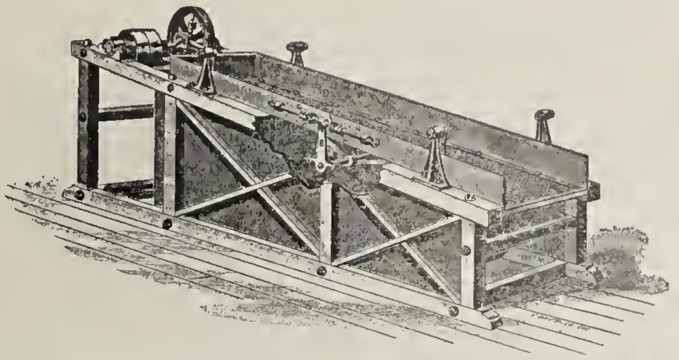
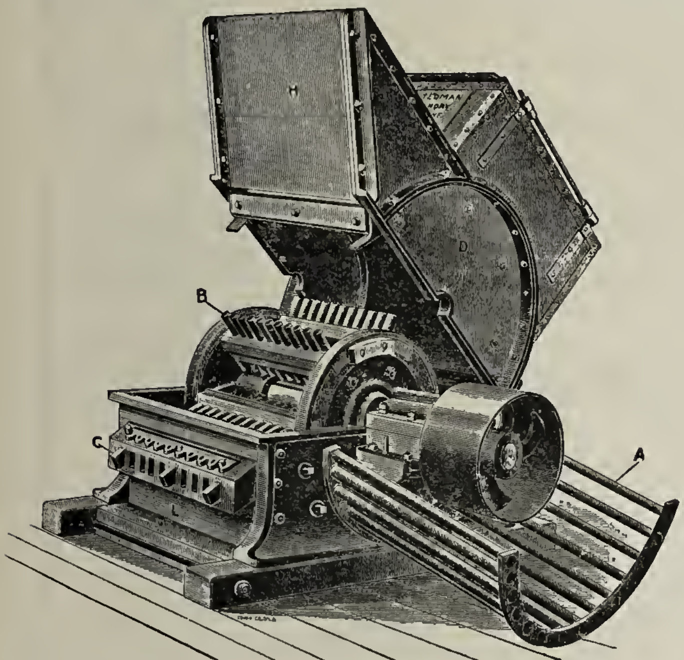
STEDMAN'S AGITATING INCLINE SHAKER SCREEN.



A GOOD Screen for properly screening to any degree of fineness a great variety of materials, and especially clay, is a long felt want. Our Incline Agitating Shaker Screen meets the requirements of the trade in the most successful manner possible.

In this screen we have one of large capacity for small floor space and one that will screen fine without clogging, as the agitating device we have underneath the screen wire prevents any clogging of the screen holes when screening clay or any other material in a dry or semi-dry condition. The screen will run with little power and without any shake or jar to the building, as the moving parts are well balanced by an adjustable counter-weight within the rim of the balance or fly wheel.



STEDMAN'S TORNADO CLAY PULVERIZER.

For Thoroughly
Pulverizing Clay in a
Dry, Semi-Dry or
Damp Condition.

Its construction is such that it will not clog in pulverizing damp clay, and the journal bearings are constructed dust proof.

Write for catalogue, giving full description, references and testimonials.

Stedman Foundry and Machine Works,
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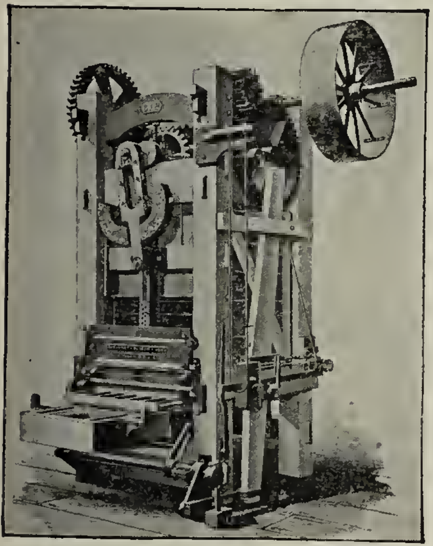
Brickmaking Machinery and SUPPLIES.

The "Grand Automatic" Brick Machine



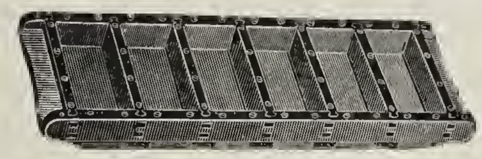
A good, reliable machine.

Makes good brick and lots of them.

Sells at a reasonable price.

Has desirable features not found in any other brick machine.

Brick Moulds.
Perfection Bottoms.



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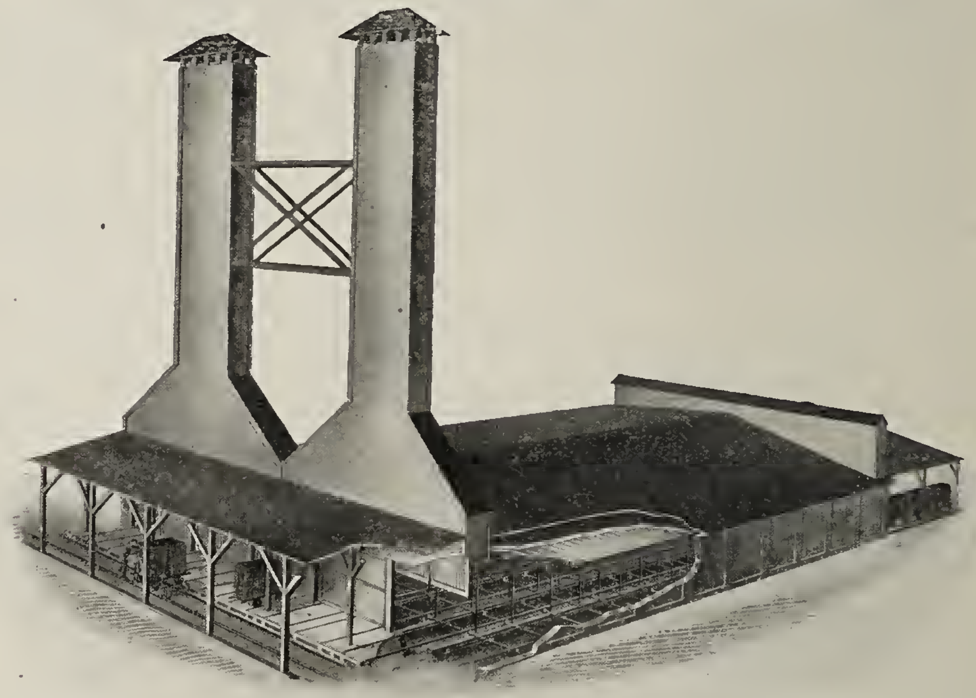

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THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXXVIII. INDIANAPOLIS, IND., DECEMBER, 1902. No. 6.

Written for The Clay-Worker.

BOSTON—OLD AND NEW.

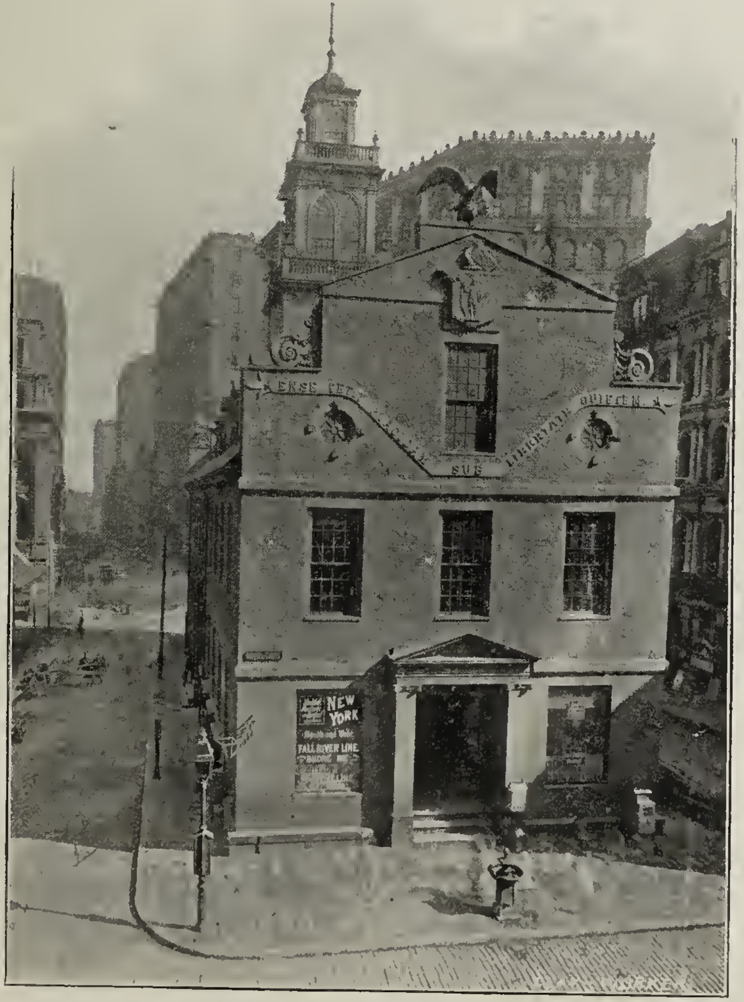
Historic Incidents and Features of Old Boston of Special Interest to Clayworkers Who Will Attend the N. B. M. A. Convention Febuary 2-14, 1903.

THE STRANGER, visiting Boston for the first time, especially if he comes from the West, will be impressed with the un-American air pervading the oldest parts of the city. Founded by English on English lines, the architectural effects are still English, although modified and adapted by the Italian and the Russian.

Boston was originally a small peninsula (at high tides an island) containing less than 800 acres, connected with the main land at Roxbury by a narrow isthmus about a mile in length. On the north of this isthmus was an inlet of the Charles river, known as Back Bay, which has since been filled in and is now the finest residential part of the city, still retaining the old name of "Back Bay."

Judged by American standards Boston is an old city, and, historically, is one of the most interesting in the country. It is well authenticated that the Norsemen made a landing in this vicinity about the year 1000 A. D., nearly five hundred years before Columbus discovered the country. Prof. Charles Norton Horsford, who devoted years to the study, was convinced that they had a settlement on the banks of the Charles river, and discovered what seemed to be evidences of their homes. He erected the Norumbega tower near the river, in Weston, to commemorate their visits, and one of the handsomest statues in Boston is that of Lief Erikson, leader of a band of these pioneers. If these men from the North did have a settlement here, it was soon abandoned and the Indian was again left in possession.

Other explorers came and went, and nothing deserving the name of a settlement was made until 1628, when the Puritans located in what is now Charlestown. The little peninsula, however, contained what the mainland did not offer near at hand—unfailing springs of fresh water—and to this fact is due the partial abandonment of Charlestown and the settlement of Boston, or of Shawmut, as it was then called. They came by invitation of Rev. William Blaxton, who bought the peninsula of the Indians in 1628, and who afterwards sold nearly the whole of it for £30. His clerical calling did not prevent Blaxton from being Boston's first dealer in real estate, but history fails to tell us the exact profit on the transaction. From the time of the settlement by the Puritans, Boston was a power in the new country, and soon occupied the position of chief among the New England cities. In 1773 Governor Hutchinson wrote, "for many years past the town of Boston has been used to interest itself in every affair of moment which concerned the province in general," and the town has even been accused of aspiring to the sover-

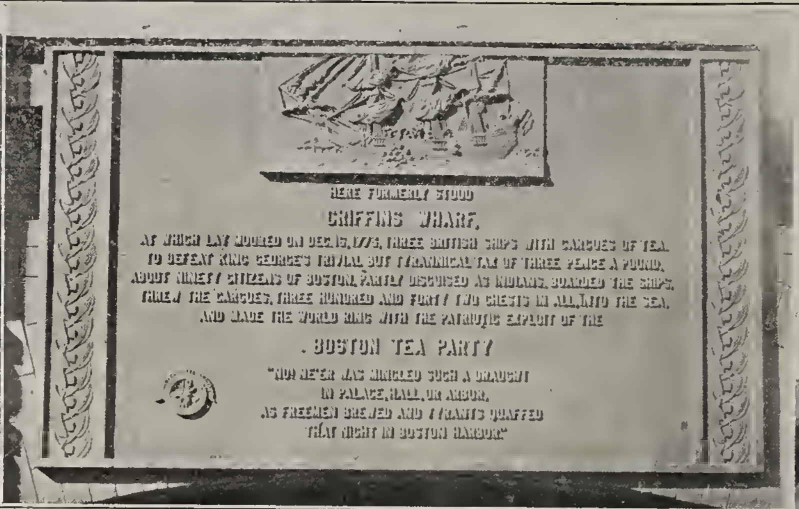


The Old State House, Boston, Near Which Was Shed the First Blood of the War of the Revolution.

eignty of the country.

The deviousness of the streets of old Boston is famous all over the country. Alleys and by-ways are hidden away in most unexpected places, and few of her citizens find them all. How many of these old alleys are famous! It was in Salutation alley, now commonplace as Salutation street, where gathered those adventurous youths who, disguised as Indians, threw overboard the tea in Boston harbor. Winter Place, to-day merely a short cut for fair ladies in their shopping expeditions, gains distinction from the fact that it was on one side of the residence of Samuel Adams, "Father of the American Revolution," whose radical speeches stirred both the wrath and the patriotism of his fellow citizens, and whose persistency kept them to the fighting point. Hidden away in a narrow, winding alley in the North End is the once famous Boston Stone, now known to comparatively few. This stone, which is half imbedded in the wall of an old building, was part of a paint mill holding some two barrels, and was imported from England early in the seventeenth century. It was often used as a starting point for surveyors.

Statue of Samuel Adams Who Organized the Revolution.

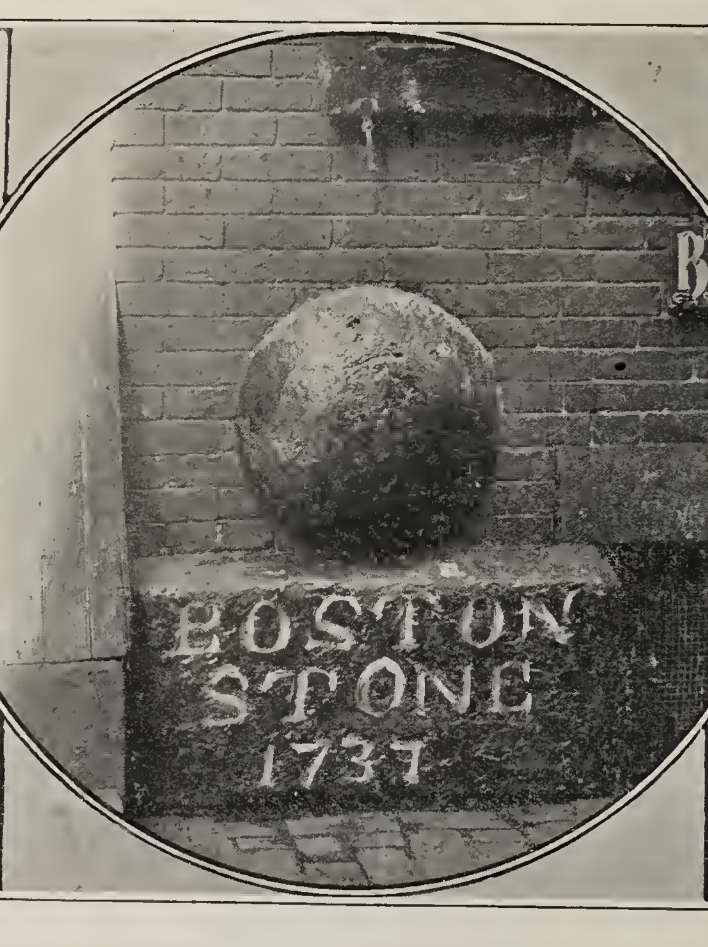


HERE FORMERLY STOOD
GRIFFINS WHARF,
AT WHICH LAY MOORED ON DEC. 16, 1773, THREE BRITISH SHIPS WITH CARGOES OF TEA.
TO DEFEAT KING GEORGE'S TRIVIAL BUT TYRANNICAL TAX OF THREE PENCE A POUND,
ABOUT NINETY CITIZENS OF BOSTON, PARTLY DISGUISED AS INDIANS, BOARDED THE SHIPS,
THREW THE CARGOES, THREE HUNDRED AND FORTY TWO CHESTS IN ALL, INTO THE SEA,
AND MADE THE WORLD RING WITH THE PATRIOTIC EXPLOIT OF THE
BOSTON TEA PARTY
"NO! NE'ER WAS MINGLED SUCH A DRAUGHT
IN PALACE, HALL, OR ARBOR,
AS FREEMEN BREWED AND TYRANTS QUAFFED
THAT NIGHT IN BOSTON HARBOR."

Boston Tea Party Tablet in Building, Corner Atlantic and Pearl Streets.

Statue of Wm. Prescott, Bunker Hill Monument in Background.

The Norumbega Tower, to Commemorate the Original Discovery of America.



Boston Stone in Building, Corner Marshall and Hanover Streets.

The Old Powder House, Medford, Mass.

Historic Streets of Old Boston.

To the true Bostonian every by-way and short cut is dear and convenient. Not one would he be willing to lose. They came as necessity demanded, and never by square and rule. Cow-paths they may originally have been, but to this day they are in just the right places. Late for an appointment? Then "cut through" some nearby alley and quickly reach your destination in an almost straight line, at the same time avoiding the crowd.

The crooked streets have yet another advantage. By their means architectural effects are made possible that are not seen in the more modern American cities. In the old part of the town one can seldom look in any direction for more than two or three blocks, and the effect is constantly changing. The streets still remain much the same as in the old days, but the buildings—how changed are they! Little more than one hundred years ago there were but four stone buildings. In those days the Old South Church was "up town" and Christ or the North Church was at the lower end. Christ Church has the oldest chime of bells in America, and it was in the belfry of this church that the lanterns were hung as a signal to Paul Revere. At that time it was a distance of eight miles to Cambridge, the only road by land being through Roxbury by way of Boston Neck. Revere rowed across the Charles river, waiting in Charlestown for the signal. He was there furnished with a horse and started on his "midnight ride." Through Medford, Lexington and Concord he went, carrying his message to Adams and Hancock. The next day was fought the first battle of the American Revolution. Two months later the American troops met with their glorious defeat at Bunker Hill, or more properly Breed's Hill, and the war may be said to be fairly begun.

The Old South Meeting House.

Boston's Early History.

The following winter was a trying one for Boston, as the town was occupied by British troops, and during the siege the population was reduced from 18,000 to 6,000, when, under direction of Washington and Prescott, fortifications on Dorchester Heights sprang up like magic in one night, the British saw no way but to evacuate the town. At this time Washington had his headquarters in Cambridge, and the day the British army embarked in their ships he entered Boston by the street which now bears his name. At that time it was known under the various names of Cornhill, Marlborough, Newbury and Orange streets. The name was not changed until 1789 when, as President, Washington made his second formal entry of the town. Since that time the street has attained a length of fifty miles and reaches to Providence, R. I. With the evacuation by the British, Boston ceased to be a battlefield, and since then only the peaceful arts have been fostered within her limits.

Unquestionably the most beautiful spot of the original town is Boston Common, a public park of some fifty acres in the heart of the city. It dates back to 1634, when it was laid out for a "trayning field and feeding cattle." Upon occasion it is still used as a training field, but no cattle have grazed there since 1828. For years it was the place of execution of criminals. In 1648 Margaret Jones was hanged on Boston elm, and in 1656 Ann Hibbins met with the same fate, both women being accused of witchcraft. As late as 1835 a mob of "gentlemen of property and standing" who disapproved of the anti-slavery principles of William Lloyd Garrison, dragged him through the streets with the avowed purpose of hanging him to the old elm.

The Cradle of Liberty.

Although many old landmarks have been destroyed to meet the demands of progress, Boston is still rich in historical buildings. Faneuil Hall, popularly known as the "Cradle of Liberty," was built in 1740, and was the gift of Peter Faneuil, a descendant of a Huguenot family who fled from France in 1686. The weather vane is a grasshopper, which was the crest of the coat-of-arms of the Faneuil family. The hall is never rented for money, but is at the disposal of the public under certain restrictions. It contains the armory of the Ancient and Honorable Artillery Company, formed in 1638, being the oldest military organization in the country.

The Old South Meeting House, built in 1730 (the first building was of cedar, erected in 1690) stands on the site of Governor Winthrop's home. During the siege of Boston the British used this church for cavalry drill, and while in possession burned many valuable manuscripts, and are supposed to have taken others with them. One such manuscript was returned in 1897, and is now in the State Library. It is Bradford's "History of Plymouth Plantation" from 1620 to 1647—the only authentic history of the early days of the colony. For years this manuscript was supposed to be lost, and was by accident discovered in the library of the Bishop of London, through whose courtesy it was presented to Ambassador Bayard for the Commonwealth of Massachusetts.

One of Boston's Popular Short Cuts.

King's Chapel has a picturesque interior, the pulpit and pews being the same as when Washington attended church there. The basement is mostly taken up by burial vaults of the former pew-owners. The first church organ in America was in King's Chapel.

Without doubt the most famous of the old buildings is the Old State House, which was built in 1740, and stands on the site of the old town house. It has done duty as town house, court house, province court house, city hall and state house. It was the council room of the royal governors and the royal council. The general court room and the merchants' exchange were also in this one small building. Within a few yards of it on the State street side occurred the Boston massacre, on March 5, 1870.

An Incident in Boston's Early History.

In 1795 was laid the corner-stone of the new State house designed by Bulfinch. This building is on Beacon Hill and on land that was, at one time, Governor Hancock's cow pasture. Winthrop tells in his diary of an amusing incident resulting in a controversy that caused the complete separation of the two branches of the State government. It was in 1636 and all on account of a poor, stray sow "with a black spot under the eye and a ragged eare." Even in those days there was a popular prejudice against allowing vagrant sows to wander at will through the town, and this particular animal was taken to Capt. Robert Keane, whose business it was to look out for such wanderers. According to custom, Capt. Keane advertised the animal by town crier and such other means as were at his command, but for more than a year no owner appeared. Then Mistress Shearman, a vigorous and aggressive woman, claimed ownership and demanded her property. As the animal in Capt. Keane's pen lacked the "black spot" and "ragged eare," Mistress Shearman declared her sow had been slaughtered and claimed damages. The case was taken to the elders of the church; it was taken to the jury, and each time the military man was victorious. The contestants then went before the "Great and General Court," where there was a tie, neither side having the necessary votes of five magistrates and sixteen deputies. From this controversy arose the question of veto, resulting, in 1644, in the separation of the two branches, now the Senate and House of Representatives, each branch to pass independently on every question. Thus the sow became famous in the history of the State, though Mistress Shearman never obtained the damages she claimed.

Faneuil Hall, "The Cradle of Liberty," as it Appears To-day.

Boston Brick.

The readers of The Clay-Worker will note with more than passing interest that the historic buildings to which we have referred were built of brick. It is thought by many that the first of these structures were built of brick imported from the Mother country. Whether this be true, or whether the brick were molded by hand by the early settlers, they stand to-day potent reminders of the everlasting qualities of the material of which the greater part of modern Boston is still being constructed. Of this we will speak further in the next issue of The Clay-Worker.

A BOSTONIAN.

Written for the Clay-Worker.

THE MODERN CLAYWORKER—SECOND PAPER.

THE IMPORTANCE OF permanent records cannot be overestimated, and these, to carry their full value, need be complete and plain. The engineer should survey the land on which the works are to be located, taking levels over its surface in order that a complete and thorough scheme of drainage can be figured out. A map on a comprehensive scale should be made and the buildings, dryers, kilns, side-tracks and storage sheds located thereon, all planned, with the assistance of the operating superintendent, to embody the most advanced ideas of economy in all the operations of manufacture. Drainage should be the first thing provided and all such lines located on the map. The writer has observed the installation of a good many clayworking plants and has often seen operations started in the middle and worked both ways. Such never reach either end and are always at sea, as far as a knowledge of what demands will be made on their capital is concerned. The old "saw" to the contrary notwithstanding, "Well-laid plans do not often go wrong." The thing is to have them well laid.

After all, that is not the only thing, because poor plans are often well laid. We have mining engineers and a long list of specialized engineers, but the ceramic engineer is not well known. They are, however, a necessity, and are being rapidly added to. Plans have in them much more than the present needs, or should have, and so they cannot be well made if made hurriedly. The man who does the planning must be acquainted with the business of the clayworking industry as well as the manufacturing branch, and must gain not only a thorough knowledge of the property to be developed, but the demands the territory is apt to make on the property after it has been in operation long enough to have gained a standing in the market and what additional product would find a ready market. Plans, then, should be laid with reference to future development in order that work once done will never be in the way of future enlargements. A handicap is not a desirable thing for any one to have to carry.

Starting or enlarging a clayworking establishment is surely as important as building a store, office building or a dwelling. Because one has operated a store for some years or lived in a poorly arranged house does not offer reason enough for building a store or a dwelling without the assistance of an architect. Nor is a clayworker justified in giving his time to the work of the ceramic engineer in planning his own factory without their aid. Too many clayworkers have started to work on building a plant without any matured plans because they have started in the middle and bought their machinery first and find urgent need to get it in out of the wet.

The best thing in the world for a clayworker to be waiting for the last thing is machinery. Yes, the kilns ought to be up and ready before the machines are on hand; the buildings built and ready to move into before the furniture is purchased, the dryers constructed before the cars are purchased. Some of the easiest money a clayworker ever makes is buying brick from another fellow with which to build his own permanent kilns. Generally the other fellow feels a little guilty when it comes to selling brick to another brickmaker. He generally hasn't any idea but the ones first formed when he went into the business what his brick are costing him, and he is afraid that the new man will have a terribly poor opinion of him later when he finds out how he robbed him. When everything is ready and out of the contracting department's hands it is time to start the pay roll. A pay roll will wear out easy if it is started too soon. It has been found to squeak badly under the friction of delays. Following out the plan of planning, one is in a position, after the services of the ceramic engineer have been had, to figure with the contractor and then with his bank account, so he can know just where he is going to start from and how much he can feed a pay roll. Nearly every one remembers the demonstration of childhood to prove that two things cannot be well done at the same time, in his efforts to rub his stomach with one hand and pat his head with the other. It is a good deal the same sort of an operation when one buys brick machinery, hurries it up in place and starts making brick before the buildings are completed or planned, kilns built or a place provided for drying. It is a case of a mule and a horse and—everybody knows the rest.

There are minds peculiarly formed, capable of comprehending quickly the whole scheme of construction. A good clayworker may have such a mind and may know a good deal about such things, and he may not. Being fully competent to erect, he may be vastly deficient in planning, particularly with the necessary careful attention to detail so necessary to the expeditious and economical erection of the finished plant. It is a safe estimate to say that four-fifths of the new plants constructed carry the investors many dollars beyond the estimated cost of construction. Particularly is this true where the investors have had no previous experience in the line which they are taking up. These difficulties would be eliminated by employing a competent ceramic engineer to draw plans, from which the cost can be closely forecasted or practically insured under contract.

Clayworkers are strong advocates or fireproof construction—by the other fellow, generally—as, strange to say, few plants now up are of brick construction. Undoubtedly this is due to the one great and ever-present trouble—haste. There may be instances where frame construction is excusable, but it can only be in isolated unimportant buildings of a purely temporary character, or where a busy man has been his own architect and needs a fire to get rid of a poorly arranged and cramped arrangement that he hasn't the courage to demolish. It has been no uncommon thing to hear a clayworker say that he had been fortunate enough to have burned out. Such remarks are not to the discredit of the party's honesty, but simply show the realization of the many advantages of well-planned fireproof structures. Unfortunately for those who have frame construction factories, clayworking establishments are on the prohibited lists of the insurance companies.

In cases where insurance can be obtained at all it is at a scandalously high rate and means an extra charge to interest on equipment investment. Aside from this, one cannot insure with any satisfaction against loss incident to a fire other than property loss. A company may have many thousands of dollars invested in a plant, and at the expiration of a few years have more of value in the established trade than in the plant. It is very important that the ground so gained by years of toil be not lost through fire. Practical fireproofing is obtainable for clayworking plants at a cost fully within reason, and on a basis of profit in the extra investment when taking into consideration the high cost of insurance. What the insurance companies are pleased to consider a reasonable risk or one on which they will make a low rate should be considered by the brickmaker as fireproof. In the modern brick plant partition walls are, or should be, done away with. These being eliminated, there need be little dread of fire. When the construction is brick, and the roof, in the absence of tiles or slate, is good gravel construction, there is little, if any, need of the protection offered by the insurance companies.

There may yet be need of insurance for clayworking plants which manufacture large-piece articles, such as sewer pipe, terra cotta, etc., and which need the space of several floors, one above the other, to facilitate drying. On the first thought one might think that the insurance companies were not giving the brickmakers a fair deal in discriminating against them, but they are really assisting in the work that brickmakers should give more attention to—that is, fireproof con-

Boston's Oldest Building, "The Old Corner Book Store," Corner School and Washington Streets.

struction. In any case a provision for water protection should be made, to stop the trifling loss that might occur in the practically fireproof construction given with the brick wall, open manufacturing rooms, woodwork lime-coated and gravel roofs. The detached boiler room is desirable in many ways, insuring against dirt and heat in the engine room, where the most delicate machinery is located. The location of the boiler room should be between the kilns and the factory buildings proper, as they are here out of the line of probable extension, and so out of the way. In planning the boiler room space should be provided at each end to give ample room for cleaning flues, repairing, etc. It is not at all necessary nor advisable to set the boilers below the general floor level, as is often done. About the only possible advantage in this is the very small attending saving in handling fuel from the carts to the boiler room, which advantage is more than used up in the extra labor of handling the ashes.

A good arrangement is had in a separate coal-storage room, connected with the boiler room by a track on which a car containing the coal is run and in which the ashes may be loaded and conveyed to the dump. In installing a boiler plant modern firing equipment should be provided to make it possible to employ skilled attendance with economy and to effect the economy in fuel and full power of the boilers. It is next to useless to install modern attachments when it is intended to attempt economy by the employment of unskilled firemen. Furnaces which insure complete combustion also insure profit from their use. Such are of various forms, prominent among which are the underfed and the traveling grate. This latter has proved quite successful, but is, up to the present time, quite cumbersome and difficult to install. The more simple of these appliances is the shaking grate, but the successful operation of even this simple arrangement depends on a little desire on the part of the fireman to exhibit some degree of skill.

It is manifest poor economy to install a steam plant of a size about equal to the demands that will be put upon it. This is also true of the engine. Where economy of operation is the watchword a Corliss engine is the thing. One often hears the expression that it is poor economy to buy a high-priced engine in order to save fuel and then more than pay out the savings thus effected in wages for high-priced engineers. When high wages are paid an engineer such expenditure cannot be figured as a loss if the man is one of ability commensurate with his cost. He will save in any plant the excess wages paid him in cost of repairs made necessary where an inferior man's ignorance causes damage, to say nothing of the loss of time in effecting such repairs. The part of the clayworking establishment that has to do with fuel cannot be too closely studied nor profitably left in indifferently good hands.

(To Be Continued.)

BRICKMAKING IN ARKANSAS.

The Leali Pressed and Fire Brick Company, as their name indicates, are making high-grade pressed brick and also a very good quality of fire brick for the Southwestern trade. Their plant is located at Kingsland, Ark., and was started about a year ago. It is equipped with a four-mold Berg brick press, capacity 20,000 per day, a Bucyrus dry pan and a Freese stiff-mud machine, which latter is used for making common building brick. The fire brick, as well as the pressed brick, are made on the Berg press, dry-pressed fire brick being a new departure for that section of country, but this company is thoroughly modern in its methods.

Some men are so impressed with their own knowledge, and so fearful lest they impart knowledge to others, that they fail to even keep up with the procession, much less march in front of the band wagon. These men are very apt to think there is nothing to be learned by reading trade papers.—Exchange.

Written for The Clay-Worker.

LIGHT AND HEAT.

Eleventh Paper.

In THIS ARTICLE we will treat the subject of mechanical stokers at some length. Having shown in our foregoing writing that mechanical means for feeding coal into furnaces, if applied in the proper manner, always exceeds that of hand work, we deem it advisable to show how it can and should be done.

Some of the readers whose chances for informing themselves in regard to such mechanical means, may deem the mechanical stoker a recent invention, as they only during the last ten years have come in more extended use. This, however, is not the fact, as a device for that purpose was invented and patented by James Watt in the year 1785. We see by this that such an eminent mind saw the usefulness thereof, at that early day of steam engineering. The invention, as most of the pioneer devices in mechanics are, was of a simple character. It consisted of a plain pusher plate, actuated by levers, to push the coal which had been deposited in a mass on the front part of the grate, after it was coked, back on to the grates.

Watt's original design was thereby to prevent smoke from bituminous coal. The records we have do not speak of the fuel saving accomplished thereby. However, Watt may have mentioned that phase in his patent, as it will plainly be seen that the gases from the coal being coked in front of the fire would be drawn through it and a perfect combustion obtained.

While inventors and engineers readily took hold of Watt's inventions in steam engineering and kept perfecting and applying them, his stoker evidently laid dormant for over fifty-five years. After the year 1840 many forms of mechanical stokers were invented in England, as the records of the patent office show. Most of these were patterned after two principal devices. One of these was that of John Jukes, patented in 1841, and the other by E. Henderson, in 1843. John Jukes made his stoker of longitudinal fire bars, connected by links so as to make an endless chain running over specially adapted drums. The coal was put in a hopper in front, and as the chain grates traveled inwards the coal was carried through the furnace and the ashes and clinkers dropped off into the ash-pit on the back. The Henderson stoker was not nearly such a practical design, yet many patterned after it. It consisted of two vertical fans on vertical shafts, which scattered the coal over the grates.

While the Jukes stoker had the elements of some of the best mechanical stokers now in use, mechanical faults prevented its universal adoption evidently.

The first American stoker was brought out by a man named Murphy. This was in 1878. It consisted of two receptacles for coal, in the side walls, from six to seven feet long (the length of the grates.) In the bottom of these magazines were rectangular iron boxes, which were moved from side to side by means of racks and pinions, and served to push the coal on to the grates, which were placed at an angle of thirty-five degrees from the edge of the coal magazines. It will be seen that this would form a V-shaped grate furnace. The grates were narrow parallel bars, so arranged that every alternate bar lifted about an inch at the lower end, while at the bottom of the V and filling the space between the ends of the grate bars was placed a cast-iron toothed bar, arranged to be turned by a crank. The mission of this bar was to grind up the clinkers and drop them below. A fire-brick arch was built over the V-shaped grate surface. While the other parts of this stoker is not the system the writer would adopt, yet the arch of fire-brick answers a good purpose, if properly devised other ways, which Murphy's construction prevented.

The writer experimented with such an arch under a boiler about eighteen years ago with good results. It was put in for a smoke consumer and also to distribute the heat more evenly over the under surface of the boiler. While Murphy left the back of the arch open, our arch had a solid wall on the back. The side walls of the arch were made with a row of openings a little above the grates which connected with vertical flues of the best fire-brick obtainable, reaching up with a foot to the bottom of the boiler. With this arrangement, after the fire was built in the morning, no smoke emerged from the stack during the whole day. The fire-brick in the vertical flues would become white-hot and burn up the smoke before it had a chance to pass through. In fact, the whole arch would be so thoroughly heated that any wet fuel would be consumed, such as wet sawdust, tanbark, slack, etc. It proved a fuel saver also.

I failed, however, to provide means for dropping the accumulation of ashes from the vertical flues, that could easily have been accomplished on a new boiler setting, which ours was not. Through this it came to grief. After being used for about six months to our entire satisfaction, while the writer was absent the flues became stopped up to such an extent that there was not enough draft. The foreman thought the best and shortest way would be to make perforations through the arch, which was done, and of course the arch destroyed, so it fell to pieces. When I returned the arch was gone and the old way in vogue again. Having rather unscientific partners, who could not see the gain of such an arrangement, and only listened to the fireman, who complained of the great heat coming from the arched furnace when the doors were opened, I desisted from further experiments in that line. I am convinced, however, that an arch constructed on the plan as described, with a modern endless chain stoker, would be the ideal furnace at the present time. There may be some in use, however, which have not come under my observation.

In discussing the various kinds of stokers, however, we shall abstain from recommending any particular make of stoker or firm that furnishes them. We shall, however, make references to the points of excellence of such that we approve, and probably point out the defects in others. What we aim at is to serve the readers of this magazine and not to advertise any particular device, may it be ever so well designed.

We find the following in a paper read by W. S. Romey before the A. S. M. E. in regard to his stoker: In the Romey mechanical stoker the fuel to be burned is dumped into a hopper on the boiler front, set in the lower part of the hopper. The pusher by a vibratory motion carrying with it the feed-plate, gradually forces the coal over the dead plate and on the grate. The grate bars in their normal condition form a series of steps to the top step, of which the coal is fed from the dead plate. Each bar rests in a concave seat in the bearer and is capable of a rocking motion, through an adjustable angle. All the grate bars are coupled together by a rocker bar. A variable back-and-forth motion is given to the rocker bar through a connecting rod, the grate bars rock in unison, now forming a series of steps and now forming an inclined plane, with the grates partly overlapping like shingles on a roof. When the grate bars rock forward the fire will tend to work down in a body, but before the coal can move too far the bars move back to the stepped position, checking the downward movement and breaking up the cakes of coal over the whole surface and securing a free admission of air. The rocking motion is slow—seven to ten strokes per minute—to suit the coal. At the end the ashes and cinders are dumped off into the ash-pit.

In the same paper the following result is given in three tests between hand-firing and three tests with the stoker under a return tubular boiler 60 inches by 20 feet with Cumberland coal and natural draft, rating the boiler at 12.5 square feet, 105 horse-power:

	By Hand.			By Stoker.		
Evaporation per pound of dry coal from and at 212 degrees......	10.36	10.44	11.00	11.89	12.25	12.54
Horse power developed	5.8	13.05	14.68	54.6	66.7	84.3

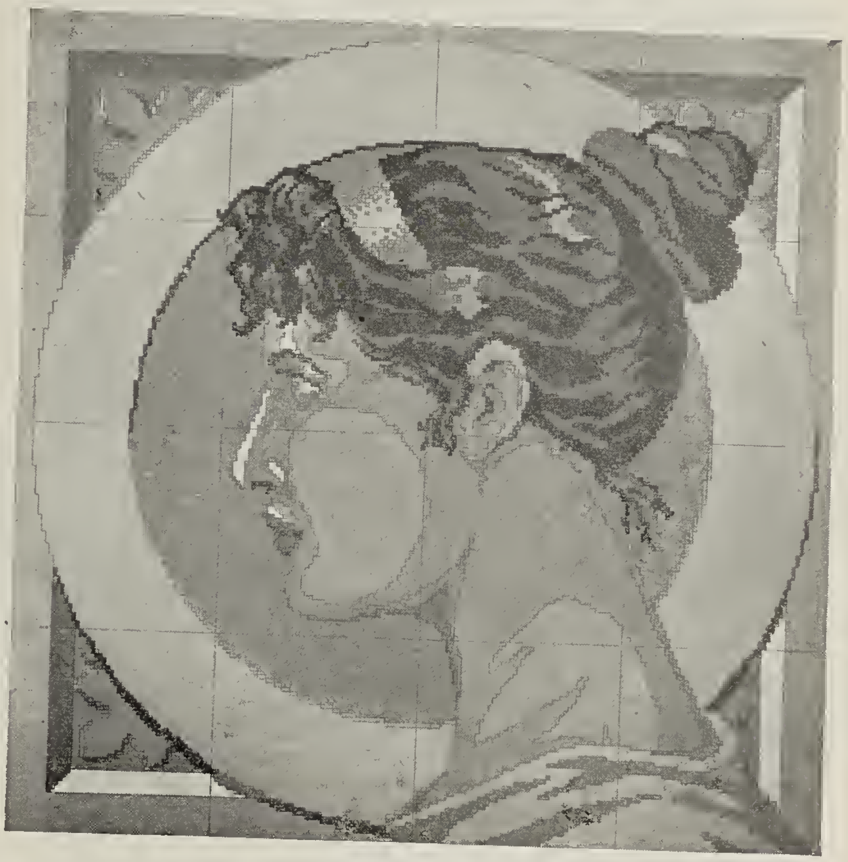
This table as will be seen, was not furnished by a committee of experts, but by the constructor of this particular stoker.

In our next paper we shall continue the description and uses of mechanical stokers, and if advisable point out a way how to apply them for the use of brick kilns.

MASTER MECHANIC.

THE CERAMIC MOSAIC FLOOR TILE.

ZANESVILLE is a great clay center. One of her foremost institutions is the Mosaic Tile Company, which, though but about seven years old, has a national reputation and finds a ready market for its product in every State of the Union, besides doing considerable export business. The Mosaic Tile Conmpany was founded by H. C. Mueller and Karl Langenbeck, its superintendents, and the business has grown to such an extent that the plant of the New Jersey Terra Cotta Company at Matawan, N. J., was this year added to the home factory, Mr. Langenbeck being placed in charge of it, while Mr. Mueller continues at the plant at Zanesville. The officers of the company are David Lee, president; William M. Bateman, vice president, and William M. Shinnick, secretary and treasurer.



A Rare Specimen of Mosaic Tiling.

The chief product of both plants is mosaic floor tilings made from clay. The artistic and durable qualities of this material have made it very popular. Countless buildings, both public and private, throughout the United States and Canada have been supplied with these tiles. Indeed, their market has extended beyond the borders of our country, and they are now being shipped to a number of foreign cities. The company was awarded a beautiful medal by the managers of the Pan American Exposition, where they had a fine exhibit.

OLD THINGS MADE NEW—MAYBE.

One would think it well-nigh impossible to invent anything, so many patents have been granted, and yet the Patent Office steadily reports about 500 patents granted each week. As many more applications are rejected. The total number issued up to Oct. 14, 1902, was 711,454. As an illustration of how many ideas have been originated during the past thirty years, 20,031 patents were granted for stoves and furnaces. Other articles of as common use are also away up in the thousands. The Yankee does love to hatch out an idea and get a patent, and the patent is all the great majority ever realize from their expectations.—Exchange.

Written for The Clay-Worker.

WHAT IS AN ECONOMICAL BURN?—(No. 2.)

L. C. Moore.

A DIFFERENCE in kilns makes a vast difference in the cost of burning. Even kilns of the same type, upon the same yard, using the same grade of fuel and clay, and fired by the same burner, show marked variations in the expense per thousand for burning bricks. We do not wish to discuss the comparative merits of the various types of kilns; but in order that we may place this subject upon some basis for discussion, we must decide upon adopting some type of kiln, and answer the question of an economical burn from that standpoint.

What we said of kilns may be also said of fuel. There is such a difference in the various grades of coal that some standard must be assumed as a basis from which we may make our calculations. "A cord of wood" is a very indefinite expression, for the heat-producing properties of various kinds of wood differ even more widely than do the many grades of coal. One cannot say that it requires just so many cords of wood to burn a kiln of 100,000 bricks, because the wood used for one kiln may be the best of oak or hickory, while for the next kiln it may be elm or bass wood—light and trashy and of but little worth for brick burning. So, for a basis from which to start, we will assume the following points:

The Heart of Bloomington After the $1,000,000 Fire, June 19th, 1900.

(1) Clay—Common plastic, red burning.
(2) Method of Manufacture—Stiff mud, auger machine, side cut.
(3) Class of Bricks—Common builders.
(4) Kilns—Down draft.
(5) Fuel—Bituminous coal.

The common plastic clay of which we speak cannot be defined by any set terms, for the varieties of this kind of clay are legion—each requiring to be handled by the manufacturer according to its own individual peculiarities. But though there is a wide range of these peculiarities, there is still not such a great difference in the amount of fuel necessary to make good bricks, when one has learned to properly handle the kind with which he has to deal. The same may be said of bituminous coal, for some mines produce an article far superior to that from a neighboring mine, and the brickmaker who is fortunate enough to be situated near to one of these best mines has a decided advantage over his competitor who is forced to use an inferior article. But throughout the States of Illinois, Iowa, Missouri and Kansas the bituminous coal is of remarkable uniformity when one considers the vast extent of these coal fields, and I shall use this fuel as the nearest to a perfect standard with which I have any practical acquaintance. There are many minor considerations that influence the burning, and add more or less to the cost according to whether these conditions be favorable or unfavorable. The weather may be such that a considerable per cent. of extra fuel and time may be necessary to make a good burn. An extremely cold day will produce just such a result. There is far more waste of heat from a kiln by radiation—especially from the crown, which is the thinnest part of masonry in a kiln. The bricks within a kiln become one great ball of fire, from which the hot air is expelled with great velocity, and the outside cold air seeks every crack and crevice by which it may pass into the kiln to take the place of the escaping hot air. This rapid circulation tends to cool the kiln, and extra fuel must be fed to the flames, because the fresh air at an extremely low temperature must be raised to the intense heat required in the kiln in order that the bricks may be properly burned.

Every burner knows the troubles incident to wet and stormy weather, or even damp and cloudy. Stacks will not draw well, and fires are slow and sluggish, causing delay in getting the kiln to a finishing heat. All this adds to the expense of burning. How well the bricks may be dried before placing them in the kiln is another important consideration in counting the cost of burning. In many factories the bricks are set so wet that it takes from five to seven days to watersmoke them. One cannot make an economical burn under such circumstances. Twenty-four hours should be as long as necessary to maintain slow fires in a kiln. Then, if the bricks had been thoroughly dried before setting them, they would be sufficiently watersmoked to permit good, strong fires, and sixty hours more should see the kiln completed.

The burner has much to do with the amount of fuel necessary to accomplish the desired result. One might reasonably suppose that a ton of coal would produce just so much heat, but the truth is that some burners can get 50 per cent. more heat out of a given quantity of coal than can others of equal experience. But given a good burner, clear weather and favorable conditions generally, what is an economical burn?

Take a down-draft kiln of 100,000 capacity common bricks, size 2⅜x4¼x9 inches. This has been a season of much rain and unfavorable weather generally, and our bricks have not been thoroughly dried in our natural air dryer, so that watersmoking has been more expensive than usual. During the summer months, when these estimates were made, we used twenty-three tons of coal to watersmoke and burn 100,000 bricks. We cannot tell that the burning during the later months of the season has been one bit more expensive, for as yet we have had no cold weather, and the rains and fogs have been far less frequent.

During the latter part of the season we have been experimenting with bituminous slack and have reduced our fuel bill about 15 per cent from the figures named above. Slack costs us $1 per ton, and coal $2.50 per ton f. o. b. cars, factory switch. We do not complete a burn with slack because of the difficulty of getting the degree of heat necessary. Slack is used for watersmoking and for raising the heat throughout the kiln to a red heat, when coal is used to complete the burn. It required about ten hours' time and four tons of coal to do this.

Of course things are great or small only by comparison. When compared to the expense of burning with wood in similar kilns this is an economical burn. Perhaps it may not seem so to others, and we may some day be surprised that we ever wrote such an article on an economical burn.

Written for The Clay-Worker.

WITH THE ILLINOIS CLAYWORKERS.

Bloomington, the Convention City—The Home of Brick Pavements—The Plant of the Bloomington Press Brick Company—Convention Programme, Etc.

BLOOMINGTON is well called the Convention City, its central location making it attractive for various State meetings. Already twenty to thirty conventions have been booked for 1903. The first of the series will be the Illinois Clayworkers' annual meeting, which will be held at the Illinois Hotel, January 6 and 7. The members of the association are fortunate in having such an excellent place to meet in, it being a new fireproof structure, affording all modern conveniences and comforts.

Bloomington is a wide-awake city of 30,000 people, who are prosperous and hospitable. The city has never had a boom of any kind, nor has it ever suffered a panic or serious financial trouble of any sort. It met with a grievous disaster June 19, 1900, when a large portion of the business section of the city was wiped out by fire. The total loss footed up about $4,000,000. As is often the case, this was not an unmitigated evil, but, inasmuch as it admits of rebuilding on modern lines, will prove beneficial. Included in the burned district was the county court house, which was supposed to be a fireproof structure. Its destruction was brought about in a peculiar way: Sparrows had built innumerable nests in all the nooks and crevices of the cornice and upper windows. Sparks from the burning buildings set fire to these nests, which in turn communicated the flames to the interior of the building, and its contents were totally destroyed. From all outward appearance the building did not seem to be much damaged, but rather than patch up an old building, it was torn down and a new court house is being erected at a cost of half a million dollars. Most of the burned district has been rebuilt with substantial structures.

It is the pride of Bloomington citizens that no other city of equal size in the country can boast of so many handsome and commodious office buildings, and these are most of them monuments to the skill of her local brickmakers. Her chief building brick plant is that of

The Bloomington Press Brick Company.

This up-to-date factory is located right in the city, and obtains its supply of shale and coal from the shaft of the McLean County Coal Company. Ex-Vice President Adlai Stevenson is president of the latter company. The brick plant was built in 1893, and equipped with a dry press outfit. A portion of the annual output is still made by that process. In 1896 a stiff-mud outfit was added, by which the bulk of the product is now made, the daily capacity of the plant being 30,000 brick. Some street paving brick have been made, but the demand for common building brick and sidewalk brick has been sufficient of late years to consume the entire product. They ship a small portion of the brick to nearby towns, but the great bulk of their product is used in Bloomington.

The material from which they are making brick is difficult to work and would not be considered as available by those accustomed to use pure shale. The shale as it is raised from the mine is dumped into a chute and carried to the dry pans, where it is mixed with an equal quantity of burned debris that has been thrown away at the mine. Most readers have probably noticed great piles of this debris heaped up at the mines in central and northern Illinois. It is a mixture of the refuse of the mine, being shale, fire clay, slate, fine coal, dirt and sulphur rock. The latter material is sometimes called "nigger head." After this conglomeration is exposed to the air and weather for a time, it takes fire from spontaneous combustion, and all combustible and bituminous parts are burned, leaving practically a calcined clay.

Glimpses of the Works of the Bloomington Press Brick Co.

Readers of The Clay-Worker who have used impure shales need not be told that this material can only be handled successfully with great difficulty. Great care must be exercised

Bloomington's First Brick Paved Street, Center, Between Washington and Jefferson.

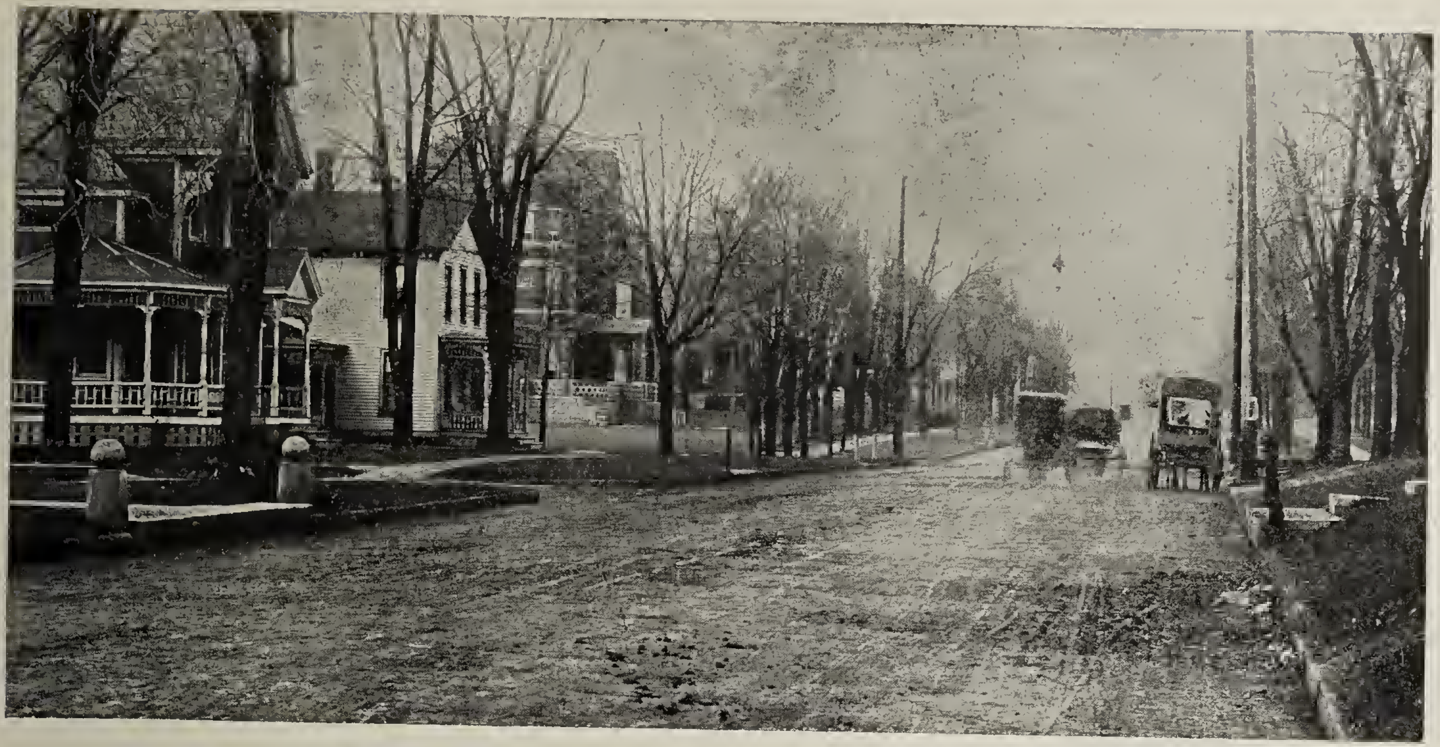
at all times from start to finish of this work. Mr. O. W. Dunlap, the present proprietor of the plant, attributes its success largely to the skill and genius of Howard E. Search, the yard superintendent.

The accompanying views of the plant will give our readers an idea of its location and surroundings. The first view gives a glimpse of the plant, while in the background appears a mountain of the debris, which has been accumulating for nearly forty years. At the bottom is shown a birdseye view of the plant, as seen from the top of the mountain, while in the center is the office of the plant, at the entrance of which is Mr. Dunlap on the left and Mr. Search on the right. Mr. Dunlap extends a cordial invitation for all who attend the convention to visit the plant. He says that after the plant was burned down, a little over a year ago, it was all rebuilt in good shape excepting the office. It is his purpose to build a new brick office as soon as the demand for brick eases up enough to permit him to do so. In view of this visitors are requested to refrain from making any unkindly remarks or criticisms of this particular feature of the plant. The observing reader will note that it has a brick chimney and that the style of architecture is simple, almost plain.

Bloomington, the Home of Brick Pavements.

One evidence of Bloomington's thrift is the fact that it has

East Jefferson Street, Bloomington, Paved With Brick in 1893.

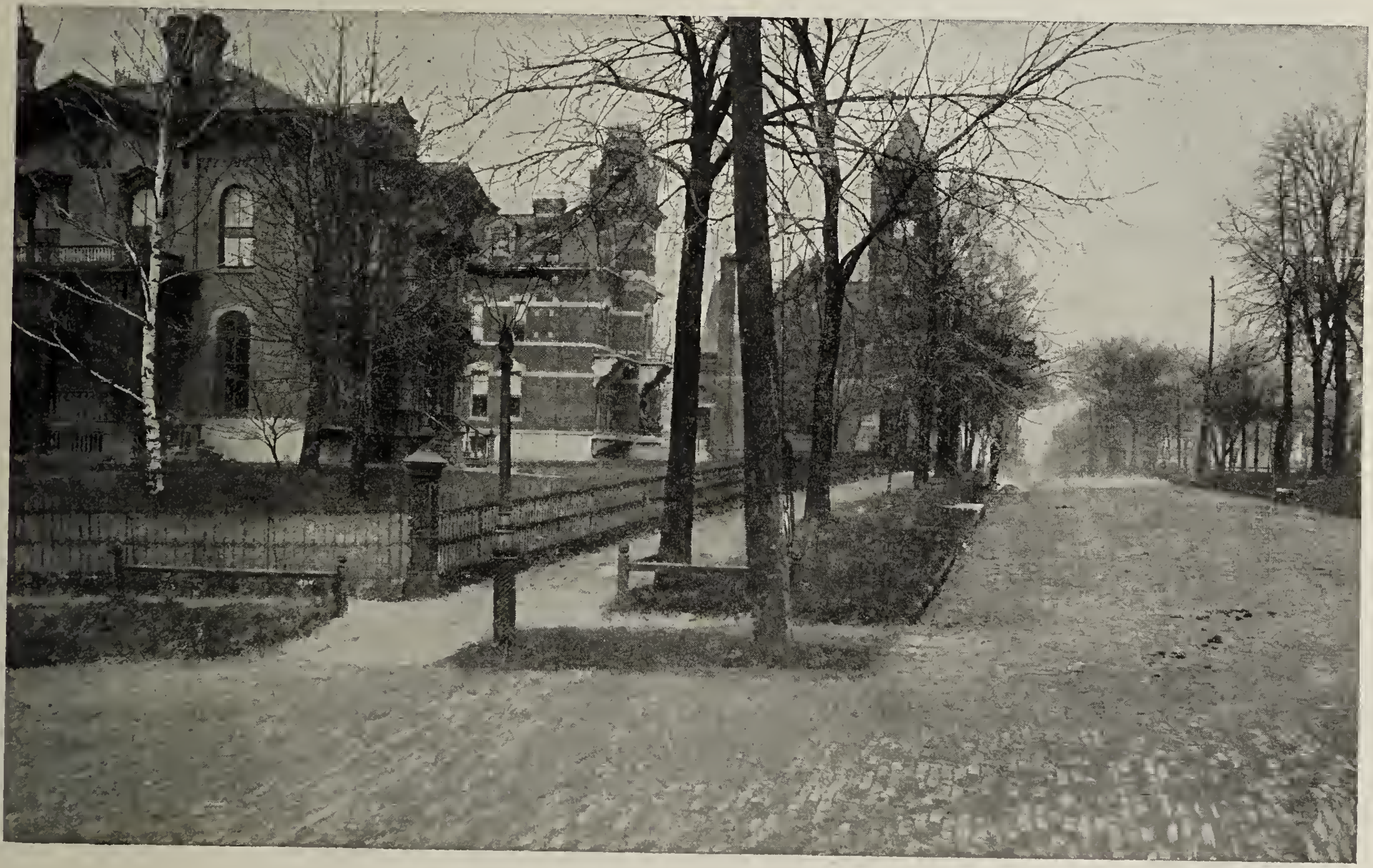


North Main Street, Bloomington, Looking North from Graham. Brick Laid in 1887.

some twenty-five miles of brick-paved streets, and it claims the distinction of being the pioneer paving brick town of the West. Her first brick street was laid in 1870 by Mr. N. B. Heafer, who, having obtained permission from the City Council, constructed at his own expense a small section of brick pavement on North Center street, west of the court house. Though the brick of which this pavement was constructed were but ordinary hard-burned building brick, it proved very durable, and demonstrated to the citizens of Bloomington that a good brick pavement is the best driveway for city purposes that has yet been conceived. Mr. Heafer deserves a monument, and the citizens of Bloomington should see to it that a suitable memorial shaft is erected to his memory.

The First Brick Street.

Mr. Heafer followed his own good judgment in laying the trial pavement. The surface of the road was brought to a level and this thoroughly tamped. Upon it was then spread a cushion of sand two or three inches in depth; upon this as a foundation he placed what is known in brickyard parlance as a flat course of common building brick. Over this he spread another layer of sand an inch thick, upon which the second and final course of vitrified brick was laid on edge. Sand was swept into the interstices between the brick and the pavement



East Street, in Bloomington, Looking North from Mulberry. Paved With Brick in 1888.

was completed, and it stood the test of time for twenty-four years. It was taken up in 1894 or 1895, when it was found that the upper course of brick was only worn about half way through. That is, they had worn away about two inches in the twenty-four years. In view of this it is little wonder that brick streets have become popular in Bloomington. Of late years Bloomington's brick streets have been constructed on modern lines. That is, a single course of vitrified block upon a concrete foundation. Mr. Edgar M. Heafer, a son of N. B. Heafer, and who succeeded to his father's business, is an advocate of the two-course method of construction for localities where economy of construction is an important element, and cites the original Bloomington pavement as proof positive that such construction is adequate for streets subject to moderate traffic. Those who think that the two-course pavement is obsolete may change their minds if they will attend the Bloomington convention and try conclusions with Mr. Heafer.

Many readers of The Clay-Worker know Bloomington as the home of the "Perfect" clay screen, a product of the Dunlap Manufacturing Company, another enterprise in which Mr. Dunlap figures conspicuously. In former years there was a modest gentleman connected with him in this business who was a conspicuous figure at a number of the State conventions because of his striking resemblance to Abraham Lincoln. It has been said of Mr. J. M. Elder, the gentleman referred to, that he never met a stranger. While he is no longer connected with the brick business, it is a safe wager that he will be on hand convention week to extend the glad hand to all his old-time brick and tile associates.

The Convention Programme.

TUESDAY, JAN. 6, 10:30 A. M.

Enrollment of members.

AFTERNOON SESSION, 2 P. M.

"Address of Welcome"....Lewis B. Thomas, Mayor of Bloomington
Annual Address..........President W. S. Purington, Galesburg, Ill.
"How can the deleterious effects of alkali in clay be overcome most cheaply and effectively for common brick?"........................H. De Joanis, Chicago
"What does the present coal situation point to for the clay-worker?"..........................H. F. Townsend, Lewistown, Ill.
"Unloading ware from kilns by mechanical carriers"..............................Mr. Barney, Kansas City, Mo.
"What is the best shape for crown of round kilns, ¼ or ½ circle, and why?".............................F. Plumb, Streator, Ill.
"Respective cost of drying ware with steam, direct heat and waste heat".. ——
"Continuous Kilns"...................Peter Hemple, Hastings, Neb.
"What is the most economical method of firing continuous kilns, from side or top?"...............H. B. Lower, Sioux City, Ia.
Dinner, Illinois Hotel, 7:30 p. m.
O. W. Dunlap, Bloomington, toastmaster.

SECOND SESSION, JAN. 7, 9 A. M.

"Road and Field Drainage"..................E. M. Pike, Chenoa, Ill.
"History of Bloomington, with Its Clay Industries".................................... ————, Bloomington
"Factory Construction"...H. B. Tefft, Consulting Engineer, Chicago
"Cheap Drying Racks for Summer Factories"................................. ————, Bloomington
"What is the best ceiling and roof for dryers?"...................................... ————, Chicago
"Stripping Clay by Hydraulic Pressure"...C. C. Barr, Streator, Ill.
"Paving Brick Twenty Years Ago and To-day"...................................E. M. Heafer, Bloomington
Report of committee on resolutions.
Election of officers.
Adjournment.

G. C. STOLL, Secretary,
Wheaton, Ill.

Headquarters will be held at the Illinois Hotel.

Prosperity in Montana.

Editor Clay-Worker:

Inclosed you will find P. O. order for $2.00 to pay my subscription to The Clay-Worker. Business has been good, but prices low and money rates high. I closed down with 2,500,000 brick on hand, but am sold out now, with some deliveries yet to make. This would be a good location for some one with plenty of money. Any catalogues received are always carefully studied. JOHN H. MONTGOMERY.

Kalispell, Mont.

Written for The Clay-Worker:

BRICKS AND BRICKLAYING.—No. 2.

By Owen B. Maginnis.

COMING NOW to the preparation of bricks for laying, I would state that there is entirely too much sloppiness and neglect of the bricks themselves as a constituent part of the future wall; in fact, it is taken for granted that because bricks are a rough material, they should be handled and dumped any old way which is most convenient to the carrier. This is all wrong and should be guarded against by a prompt rejection of every load which shows too large a percentage of broken bricks or bats, as these often accumulate through careless handling.

Before bricks are hodded, wheeled or hoisted to the scaffold they should be wetted by a thorough sprinkling, especially in hot weather, not only to cool off the bricks, which being like pieces of lump sugar, highly porous and of an extreme capillary nature, will absorb and retain the heat existent in the atmosphere, or if subject to the sun's rays. When heated, overheated, or even charged with heat, water or any other matter, they are totally unfit for laying and must be artificially treated to bring them to their fit state, and this must be done as follows:

We will presmue that a pile of fairly good or excellent bricks have been lying on the street or in the lot for one, two or three days in the hot summer season, previous to being laid, and that there are some hot and some warm. Let us consider their condition. We will assume at the beginning that a number of them are or have been laid on a lime bed of mortar. Let us see what happens. The bricks are hot and the mortar hot, as lime mortar must be hot to bond properly. Now two likes will not assimilate. Heat will not attract heat, nor cold, cold; therefore, the hot mortar will not attract the hot bricks, nor the hot bricks the hot mortar, so that the bricks are simply in place and have no cohesive value whatsoever. They may stay in position by reason of their own specific gravity or weight, but the mortar might as well be omitted altogether for all the good it does. The reason of this is that the inherent heat in the bricks when laid on the mortar, which contains, or should contain, according to Trautwine, a small per cent. of water, immediately absorb by their capillary action every drop of water and leaves the mortar a dry compound of flaky, cracked lime and dry sand, which is absolutely worthless, and only powder.

To avoid this destructive action bricks must be well wet and sufficiently cooled, that when laid they will suck the mortar to themselves without depriving it of the fluid water, which is necessary to its proper solidification, for when a good mortar has set, if well made and the bricks be properly treated, it should be as hard as the bricks themselves..

Front bricks, or those composed of the harder, or fired, clays, must be soaked in an extemporized tank or barrel. When immersed they will denote the process of absorption by sending off bubbles to the surface, so that the water in the tank must be perfectly clean and clear. The bubbling indicates the air which the water displaces, and being lighter than the fluid rises and finds egress to the atmosphere at the surface. Bricks which have been soaked should be laid immediately lest the heated or dry atmosphere rob them of the water; and in cold or frosty weather must be kept indoors because the frost has a tendency to strike in and burst the brick by the expansion of the water under the action of heat after the bricks are laid in the wall.

A neglect of the precaution of not allowing water-soaked bricks to be laid in zero weather once almost cost the writer his reputation in the following way: A seven-story bearing gable 16x12 inches thick on the easterly side of a heavy apartment house was run up during the first three weeks of January, the bricklayers working between times in spells of clear, cold frosty weather, the bricks being uncovered on the ground and intensely cold. For the following two months, viz., February and March, it stood admirably plumb, straight and true, but lo! April came and with it the warm, balmy breeze, the warmer action of the spring sun playing from sunrise to sundown on that devoted and doomed gable. Immediately it commenced to draw. In 75 feet it bulged 6 inches in the center like a dish. It drew the anchors off the floor beams and commenced to weep tears of sorrow at its condition. Down the inside and outside it wept till its foot looked like a lake and it creaked and groaned until to end its misery it was demolished, and its owners and builders were sadder and wiser men. Never again will they try to economize by laying wet brick in winter, for they are now broke and have the honor of being their wives' husbands. Alas, for bricks and men, they both sorrowed.

So let us profit by the lesson and become practical again. Brick walls are vital things and essential to our human existence. They, like men, will not do successful work unless well built. (To Be Continued.)

THE KEY TO BUSINESS PROGRESS.

Organized Effort Is Essential to the Highest Development in Industrial and Commercial Life—An Address by W. H. Hunt Before the Annual Meeting of the Cleveland Builders' Exchange.

THIS IS AN ERA of development, of organized effort in commercial and industrial life. Religious and political societies were coincident with man's earliest activities. Fraternal and social bodies among all classes have existed for generations. In art and literature, science and travel, music and philosophy, during all ages, men have come together in organized effort for mutual help in their respective vocations. During all time, among all peoples, men have been drawn together in response to a feeling of common interest in a given cause.

With the world's progress in business development, with the great industrial awakening in both Europe and America, have come by natural impulse the organization of labor and the organization of the employers of labor—labor trades councils and centralized labor bodies on the one hand and the organizations of labor-employing bodies on the other.

This, it would seem, is but a continuance of the divine order of things. The spirit of fraternity and dependence upon cooperative effort for mutual protection and advancement is an irresistible force in man. These qualities must be capable of the greatest development only with men of kindred mind and kindred vocation. It would seem to be a righteous cause when men actuated by correct principles and a just regard for the rights of others unite with the common object of mutual improvement.

The home means more to the man whose interest is lively in securing comfort and happiness for his family. The church means more to the man whose heart and soul are in responsive touch with the great principles of truth for which the church stands, unchallenged except by the voice of the demagogue.

Trades councils and business organizations mean vastly more to the man who believes in his trade or business as an institution demanding ceaseless vigilance that nothing may assail its character or make his calling less honorable in sight of God or man.

Of all the pursuits of men which contribute to the world's progress and improvement the vocation of the builder would seem to be pre-eminent. Our trade is made honorable and distinctive by divine example. "Builder" is significant of creation and development, of growth and advancement; hence in choosing our occupation, with its consequent responsibilities, our unique position among the trades of men makes our possible power or influence for good in every direction immeasurable.

The builder occupies the middle ground between the producer and the consumer. He stands between the architect, manufacturer and dealer upon one side, and the artisan and owner upon the other. His example should be the standard of principle, insuring fair dealing and unquestioned business practice. Unfortunately there are evils peculiar to the building trades, evils which beset the path of the architect, the dealer and the contractor, offering to some irresistible temptation for larger profits and unfair advantages.

The voice of this Exchange is expressed in earnest protest against these evils, and every member should support the exchange in its determination to maintain the dignity and honor of our trade.

Charity and generosity, virtues commonly conspicuous in mans' relation with his home and his church, are ofttimes disregarded in his business dealings with his fellow men. Nothing is proof against human frailty, an element which must be reckoned with in business competition. The mental capacity, or mental horizon, if you please, of men is hardly alike in two cases. Particularly among contractors, men have come into the trade from every possible condition and environment of earlier life. Many good contractors are of foreign birth and training, and are handicapped by natural conditions which do not lend themselves to a ready understanding or practice of the methods and customs of our country. It is not the rule that the man with the best education makes the best contractor.

W. H. Hunt, Cleveland, Ohio.

Again, some men do not reach the front rank of popularity because of inherent personal characteristics. Business cares and responsibilities do not disturb the mental poise or personal bearing of some men. It is not fair to take as the true measure of a fellow contractor or dealer his natural characteristics alone. If he has a proper regard for good principles in business practice, coupled with responsibility and a sufficient knowledge of his chosen trade, he is entitled to just consideration.

In no other branch of business is competition more sharply waged than with the contractor and builder; hence the spirit of fair dealing and fraternity should never be ignored. The influence of the Builders' Exchange in sustaining these virtues is conceded and appreciated by all branches of trade.

Let us avoid unjust criticism and fault-finding. Our Exchange and every member is benefited by honest criticism which exposes weaknesses and suggests remedies. Let us not be destructive by fault-finding, but rather constructive by seeking the strength and the weakness of our organization and assisting to find a remedy for what is weak and joining with others in wisely directing its strength for our greatest mutual benefit.

Every member has some ideas of value to the organization. The man who can give his ideas to others can better appreciate what he receives in return. I am hopeful that in the future a larger number of valuable, heretofore silent, members will take an active part in Exchange affairs.

Let us regard the fundamental elements of our Exchange its declared principles; determine, each and every one, to stand by these principles, to have the same fealty and respect for the ciples of our Exchange be the law that protects and dignifies the land which protect our property and society. Let the principles of our exchange be the law that protects and dignifies our trade or calling and insures to us the peaceful and profitable enjoyment of the result of our labor.

If the principles of the Exchange radiate, and their light of precept and example permeate the individual acts of every member, the full measure of inspiration will follow for the greatest enjoyment of the practical and social features of our organization.

You have been informed in a general way from the statement of the retiring board of directors and the reports of the committees of the Exchange, presented at this annual meeting, regarding the transactions of the managing board and its various sub-bodies.

The past year has been one of unusual activity in Exchange affairs, and one productive of results beneficial to its members and to the trade generally. What has been accomplished must not lead to a feeling of undue satisfaction. With our largely increased membership and consequent added strength and prestige the necessity is the greater that our forces be wisely directed, that our organization and our trade, and we as individuals, and our city, may profit in greater measure.

OBITUARY.

Charles A. Freeman, Steubenville, O.

CAPTAIN CHARLES A. FREEMAN died at his home, 991 La Belle avenue, Steubenville, O., at 11:45 a. m., December 1. Mr. Freeman had been in poor health for a year, and bedfast and critically ill for seven weeks, with liver and stomach trouble. The deceased was born at Freeman's Landing, W. Va., September 24, 1836. He has resided in Steubenville since 1885, and previous to that time in New Cumberland, W. Va., for some years. Mr. Freeman has been engaged in the manufacture of sewer pipe since 1869, when he put in at their works at Freeman's Station, O., the first steam press for the manufacture of sewer pipe there was in the United States. Since then the plant has been increased twenty times its original size. Prior to the time he was engaged in the sewer pipe business he was engaged in the manufacture of fire brick. His father, Thomas Freeman, opened the first fire clay mine in the Ohio valley in 1832.

In 1861 Mr. Freeman enlisted in the First West Virginia Infantry as first lieutenant of Company C. In 1862 he was captured and spent four months in Libby Prison. He was paroled and after exchange at Camp Chase he was made assistant adjutant general on General Kelley's staff with the rank of captain, and served till November, 1864. He then resumed the fire brick business, and was one of the most successful along the valley. The Freeman Fire Clay Company sold out to the sewer pipe trust in February, 1900, and since then he has been secretary of the Central Sewer Pipe Company, with offices in Steubenville. He was married in 1872 to Emma J. Smythe at Carnegie, Pa., and his wife and two children, a son and daughter, survive him. The deceased was a man of integrity in business affairs, a thoroughgoing good citizen and a thorough gentlemen in all walks of life. He was a member of the Loyal Legion and G. A. R., and was a member and deacon of the Second Presbyterian Church of Steubenville.

Written for The Clay-Worker.

DOWN IN MAINE.

THERE WAS NEVER such a hopeful outlook for the brick business in Maine since the first brick was struck, as there is at present. In every direction are signs that show the coming building season to be one of extraordinary activity. There are not brick enough in sight to furnish the first month's demand when the season opens.

There is every indication that the magnificent water power of the Sedgeunkedunk river (which has its rise in a series of magnificent lakes six miles east of Bangor, and forms a natural canal of sharp descent from the outlet of Brewer lake to the Penobscot river) will soon be utilized, and immense wells for the manufacture of pulp, paper, and cotton and woolens will be built with a short time. At Gardiner, the Cobbosseecontee stream is being dammed, and excavated and tunneled, and immense pulp and wood pulp paper mills, that twenty years ago were considered the greatest of their kind, and that cost many thousands of dollars, have been torn down to make way for the mammoth structures of modern ideas.

The town of Newport, with its splendid water power flowing from Lake Sebasticook through the town, is experiencing a boom such as only the history of Millinocket, in this State, equals.

Four or five great industries have chosen this pretty town (which is twenty-five miles west of Bangor, on the Maine Central railroad) as their place to locate, and all sorts of building material and labor are in unprecedented demand.

It is not every Christmas season in Maine that bears such lively evidence of coming events. The only drawback to the Maine brickmaker's enjoyment of the season is his regret that it is not yet time to start the grinder, or his worse regret that he did not double his output last summer and maintain a stiff upper lip as to price.

This is how one Bangor brickmaker apostrophizes on the climate:

Oh, did you see the street parade and hear the roses blow,
And did you go to Riverside to see the vaudeville show,
And did you, Friday afternoon, for cold fizz drop a dime?—
You bet your life you didn't—in the good old winter time.
The good old winter time, the good old winter time,
Blizzards are howling and everyone's growling
At this very sunny clime;
Just telephone for two more tons, for there is every sign
That there will be about six months of good old winter time.

You used to sit in Centre Park and listen to the band
And watch Maudes and Willies promenading hand in hand.
You used to smoke a good cigar and watch the smoke wreaths climb
Through your Angelina's frizzes in the good old summer time.
The good old summer time, forget it if you can,
When the gauze was on the girlie and duck pants were on the man,
For now its good old winter and you'll have to figure fine
To break even with the climate in the good old winter time.
Dig up the old red mittens and the old gum rubbers, too,

The fur earlaps and woolen caps that make a sight of you,
And get the big snow shovel and the ice pick—get a line
On the jobs that make you tired in the good old winter time.
For the anchor ice is come and the lights are on the bum,
And dynamite won't move the cars that gaily used to hum,
There ought to be ten years in jail and a million dollars fine
For the weather sharp who sprung on us this good old winter time.

Sonadabscook Stream.

THE NORTH AMERICAN MANUFACTURING COMPANY.

A SUBJECT THAT HAS caused much comment, indeed, is the purchase of the town of Newell, W. Va., by a syndicate headed by some of East Liverpool's foremost potters. The town of Newell was established about two years ago, and really cannot be called a town, for it has no postoffice, and, although it was divided up into lots two years ago, which were, in turn, put upon the market by E. W. Hill, a real estate agent of this city, together with the Newells, it was never made a "howling success." Some lots were sold at the time, and a bridge and also a seven-kiln pottery proposed, which was to be known as the Newell Pottery Company, but somehow the scheme fell through and nothing ever came of it. There was then a lull of affairs until the recent purchase by the East Liverpool syndicate.

The tract is known as the Lloyd tract and is located opposite the lower end of the city of East Liverpool. The tract was disposed of by W. L. Lloyd, of Pittsburg, Pa., to Joseph G. Lee and L. I. Aaron, who bought in trust for the syndicate. At the time of the purchase it was thought that it was the intention of the purchasers to erect an immense pottery plant there, as at this time trust talk was extremely popular, and for a while it really looked as if the deal would pull through.

Site of the New Pottery Town to be built by the North American Mfg. Co., Near East Liverpool, Ohio.

The price paid for the tract is given as $75,000. The purchasers of the land have recently incorporated under the name of the North American Pottery Company, with a capital stock of $1,000,000. The incorporators of the company are L. I. Aaron, C. I. Aaron and W. W. Wells, respectively, president, vice president and secretary of the Homer Laughlin China Company, together with J. N. Taylor and Joseph G. Lee, respectively president and treasurer of the Knowles, Taylor & Knowles Company; also G. W. Clark, second vice president of the Laughlin Company, and Marcus Aaron, of Pittsburg, Pa. It will be seen that the incorporators are the heads of East Liverpool's biggest pottery concerns, namely, the K., T. & K. and the Laughlin Company.

The company seems to have changed its mind, and no potteries will be erected just at present, although there may be later on. Mr. Lee, Mr. Wells and others when interviewed on the subject are noncommittal, and say that nothing will probably be done for the present, although the company will boom the town later on.

We take pleasure in showing a photograph of the new site herewith, and it will be seen that a more ideal spot could hardly be wished for. The ground is good and solid and is very level, the ideal place for a town. The location is also good for almost any kind of a manufacturing site and would be particularly desirable for either a pottery or for a big iron works of some kind. Something may be expected from Newell before very long.

Written for The Clay-Worker.

DRYER STACKS.

Dimensions Necessary for Best Services.

THE FOLLOWING question to the editor has been referred to me: "Will someone please inform us how large a flue will be necessary in stack 80 feet high to give sufficient vent for an Iron-Clad dryer with a capacity of 40,000 brick per day? We want to take about one pound of water from each brick. The temperature of our dryer at receiving end (for air) is about 160 and at the discharge 83. Brick do not check in drying."

Calculating the theoretical amount of air, that is, the amount of air saturated at 83 degrees, that must be removed every twenty-four hours in order to take from the brick 40,000 pounds of water, at average temperature and humidity of outside air, a flue would be required having a sectional area of 42 square feet. Making due allowance for extreme conditions and imperfect operation, when the air leaving the dryer is only partially saturated, the size of the flue should be increased to an area of about 55 square feet. This size will doubtless seem large to many, since dryer stacks are generally built too small. In fact, however, this size could and should be reduced by maintaining a higher temperature in the dryer. There is no economy in such a low temperature. The lower the temperature the larger the volume of air that must be removed; hence the larger the stack and the longer the time of drying. Making the calculation on a temperature of the dryer at discharge end for saturated air at 50 degrees C., or 122 degrees F., which is low enough, the flue would need to have a sectional area of only 32 square feet, theoretically, or practically about 40 square feet.

On the other hand, it is a question if there should not be taken from each brick in this case, in order to make them as dry as they ought to be, considerably more than one pound of water. But I have endeavored to answer the question in accordance with the data furnished and the best knowledge we have of the subject at the present time. The proper construction of dryer stacks and the more rapid removal of saturated air is a subject that I expect to discuss more fully and definitely in a further paper.

A. LUMINA.

Commissioner to World's Fair. The Imperial Commissioner to the St. Louis World's Fair, Dr. Chief Privy Councillor Lewald, sailed recently on the Deutschland for America. He only proposed to remain two days in New York and then go to Washington for a short stay to call upon the German ambassador. From there he will go direct to St. Louis to confer with the exposition authorities upon the question of space for the German exhibits and secure the best obtainable place. The Imperial Commissioner believes that the exposition will be principally of importance for Germany in the lines of art, ceramics, glass, porcelain, fine paper and toys. After his return, about Christmas, he will visit the German industrial centers of these branches to get an idea of what the manufacturers will do and to awaken their interest in the exposition. Commissioner Lewald will be followed to America by Architect Bruno Moehring. As at the Paris Exposition, a German building is to be erected at St. Louis, in which German wine growers will have an opportunity to distribute their products. —Deut. T. & Z. Z.

Improving Limy Clay. In reply to your request for a remedy for the flaking off of burned clay goods containing lime, I only know of one, and that is the so-called "drowning." This can only be done successfully if the burned goods, when taken out of the kiln, and while they are still quite warm are steeped for some time in warm water. If this "drowning" will not do it, then there are two ways to utilize a very limy clay; the one is by slumming, the other is by thoroughly grinding, but the first process is the more certain and the better one. Grinding can, it is true, be used, but it is only to be recommended for goods in which it is not of so much consequence if a small piece here and there splits off. Because the lime will not be made quite harmless by grinding, for even the smallest piece of burned lime, when exposed to the air, is capable of developing its rending force and splitting off little pieces of the ware. Another factor to be considered is that where there is a large proportion of lime in the clay, even when it is finely ground, the ware has a different and uncertain color after it is burned and is, not infrequently, streaky, often making it unsalable. In order to produce a good quality of ware the clay should be slummed, or else get a clay without any lime in it.—Keram. Rund.

Starting a New Clay Bank. My clay bank will be worked out in a few years, so that I must begin to think about providing myself with other material. I am in a position just now to get a piece of ground, quite near to me, and that looks just the same as my field did where my clay is. I have taken an option on this piece of land, but before I buy it I would like to know whether the clay in it is suitable for brickmaking, and whether it is deep enough. As I would like to employ my men during the winter months for getting the land in order, I beg that you will advise me how I can set about determining these matters in the most practical and advantageous manner.

Answer. The thing is not at all difficult, and you can easily make the investigations yourself. You will have to get an earth drill, if you have not one already. A hand drill 65 feet long will do the work. If you have to buy an apparatus you will find the thing you want advertised in the columns of this paper. The price is quite moderate. You must then, with your drill, make test borings over the whole field and at various depths. For this purpose you first prepare a number of wooden stakes, 18 feet long. You then step off in one line distances of 100 yards and at every 100 yards you drive in a stake. The next row of stakes is started 50 yards in advance; the third row is started from the same line as the first one. Thus you get all the stakes 50 yards apart, as is shown by the following arrangement of figures:

1 2 3 4
5 6 7
8 9 10 11

Each stake is marked with a number, so that its position can always be known. The quantity of stakes required will depend upon the size of the field. After the field has been staked out a plan is made. This, with the aid of a pair of compasses, is easily made and drawn to scale, showing the position of each stake and its number. The actual boring tests will then begin. Near to each stake a boring is made, and at every two feet in depth a small sample of the soil is taken. This you will pack in paper, or put in an envelope, the paper or envelope having inscribed upon it the number of the stake and the depth at which the same was taken, so that they will read, "No. 1, 2 ft.," "No. 1, 4 ft.," etc. You make out a table, in which you enter all the results, for instance: "No. 1, 2 ft. stripping, gray;" "No. 1, 6 ft. yellow clay, fat," and so on. These samples should be carefully packed and sent to your office for closer examination, and, if necessary, for testing. It is very important that you should be able to judge these samples correctly. If you are not, then you should send them to a competent ceramic chemist, so that you can know the qualities of the material, the uses that can be made of it and the treatment it requires. If when boring you find that the strata at equal depths show the same kind of material, then you can safely neglect every other stake and make your borings at every 200, instead of of every 100 yards. If, on the other hand, you find considerable differences in the samples from the same depth, then it will be advisable to make your borings closer together and drill a hole at every 50, instead of 100 yards. By means of the table you make you can see what is the extent and depth of the clay. These factors will give you the cubic yards of the deposit. It takes about 3¼ cubic yards of solid clay to make 1,000 bricks (German standard size). It is easy to calculate the number of thousands of brick which the clay deposit holds, and if you divide this sum by your annual output, expressed in thousands of brick, you will get the number of years that your clay will last, and from this you can reckon what you can afford to pay for the land.—Deut. T. T. Z.

Hardening Lime-Sand Brick. I make lime-slag-sand brick, which differ only from the ordinary lime-sand brick in that granulated blast furnace slag is used instead of sand. The hardening of the brick is done in steam chambers under the two Neff patents. I use a white or fat lime, which I add to the sand in the form of a dry powder, calcium hydrate O_2 Ca. Sigmund Lehner, in his book, "Artificial Stone," recommends for hardening the use of carbonic acid gas, the bricks to be in an inclosed chamber in which coke is burned. The hardening of my brick is done, as is usual with lime-sand brick, by steam under pressure, and I would like to get competent opinion as to whether the employment of carbonic acid gas, after the steaming, would increase the hardness of the ware. In such case, would the use of liquid carbonic acid, or of carbonate of ammonia, not be more convenient, and, perhaps, cheaper than to produce carbonic acid gas by burning coke? Some other printed matter on the subject recommends the addition to the raw material of ground, calcined gypsum, equal to about 5 per cent. lime, in order to produce better (harder) bricks. Will the addition of gypsum do any good?

Answer. I recently had the opportunity of testing a lime-sand brick which had been hardened with carbonic acid gas instead of steam. I must say that at the first glance it looked like a brick that, if not of first quality, was still good enough to be used for building purposes. My first objection was to its great weight, but when I had it tested for resistance to crushing I was astonished to find that it was so weak that no building inspector would be likely to admit it. That bricks which are hardened by air in an inclosed chamber will dry quicker where carbonic acid gas is produced by burning coke can be readily believed, as the warmth will hasten the process at the same time that the calcium carbonate is formed by the action of the gas. There can be doubt that bricks which get their hardness in a short time by the action of steam forming a silicate of lime will be harder than those produced by the action of carbonic acid gas forming carbonate of lime. To give an after treatment to a lime-sand brick, or a lime-slag brick in the manner your suggest would, I consider, be a mistake. If your bricks contain uncombined lime this is due to defective manufacturing, and I can only advise you to reduce the quantity of lime, or if you have as little of that as possible for working, then mix the lime and sand, or lime and slag, thoroughly together by means of a dry pan. I may mention that the treatment with carbonate of ammonia is covered by Germant patent 126552 and can only be applied by permission of the patentee, though it does not seem that he attaches much importance to this process, as I have never heard of it being practically applied. Whether the addition of gypsum would be an improvement can best be found by trial. I think that, if anything, cement would be better. (Thonind.-Z.)

The Monastery Size Brick. A subject which has been recently discussed by German brick manufacturers is the circular issued last year by the Minister of Public Works to brick manufacturers, as follows:

"In the building division of my ministry it has been urged for some time past that for brick buildings of a monumental character, that should present the most impressive appearance, and particularly for churches, the size of the bricks should be that which was in use during the middle ages, as by using this larger size a more imposing and worthier effect can be produced than with the standard size.

"It is, therefore, to be wished that the production of these medieval style bricks were more general, instead of as at present, being made only by a few works, when specially ordered, in order that reliance could be placed upon getting these bricks when wanted, especially in those districts which have no natural stone and are compelled to use bricks. It is desirable that in those districts it should be possible to procure these larger size bricks, especially for church architecture, without too great a loss of time or seriously increasing the cost of the building.

"It would, no doubt, be helpful in gaining this end if a standard size were agreed upon for the larger brick.

"An inquiry was addressed by this department to provincial officials, and it appears that the dimensions which would be preferred are as follows:

Length	11⅛ inches
Breadth	5¼ inches
Thickness	3½ inches

"Before I decide upon this point and give the building inspectors definite instructions I will give the Brick Manufacturers Association an opportunity to discuss these dimensions and also to express an opinion upon the relative merits, in bricks of this size, of the hand struck and machined pressed methods of production." (Signed) Schultz.

The letter of the Minister of Public Works was considered at the principal convention of the association this year, and the reply regarding the production of the larger size brick as a hand-struck or machine-made brick was given in the following conclusions:

1. "The present German standard size of 9⅞x4¾x2½ in. for building and front bricks is in every respect the most favorable and the most useful. If a more imposing and worthy effect is desired, then it would be better, instead of increasing the size of the bricks, to make them a suitable color. This has been done in the case of a number of churches for the capital and with the happiest results.

2. In order to produce a larger size (11⅛x5¼x3½ in.) it would be possible for those manufacturers who have hitherto been able to turn out a good average of fair quality bricks, provided that their clay proves suitable, when used in the manner to which they are accustomed, but the increase of 3½ in. would be quite considerable, particularly for hand-struck bricks. This increased difficulty would be accompanied by an increase in the cost of production.

3. It is not probable that any considerable number of brick works would keep a stock of these large bricks, so that the building authorities would do well to order them, in every case, as early as possible and, to insure good execution of the work, to allow ample time.

4. The production of hand-struck bricks, both in the standard size and the larger size, is only possible by using clay of the lower, or lignitic, formation.

5. In making an exact comparison between hand-struck bricks and those made on an auger machine no difference in quality can be found, in strength or resistance to compression, when similar material is used in each case, but the auger-machine-made bricks are better shaped.

6. In making a comparison between the two kinds of full size bricks above mentioned and perforated front bricks, the perforated brick is to be preferred, as regards correctness of shape, resistance to breaking and compression strains, it being understood that the clay used is sufficiently plastic. The small amount of perforation does not produce any technical difficulty in the use of these bricks, as full size front bricks. By employing perforated bricks of the larger size and reducing the bond, as is the present practice in front brick work with half and quarter bricks, there would be a considerable saving of expense.

7. The production of perforated bricks in the brick machine is only possible where there is a pure and plastic clay of the lower, or lignitic, formation.

8. The proper use of this clay has made possible the production of perforated front bricks, which are in every respect not only equal, but superior, to the hand-struck bricks. These deserve to be kept in mind when introducing the large size for monumental brickwork, such as the Emperor Frederick Memorial Church. This branch of the front brick industry has proved its capability for development and also its adaptability to the changing conditions of the time and the progressive demands of architecture."

Hereupon the minister issued the following circular the 10th of last month:

"For monumental buildings of brickwork, particularly for church architecture, it is desirable, in order to get the effective appearance of the medieval brickwork, to employ bricks of larger size.

"For the purpose of getting these bricks, which are now only produced by a few works to special order, made generally and in such quantity that there will not be great delay, nor too considerable increase in the cost of building, it has been decided that the following dimensions shall be standard:

Length	11⅛ inches
Breadth	5¼ inches
Thickness	3 1-3 inches

"These dimensions are to be adhered to in every case where new monumental buildings are erected and the larger size bricks are used. (Signature of Minister.)"

—Thon. Ind. Z.

If you want experienced help read the "Want" ads. in the Clay-Worker.

Written for The Clay-Worker.

CLAY DUST.—No. 2.

By A. Lumina.

Lime Pebbles in Clay.

THE QUESTION OF HOW to treat clays containing limestone pebbles so as to prevent damage to brick has recently been brought forward in this journal, and a partial answer given by the manufacturrers of a well-known line of brickmaking machinery. I have been requested to take the matter up in these papers in a more elaborate manner, and to try to formulate methods of treatment of such clays that will give a practical solution of this troublesome problem. I am the more inclined to this since it is a problem that I encountered and struggled with in the first years of my experience in brickmaking, when I would have been very grateful for such information as can now be obtained through The Clay-Worker.

Limestone pebbles occur in nearly all drift clays, which are the deposits that must most generally be used for the manufacture of building brick. The effect of these small nodules of limestone is well known. The limestone, calcium carbonate, is burned to caustic lime, calcium oxide, which, upon exposure to moisture, slakes with great energy, the large increase of volume of the hydrate causing the popping or flaking of the brick that is so damaging to appearance and durability.

The Remedy.

The most natural solution of the problem of preventing this injurious action of lime pebbles is to remove the pebbles from the clay. There are two methods of doing this, one of which may be called the dry method, and the other the wet method. The dry method consists of the drying of the clay either in the open air or in a revolving cylindrical dryer, the disintegration of it by an impact pulverizer so as to free the stone from the clay, and the screening out of the pebbles. The wet method, generally known as "slumming," is the washing of the clay from the pebbles in some form of agitator; the clay, suspended in water, is run off into settling troughs or vats, and the pebbles removed from the machine.

The dry method is simple and practicable, and not very expensive under usual conditions. I used this method fifteen years ago in the manufacture of face brick by the dry-clay process, taking from the clay a large wagon load of pebbles every day in making 15,000 brick. This method is practicable also for common brick, though, of course, adding somewhat to the cost. Either for face brick or common brick the clay should, when practicable, be dried in the open air during the summer season and the pebbles separated by pulverizer and screen before the clay is stored for use. If an artificial dryer is used for the clay, storage sheds may not be necessary for common brick, and for face brick it may be advisable to steam the screened clay before storing it. The pulverizer should not crush the clay and stone, but should disintegrate it by the impact of hinged hammers or chains revolving at a high speed. I used for this purpose the vertical chain pulverizer advertised in The Clay-Worker several years ago under the name of the Pratt Pulverizer. An improved machine of this type has been extensively introduced in recent years by St. Louis manufacturers.

After passing through the pulverizer the clay should go into a reel or revolving screen with meshes just close enough to prevent the passage of the pebbles. The screened material should afterwards be passed through a smooth roll crusher if a fine product is desired.

These lime pebbly clays are much used in New York State, and a few years ago an ingenious method of treating them was invented and used by Mr. Campbell, of Ithaca. Whether this method has stood the test of long practice and is still in use I am unable to say.

With slumming, the wet method of removing pebbles from clay, I am not familiar, never having seen the operation. A special article upon slumming, giving the modus operandi and the cost, by one who is using it in the manufacture of brick, would be of interest to many. I have never heard of anyone making use of this method in America, except Lehman, of Chicago. Whether he is still slumming his clay I do not know. In Europe, however, especially in northern Germany, this method of treating clays is said to be quite common, and is considered entirely practicable where there is an abundance of water.

Another solution of the lime pebble problem that is much cheaper than removing the pebbles, is the grinding of the clay so that the pebbles are crushed so finely as to prevent all serious trouble. This is the method described in the October Clay-Worker by the Wellington Machine Company. The method is practicable for common brick and is effective when properly done, that is, when the crushing rolls are set close enough together to insure that no grains of limestone larger than one-sixteenth of an inch diameter shall go into the brick and the brick are burned hard. But in practice, with the machinery described and the up-draft kilns generally in use, this is not an easy matter, and hence one frequently sees on a yard using this method the trouble from lime pebbles only partially relieved—perhaps just enough to prevent serious complaint or rejection of brick, the manufacturer merely claiming that his brick are as good in this respect as those of his competitors.

How to Detect Presence of Lime Pebbles in Clay.

One who is erecting a plant for the manufacture of brick from drift clays should ascertain if there are lime pebbles in the clay. This is easily done by picking out or washing out the pebbles and testing them by placing them in hydrochloric acid, effervescence indicating lime. If the pebbles are thus shown to be limestone the proper equipment can be provided. If the product is common brick exclusively the machinery will generally consist of two sets of roll crushers—one set having a fast roll with projecting bars or teeth for feeding and tearing the clay, called a disintegrator, and the other set two smooth rolls of large diameter, set not more than one-sixteenth of an inch apart, with no relief springs. If the brick machine has large capacity there will have to be more than one set of the smooth rolls to provide sufficient amount of fine material. Unfortunately, smooth roll crushers have not been sufficiently developed in this country to make the selection of such a machine satisfactory. In this manner clays can be made to produce good brick that contain 20 to 25 per cent of calcium carbonate, since at the high temperature of the brick kiln a combination of the lime with the silica and alumina takes place, the lime being in a fine enough state to wholly enter into this combination, leaving no free oxide to be acted upon by water. It has been pointed out also that the sulphurous gases of the continuous kiln change the lime to a sulphate, and thus prevent injurious action of water. If this is true another argument is given to the advocates of the continuous kiln.

Enough has been said upon this subject to show that clays containing lime pebbles can be so manipulated as to overcome the ill effects of lime pebbles in clay. The methods of doing this may be summarized as follows:

1. Removal of the pebbles from the clay either
   (a) By drying the clay, disintegrating it and screening out the pebbles, or
   (b) By slumming—washing the clay from the pebbles.
2. Grinding the pebbles with the clay to a fineness sufficient to permit of a chemical union in burning of the lime and the silica and alumina.

This last method is generally the most practicable one for common brick, though either of the other methods may be the best under favorable conditions.

THE ELIMINATION OF HAND LABOR IN BRICKMAKING.

By J. Parker B. Fiske, B. Sc., Boston, Mass.

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ALL OBSERVING PERSONS will agree that the manufacturing world has practically been revolutionized within the last quarter of a century by the use of labor-saving machinery. Hardly a class of manufacture exists that has not felt its magic touch, and with its aid the United States has become the foremost manufacturing country in the world. A manufacturer in nearly every industry who should return to the practice of even ten years ago in preference to that of to-day would invite failure and bankruptcy.

This is the age of machinery—automatic machinery, often with the most intricate mechanism, which works with marvelous speed and accuracy and which accomplishes tasks far beyond the capability of the human hand, both in quality and quantity of product manufactured. As a result of such machinery, the cost of nearly all manufactured articles has been enormously reduced and the consumption by the people correspondingly increased.

Plate 1.—Exterior View of Factory.

It is the purpose of this paper to discuss the application of machinery to the art of brickmaking, with a view to the practical elimination of hand labor.

Much ingenious and useful brick machinery has already been invented and is in daily use in hundreds of plants; this is, however, largely confined to the preparation and handling of the clay and the forming of the soft bricks. This machinery has been perfected to such a point that little improvement is needed or can be expected in future, and the same remarks are doubtless true of the most modern types of drying and burning devices.

No successful attempt has been made, however, so far as I am aware, to eliminate the manual labor involved in handling the bricks from the brick machine through the various processes of drying, burning, storing and delivery to the user, and inasmuch as this labor of handling constitutes a large part of the entire labor involved in the manufacture, comparatively little saving has been effected in the total labor cost.

Certain improvements, such as the various car and truck systems, have come into use to a large extent, but these have been adopted mainly because of their convenience and adaptability to the artificial dryer rather than as labor-saving devices pure and simple. These devices must still be propelled over long distances by man power and the bricks, even under the most favorable conditions, must undergo repeated handlings in setting and emptying the kilns and in loading the delivery cars or wagons.

The number of hand operations in modern brickmaking varies greatly, depending upon the process, whether molded by the "soft mud" or the "stiff mud" machines, whether dried on the open yard in racks or in artificial dryers, and whether burned in up-draft, down-draft or continuous kilns. It is fair to say, however, that an average of all plants would show from twelve to fifteen hand or man power operations, from the time the bricks are molded until they are loaded on the delivery wagons.

When the value per ton of the finished product is taken into account this amount of hand labor appears excessive; thus a ton of common bricks is worth on the average say $2.50 on the wagon or cars at the plant, while a ton of steel rails at $20 has excited the wonder of the whole world. Such a low value should involve a minimum of hand labor per unit of weight, yet it is doubtless true that no finished product in the world involves so much.

In short, an excessive proportion of the entire cost of brickmaking to-day is in the labor item, and our only hope of substantial reduction lies in the minimizing of this hand labor.

The prime necessity for the successful use of automatic machinery in any art is that every unit of manufacture shall be subjected to precisely the same treatment, and this condition

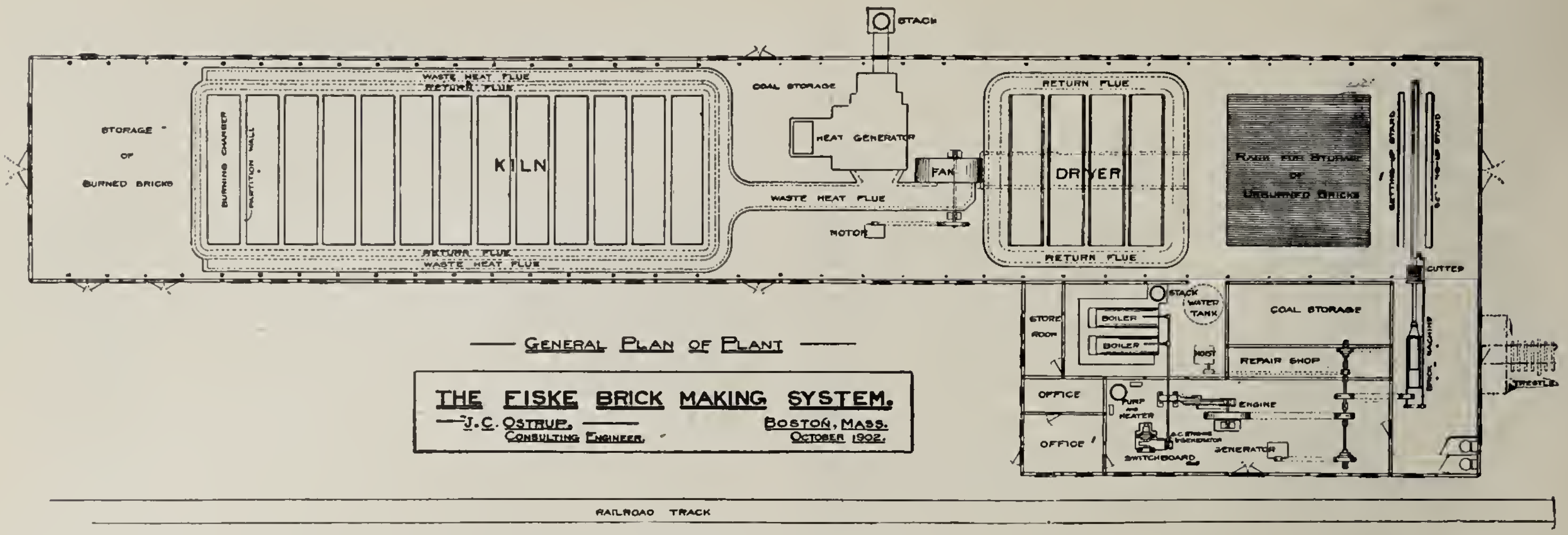


Plate 2.—Plan of Factory.

obtains to an ideal extent in the art of brickmaking. Thus, particularly in the case of common bricks, every piece is molded or pressed exactly like its mates, and is subjected to the same drying and burning heats and, theoretically, when finished should be of exactly the same size, shape and texture.

However, a careful study of this problem will, I think, convince anyone that no great improvement can be made in the "summer brickyard;" that is, one in which the drying is done by sun and wind, as these elements are intermittent in their action and are so uncertain at best that manufacturing can be conducted not over one-third of the total number of working days in the year. It is also important for the profitable use of labor-saving machinery that it shall be worked systematically and continuously in order that it may have an opportunity to earn a fair interest on its first cost, which is necessarily high. To make any radical improvements, therefore, the "open yard" idea must be abandoned and a permanent, substantial construction must be adopted, with the best possible form of brick molding machinery, artificial dryers and fuel-saving kilns, specially constructed to suit the new conditions involved in the use of automatic handling machinery, the whole plant representing a comprehensive scheme, complete in all its arrangements, so that the raw material may enter at one end, proceed systematically through the various processes and emerge a finished product at the other, practically without hand labor.

Having perfected such a system and put it into successful operation at the works of the Fiske Brick Company, at Dover Point, N. H., I take pleasure in presenting a description of it to this society.

Plate 1 shows a photograph of the exterior of the main building, with monitor roof, 367 feet long and 60 feet wide, and the auxiliary building being 115 feet long and 50 feet wide.

Plate 2 is a plan view of the plant thus far erected, and shows:

Power Plant, consisting of two tubular boilers, pumps and feed water heater, a 200 H. P. Corliss engine, 50 kilowatt belted dynamo, 50 kilowatt direct connected engine and dynamo as a spare unit, switchboard, shafting, etc.

Brick Machinery, consisting of a Chambers disintegrator and a Freese combined pug mill and auger machine for making

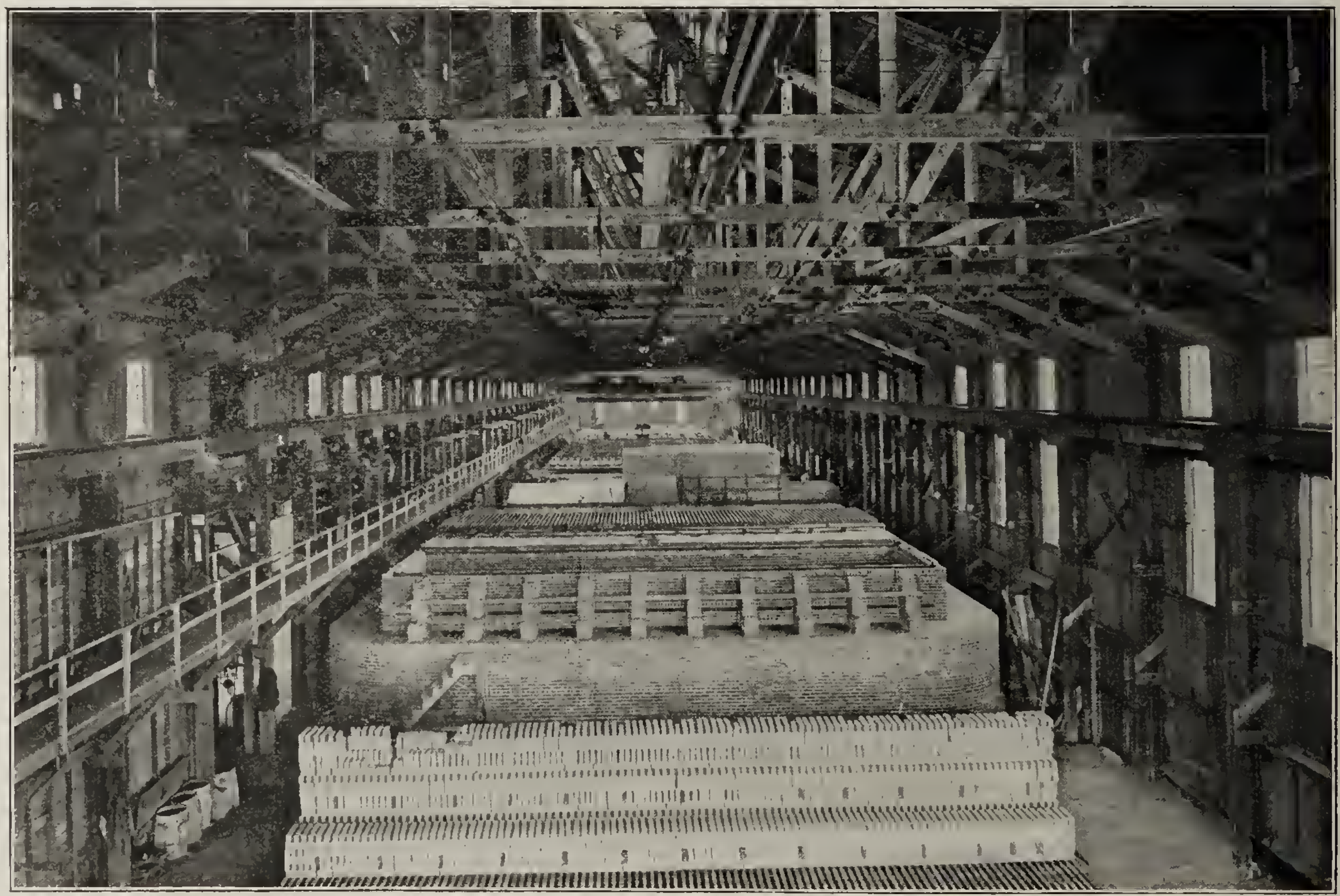


Plate 3.—Birdseye View of Interior of Main Building, Showing Storage Rack for Dried Brick in the Foreground.

stiff mud bricks, with an automatic cutter and an off-bearing belt extending nearly across the main building.

Setting-up Stands for the reception of the green bricks as they are taken from the belt.

Drying Arrangements, consisting of a Crown Heat Generator, a twelve-foot Sturtevant fan and four drying chambers of special construction, as described later.

Kiln, consisting of thirteen chambers arranged in one battery for burning by the continuous or regenerative principle.

Plate 3 is a bird's-eye interior view looking north and shows the storage rack and dryer in the foreground.

The clay is drawn up an inclined trestle in side dumping cars, each of five yards capacity, and is dumped into a hopper at the disintegrator. The material proceeds through the disintegrator, brick machine and cutter, and the green bricks pass out into the main building on the off-bearing belt, all in the usual manner.

At this point in the manufacture the special handling machinery begins it work, the process thus far being an entirely standard one.

Careful consideration of the conditions necessary for the drying and burning of bricks has convinced me that the successful handling machinery must handle the bricks in large masses rather than one by one, as is done by labor-saving machinery in other arts, and I consequently introduce at this point in the manufacture what I term the "unit stack" idea, which I believe to be entirely novel in brickmaking.

The unit stack consists of a pile of bricks built up, as they issue from the molding or pressing machine, in such relative position, brick to brick, that they can be dried, burned and loaded on the delivery car or wagon without rearrangement, the entire stack being lifted as a unit, transported and deposited by suitable machinery, first into the dryer, then into the kiln, and finally into the stockyard or delivery wagon. The original stacking can be done automatically, layer upon layer, by machinery, or can be done by hand as in the plant under discussion.

The unit stack system creates a distinct advance in the art, as it eliminates all manual handling after the bricks are once stacked, banishes from the brick factory all tip carts, trucks, wheel-barrows, dryer cars, tracks, transfer cars and turn-tables, dispenses with kiln "setters" and "emptiers," and reduces the entire force of employes, beyond the brick machinery gang proper, to a mere handful of men.

In order to place the bricks in unit stack formation, a rack called a "setting-up stand" is permanently located on each side of the off-bearing belt, and at a suitable distance therefrom to accommodate the stackers.

Plate 4 shows the sitting-up stands, constructed with 105 heavy horizontal bars of hard pine, mounted at a convenient height for the stacking of the bricks, these bars being spaced apart so as to support each lower brick at its two ends and in the middle, leaving two clear spaces about one and a half inches wide under each bottom row. The bricks may be set five over two, six over two, or in any manner required for their proper drying and burning, exactly as is done in the usual plant, and no more care is required than in setting bricks in an ordinary kiln. For these reasons a very wide variety of clays can be handled by this system as any style of setting may be adopted which is found necessary to suit the peculiarities of the clay in question.

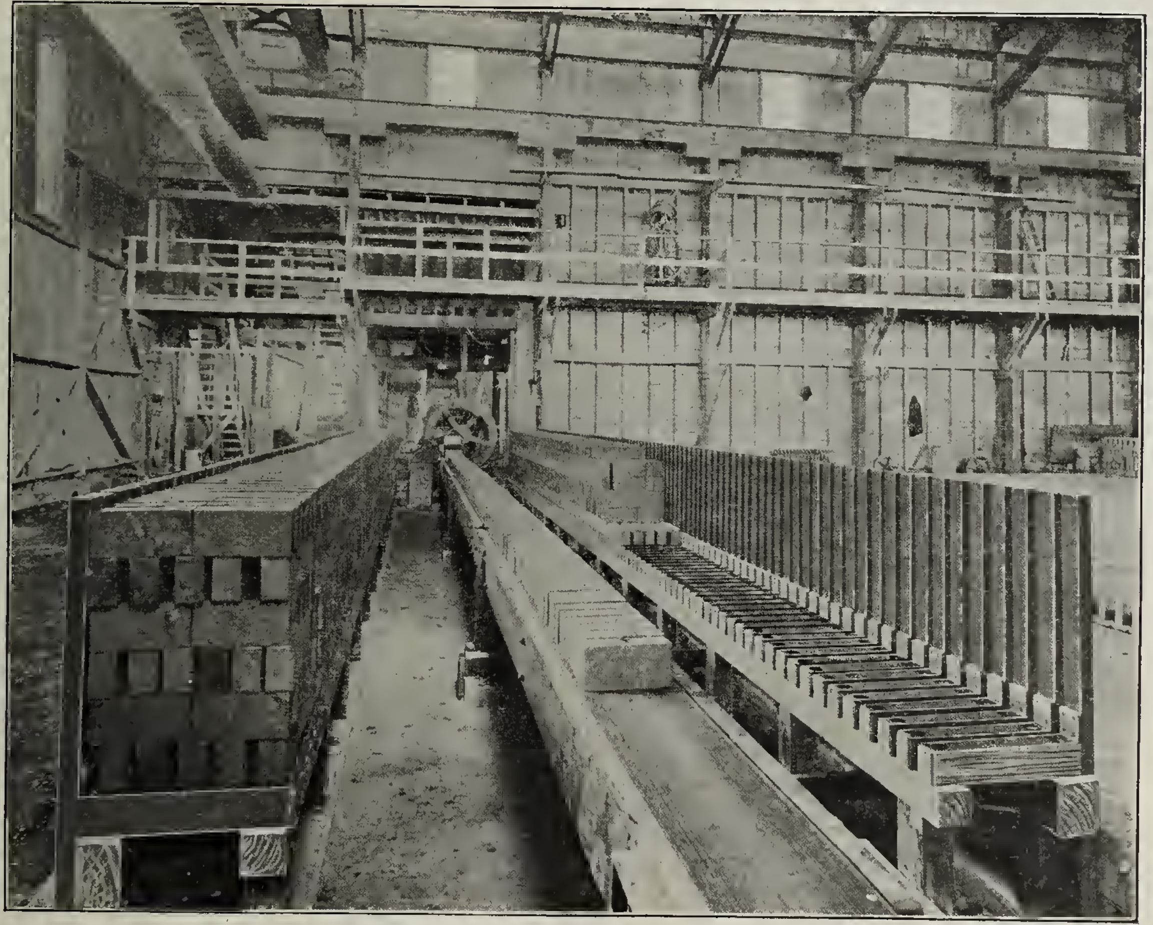


Plate 4.—Setting-up-stands, One Filled with Soft Bricks and One Partly Filled; The Offbearing Belts Being Between Them.

The stand is about thirty-nine feet long by twenty inches wide, and holds about 1,500 bricks when stacked five over two (that is, five headers over two stretchers) and six courses high. At the back of the stand are vertical guide bars, also of hard pine, to insure a perfectly vertical stack and to guide the stackers in setting the top row of bricks, which must be spaced exactly to correspond with the horizontal bars, as will be seen later.

As soon as the first stack is completed, the stackers commence placing the bricks on the opposite stand, the first stack being soon removed by the handling machinery, thus leaving the first stand empty and ready for another stack. Thus all waiting for empty cars or trucks, as is common in many brick plants, is eliminated, and the brick machine is free to run without interruption. Plate 4 shows one stand filled and the other partially filled. The handling machinery consists of an overhead electric traveling crane and a special carrier called a "brick lift."

By reference to Plate 5 it will be seen that the crane travels on tracks supported on an elevated runway near the eaves of the main building, and that it spans this building completely and travels its entire length. The crane is driven along the overhead tracks by an electric motor, called the "travel motor," located midway on the crane girder and shown in the cut, and the hoisting and lowering of the load is effected by the "hoist motor," located on top; each motor is controlled independently by a lever in the operator's cage. The hoisting is done by four vertical chains and four winding drums driven in unison by the main shaft from the hoisting motor.

The brick lift consists of two main lifting beams properly braced together to form a girder; to this girder are attached 104 lifting fingers, accurately spaced apart to correspond to the spaces between the bars of the setting-up stand, so that the whole forms a rigid structure. The four vertical chains already mentioned are attached to four lifting eyes on the lifting beams, thereby securing the utmost stability of the loaded lift, tipping in any direction being impossible and swaying and twisting being reduced to a minimum.

To engage and transport a load of bricks, the lift is brought by the crane in front of the setting-up stand, lowered until the fingers are at the proper level, the crane moved forward until the horizontal members of the fingers are run into the spaces between the bars of the stand and underneath the lower layer of bricks. Plate 6 shows the fingers in the act of entering these spaces. The lift with the entire load of bricks is then raised clear of the stand by the hoisting motor, and is carried by the crane to the dryer as a unit.

By reference to Plate 7, it will be seen that each brick of the bottom layer is supported on two fingers of the lift, hence there is perfect stability of the load and it is impossible for it to twist or topple over. Repeated trials with the most violent movements of the crane that were possible have failed to dislodge a single brick from its load.

The crane operator is located in a cage at one end of the crane, as shown in Plate 5, and at all times has an uninterrupted view of the runway and of his work below.

It will be noted that this operator, with one helper on the brick lift, can handle as many bricks at a time as fifteen or twenty men with wheelbarrows, and that the speed of the travel along the tracks is faster than a man can comfortably walk.

Handling the unit stack during the remainder of the process is accomplished by the use of racks in the dryer, kiln and store room, each constructed with horizontal members accurately spaced for the reception of the bricks, as in the case of the setting-up stand, and provided with spaces between its members to correspond to the fingers of the lift. Thus in the dryer these racks are of steel I beams, in the kiln they are of bricks to withstand the heat necessary for burning the ware, and in the store room they are of either steel or wood.

The dryer shown in section in Plates 8 and 9 is of brick and steel construction, is absolutely fireproof and is novel throughout. It is divided into four chambers by permanent partition walls, each chamber being provided with a cover removable in one piece; these covers are constructed of I beams with an upper and lower covering of sheet iron, thereby providing a dead air space of about four inches. Plate 10 shows one of these chambers with the cover removed, two stacks of soft bricks having been placed in the chamber.

In the bottom of each chamber is a fixed rack of I beams constructed as already described; the stacks of bricks are brought from the setting-up table and deposited successively upon this rack, the brick lift being lowered through the rack to deposit the bricks, and being backed out and raised from the rack each time after so depositing them.

As the soft bricks will not bear the weight of super-imposed loads, each chamber is provided also with two removable

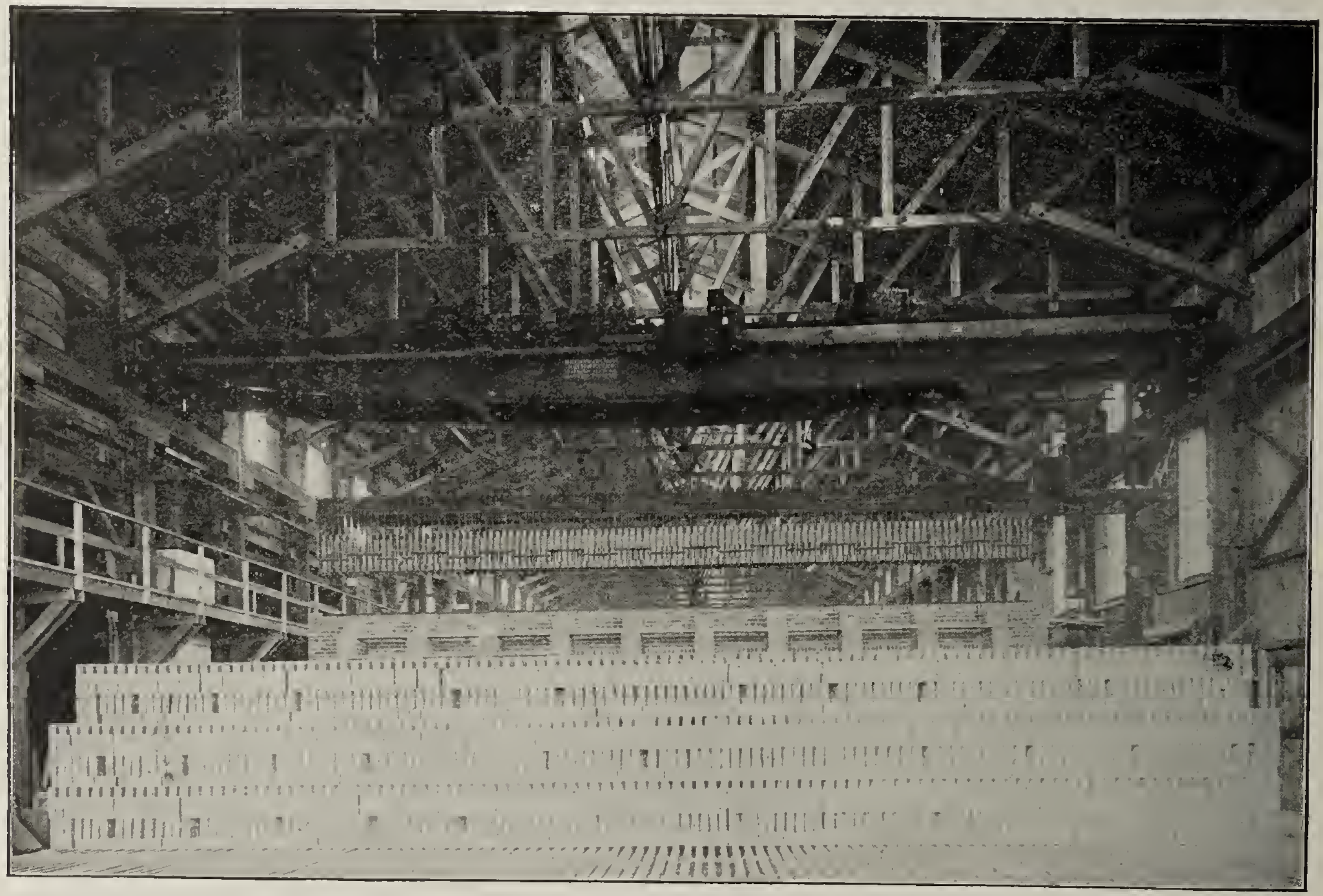


Plate 5.—Showing Crane Traveling on Elevated Runway and Carrying a Stack of Soft Bricks to the Dryer. Dried Bricks in Storage in the Foreground.

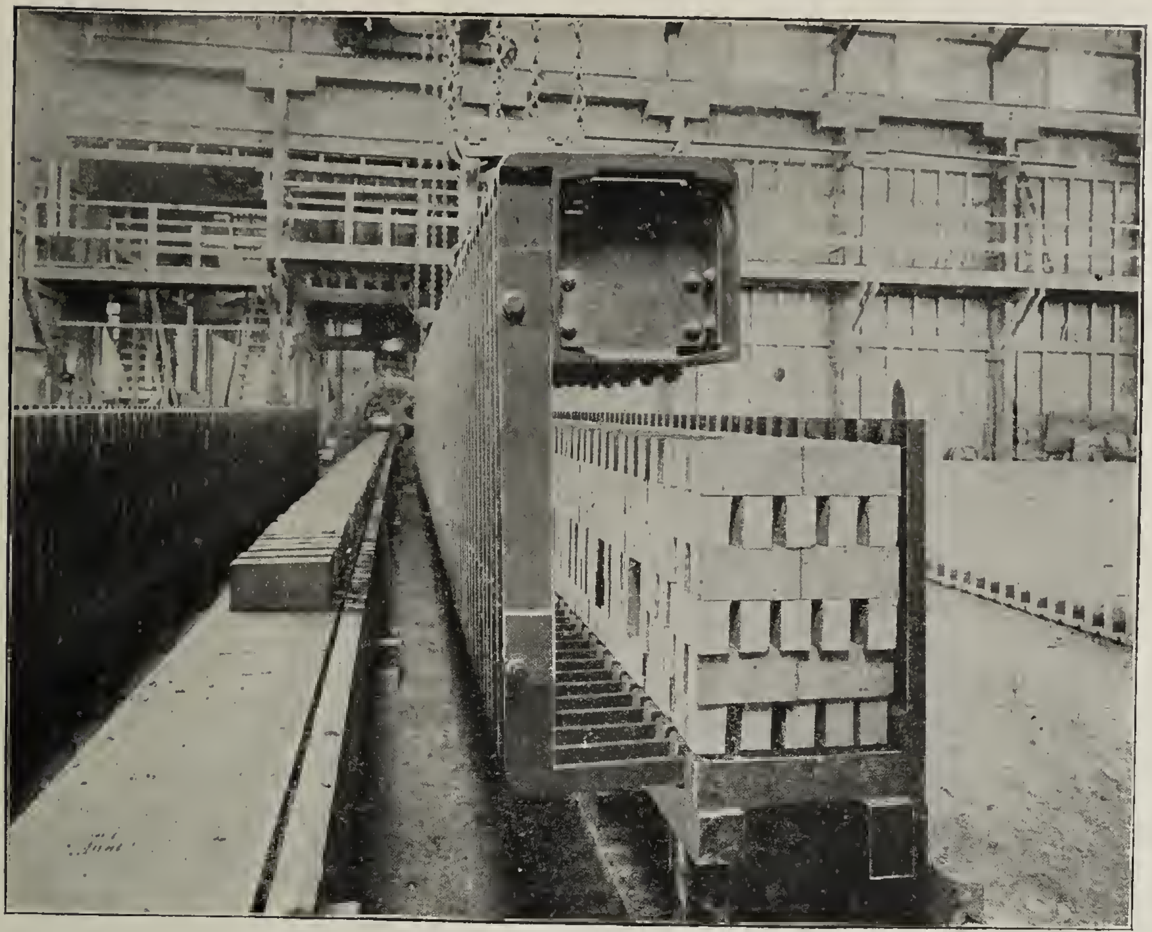


Plate 6.—Showing the Fingers of the Brick Lift Entering the Setting-up-stand to Lift a Stack of Soft Bricks Therefrom.

racks, which are supported by horizontal channel beams built into partition walls separating the chamber. Each removable rack is built of I beams like the fixed rack below it, and each holds four stacks of bricks, thus making the capacity of each chamber twelve stacks, or about 18,000 bricks.

The arrangement of the covers and the racks with their loads of brick is clearly shown in Plates 8 and 9.

The method of handling the removable racks is shown in Plates 11 and 12. Each rack is provided on its under side with two flat iron bars running lengthwise and equi-distant from the center line of the rack. The fingers of the brick lift are dropped below the level of these bars and are then run under them so that the rack can then be lifted and transported, the bearing on the two bars preventing the rack from tipping or twisting.

The covers are provided with latticed lifting beams attached to the tops so that the fingers of the lift can be run under them for the purpose of handling the covers from one chamber to another. A cover is generally removed from a chamber of dried bricks and placed upon a chamber just filled with bricks to be dried. Each cover, when in position, is supported by channel irons on the top of the partition walls, as shown in

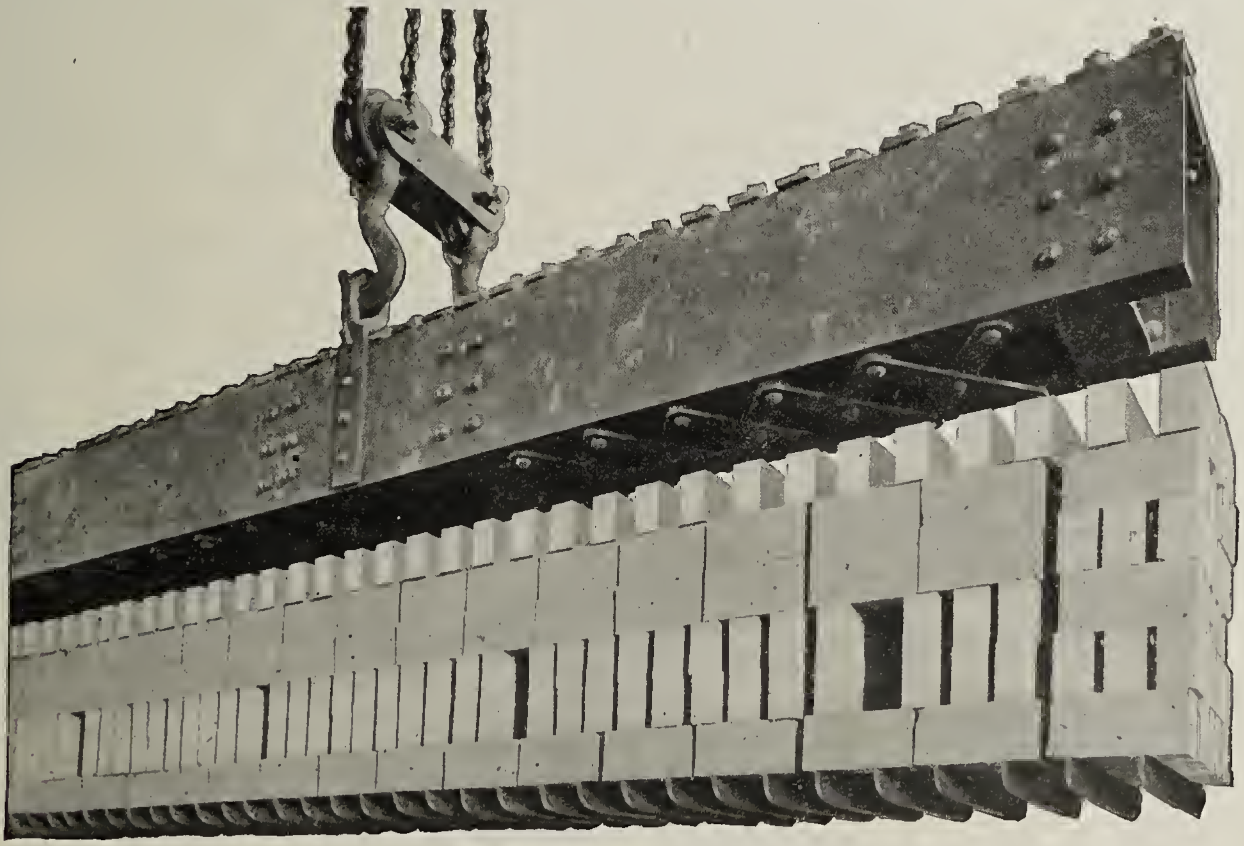


Plate 7.—Brick Lift Supporting a "Unit Stack" of Bricks, Showing One End Only.

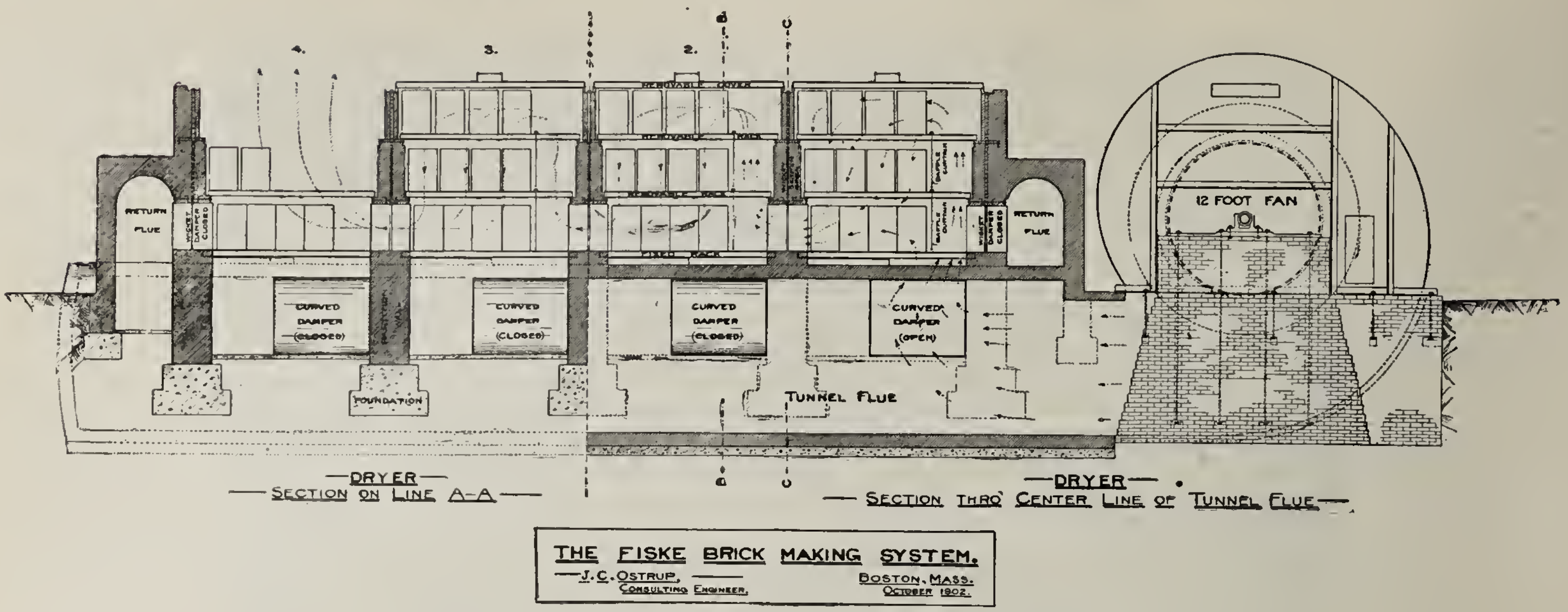


Plate 8.—Longitudinal Section of Fan and Dryer Chambers.

Plates 8 and 10, these channels being filled with sand; a downwardly projecting lip on the cover imbeds itself in this sand when the cover is placed in position, thereby automatically sealing the chamber.

Hot air is forced through the bricks by a powerful fan driven by an electric motor, the air passing through three chambers in succession, as shown in Plate 9. Inasmuch as the bricks can not be progressed through successively hotter and hotter zones, as in the case of the tunnel dryer, the same results are obtained by progressing the zone of maximum heat through the bricks. Thus the air being heated by a suitable device, in this case by a Crown Heat Generator, it is forced into a circular tunnel running lengthwise of the building and passing under the center of each chamber, as shown in Plates 8 and 9. On each side of this tunnel and under each chamber is a large opening, closed by a curved hanging damper controlled by a chain from the outside of the dryer. This opening admits just the proper amount of air to a distributing compartment located beneath the lower brick rack and provided with a sloping bottom to insure a proper flow of air into all parts of the drying chamber. The curved dampers being closed under all the chambers except the one of nearly dried bricks, the air passes from the tunnel into the distributing compartment, and thence upward through the bricks.

In order to facilitate the proper circulation, a wide space is left between the bricks at one side of the chamber and the partition wall, this space being insured by the room necessary for backing out the brick lift after depositing its last load on each rack. In the case of the lower rack, a wide sheet iron floor is attached to the lower side of the rack, underneath that portion covered by the bricks, in order to force all the air first into the clearance space and up to the cover, and thence downward and at more or less of an angle through the bricks to openings or wickets in the base of the opposite partition wall, and thence into the next chamber. To prevent the air from passing directly through the lower tier of bricks to the wickets, canvas baffle curtains are hung from the bottom of the two movable racks, thereby forcing the air up, over and then downward through the bricks. The wickets are closed by vertical sliding dampers, controlled by chains passing upward through two-inch pipes imbedded in the partition walls.

The hot air is first admitted to a chamber of nearly dried bricks and passes thence to a partially dried chamber, thence to a chamber freshly filled and finally into an open chamber just being filled. As soon as the first chamber has been thoroughly dried and the last chamber has been filled, the cover of chamber No. 1 is removed, and is placed in position on No. 4, the hot air is shut off from the No. 1 and admitted directly to No. 2, which by this time has become sufficiently heated and dried to prevent checking of the ware. Chamber No. 1 is now ready to have its brick removed to the kiln for burning. Chamber No. 4 is connected with chamber No. 1 by return flues,

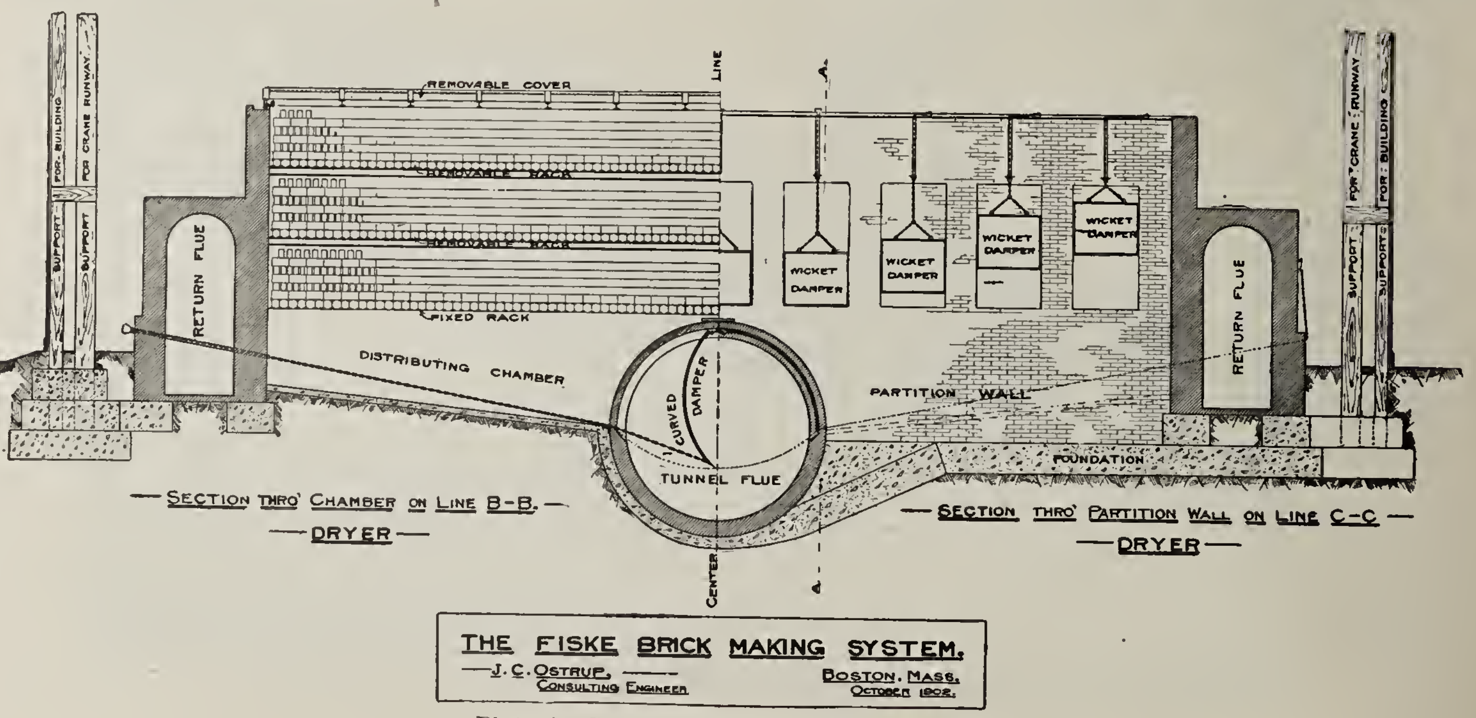


Plate 9.—Cross Sections of Dryer.

located on either side of the dryer in order that the chambers may operate in rotation without any interruption, as in the case of the continuous burning kiln.

Thus the zone of maximum heat is progressed from chamber to chamber, the nearly dried bricks receiving the maximum heat and the green bricks being subjected to warm, moist air as in the most approved types of progressive artificial dryers.

The bricks are carried from the dryer to the kiln by the crane and brick lift, and are there deposited, each chamber (holding about 18,000 bricks) having a removable crown, so as to leave the entire top open. The bottom of the kiln, or that portion covered by bricks to be burned, is provided with a special fire brick floor with separated ribs, corresponding in spacing to the fingers of the brick lift, so that the stack of dried bricks is deposited without difficulty and the lift withdrawn, as in the case of the dryer, each brick of the lower layer being supported by the ribs of the floor at its two ends and in the middle. Plate 13 shows one kiln-dried brick, and Plate 14, taken during the construction of the kiln and before the partition walls were built, shows the brick life in the act of depositing a load of bricks on the ribs forming the special kiln bottom.

chambers; the fires are fed with coal through holes in the crown and are supplied with hot air from the cooling chambers behind, the air entering the burning chamber through the "wickets" in the base of the partition wall; the waste heat of the burning chamber passes forward in a similar manner to heat up the green bricks in advance of the fires. Thus the utmost economy of fuel is secured.

Many novel features are to be noted in the construction and operation of the kiln under discussion.

The chambers are unusually low and narrow, which enables them to be fired largely from one side and to produce a very uniform burn.

The open space above mentioned acts not only as a combustion chamber, but provides an entrance and exit for the brick lift to the chamber when the latter is filled with bricks.

The removable crowns for the kiln chamber are constructed of fire clay blocks and cast iron hollow beams of special shape and section. These beams are spaced about eighteen inches apart by separating bolts and span the kiln chamber from one partition wall to the next, the ends resting on special cast iron channel irons anchored along the top of the partitions. The

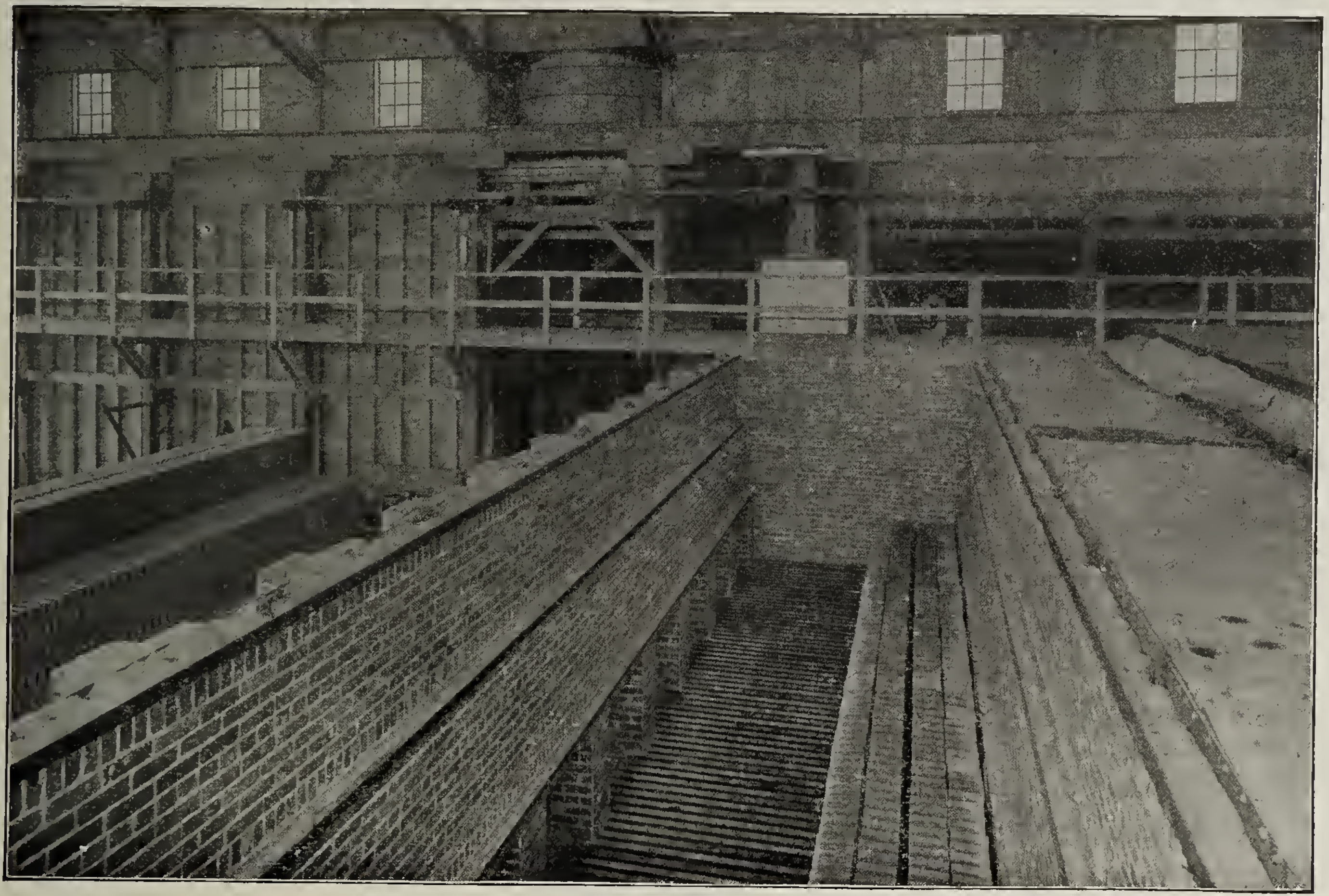


Plate 10.—Looking Down Into Dryer Chamber, the Cover and Two Portable Racks Being Removed. Two Stacks of Soft Bricks Are Shown, Placed in Position for Drying.

After the four stacks of bricks forming the lower tier have thus been placed in position in the kiln, the other successive stacks are placed upon them, the fingers of the lift passing down into spaces of the upper row of bricks of the tier below. It will be noted that the upper row of bricks of each stack is spaced especially wide apart to permit this operation, as has already been described.

The setting consists of three tiers of four stacks each. After placing the last stack in position the empty lift is backed out into the "combustion space," and is then withdrawn from the kiln. In reverse manner, the lift enters the kiln when the bricks have been burned and cooled and removes one load after another to the point of shipping or storage.

Plate 15 shows a kiln chamber filled with bricks ready for the reception of the portable crown.

The kiln operates on the "semi-continuous" principle, and is built with permanent transverse partitions, dividing it into

beams support heavy blocks, made of high grade fire clay mixed with sawdust to give porosity, the soffits of the beams being amply protected by fire clay key pieces.

The crown is sealed around the edge with soft bricks and sand, and gives a construction of great superiority over the ordinary mason-work arch. No lateral thrust of any kind on the side walls or partition walls is produced as the crown expands and contracts, the iron beams simply sliding on the channel iron supports. Moreover, repairs may be made to a crown by removing one or more fire clay blocks without tearing down the whole crown, and without interrupting the operation of the kiln, as is often the case in ordinary fire brick construction. The crowns are lifted, transported and deposited by the crane and the brick lift, which engages a heavy latticed lifting girder attached to each iron beam of the crown. This construction provides a liberal amount of flexibility and secures a satisfactory seating of each beam on the wall without undue straining of the fireproofing materials. The construction of the crowns and the manner of lifting them are shown in Plate 16.

As all filling and emptying of the chambers are done through the top, the kiln is built with thick, permanent and unbroken side walls, all arched doorways being omitted. Thus the necessity of continually bricking up and tearing down the doors, as in other kilns, and the usual complement of soft burned bricks near the doorways are obviated. Moreover, as the side walls are unbroken from end to end, it is possible to build the kiln with all flues in the walls, thereby eliminating the underground flue absolutely. As is well known, underground flues are often cold and damp and are a source of great irregularity of draft, particularly in a continuous kiln, where the temperature of the waste gases is very low.

The draft for burning is produced by an exhaust fan driven by an electric motor, the whole being mounted on a portable cover, constructed of I beams and sheet iron covering, as in the case of the dryer covers. A suitable iron pipe connects the inlet of the fan with holes through the cover at the proper points. The draft cover is transported by the crane and brick lift, which engages a lifting beam, as will be seen by reference to Plate 17. The draft cover is deposited over a kiln chamber a suitable distance ahead of the fire, and is advanced from time to time as the fire progresses. Thus the source of draft is always at a fixed distance from the fire, is direct, positive and uniform, and at once effectually overcomes all the difficulties experienced with natural draft.

The kiln is built in a straight line instead of in the usual oval shape, in order to bring all the chambers properly within the range of the overhead crane, and it may be constructed on the semi-continuous principle, in which the fire is started at one end, traverses the length of the kiln, and then dies out, or by the use of "return flues" connecting the two ends of the kiln, heat from the last chamber may be carried to the starting end for watersmoking purposes, as in the case of the original continuous kiln. The latter arrangement is used in the Dover Point plant.

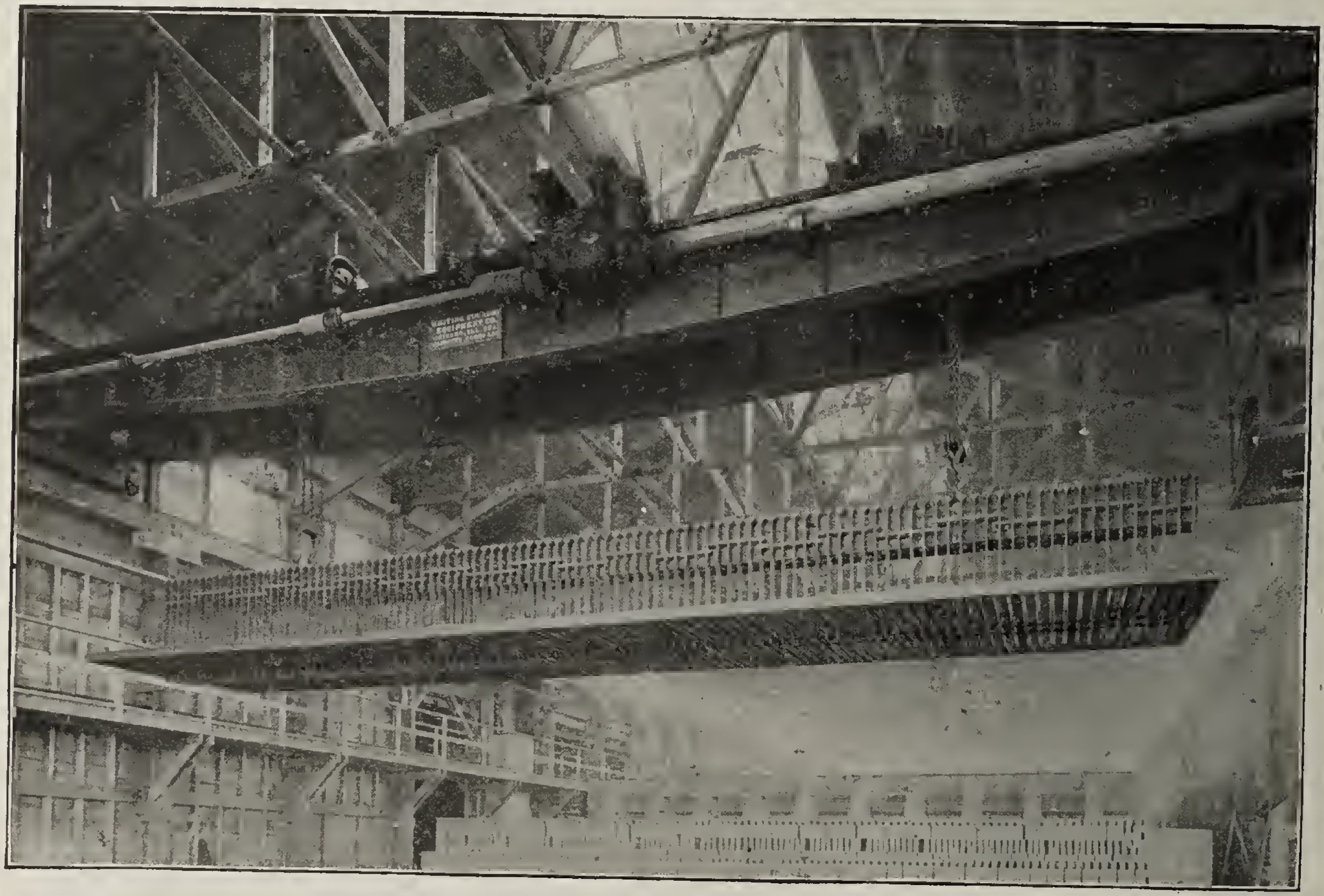


Plate 11.—Crane Handling Portable Dryer Rack.

The improved continuous kiln not only saves two-thirds of the fuel and a large part of the labor of the up-draft wood-burning kiln, but produces bricks of far more uniform color with practically no cracking, breakage or other loss.

The coal for firing the kiln is brought by the crane and brick lift from the storage bin in long iron boxes, which are deposited on top of the kiln adjacent to the proper feed holes. These boxes are moved along from chamber to chamber as the fire progresses. Thus the wheeling of coal is minimized and no coal is wasted by being scattered over the top of the kiln. The ashes are taken out of the kiln by a similar box, which is lowered into the chamber after the bricks are removed.

When a chamber of burned bricks has become sufficiently cooled for removal to the stock pile, the crown is lifted by the crane and brick lift and deposited over a chamber just filled with dried brick. The brick lift is then lowered into the combustion space to a proper level, the fingers are run under the stacks of burned bricks, which are lifted and transported one by one to any desired point for assorting, storage and shipment. In plants making common bricks only the bricks may be deposited upon an automatic loading machine, consisting of an endless belt with separated slats or bars for receiving the bricks, as in the case of the dryer racks, this belt conveying the bricks and dumping them into the delivery wagon, thus reducing the entire hand labor on the plant to the single operation of stacking the soft bricks at the setting-up stands. Each unit stack will fill an ordinary delivery wagon. The same device may be used to load railway cars.

In the case of the Dover Point plant, some high-grade bricks are obtained by assorting, and consequently a second hand operation is here introduced, the burned bricks being deposited upon an assorting stand at the end of the kiln.

In the plant as thus far constructed no labor-saving appliances are used in connection with storing or loading the bricks, but it is the intention of the company to increase the main building to about twice its present length and to construct more continuous kilns simliar to the one now in use. A storage building will then be constructed at right angles to the present main building, and an electric overhead crane arranged to take the bricks in large loads after assorting and to place them in the storage building, later to be shipped either by rail or water to the distant market. The elevated crane track in the storage building will be extended to include the railroad tracks at one end and the shipping dock at the other, and the assorted bricks will be handled on cradles, each containing a cartload. The cars or shipping barges may then be run under a crane at the point of destination and the cradles of bricks lifted as a unit and placed in the delivery wagons, thus eliminating the usual expense of hand labor for loading. By this system it is, therefore, possible to manufacture common bricks and deliver them to the customer with but two manual haulings from the clay bank to the mason, one after molding and one after burning, thus reducing the total labor to a fraction of its present amount even in the most modern yards.

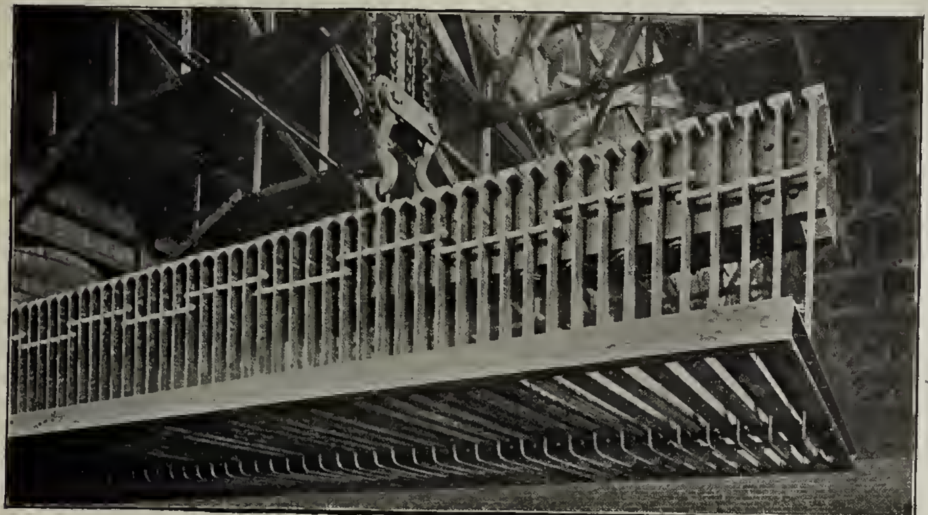


Plate 12.—Showing How the Brick Lift Engages the Portable Dryer Rack.

The plant under discussion has so recently been put into operation that I am unfortunately unable to present any data as to the cost of manufacture, but it will doubtless be sufficient at this time to say that the practicability of the entire scheme has been fully demonstrated and that no great difficulties have been encountered. At a later date I hope to have the pleasure of presenting some data as to the cost of handling by this system and of burning in the continuous kiln with portable mechanical draft.

The preparation of the drawings and the erection of the plant has been under the immediate supervision of the consulting engineer of the company, Mr. John C. Ostrup, member American Society of Civil Engineers, well known throughout the country from his connection with the Chicago elevated roads and as designing engineer of the Boston elevated railroad.

A GOOD STORY, OR MAYBE, A "DREAM."

It is stated that Mr. Edison has often said he never knew and never cared to know what the time was. He only believes in letting not a minute slip by, as that minute might yield an important invention. A friend of his once called on the inventor and presented his boy, asking for a word of advice and a motto the youth might adopt in his work. Edison was very busy with half a dozen engagements pressing. It was near the noon hour and the boy was noticed to frequently glance at the clock. Edison turned to him, grasped his hand and said: "Young man, the best advice I can give you is, never look at the clock."

ANNUAL CONVENTION OF THE UNITED STATES POTTERS' ASSOCIATION.

THE ANNUAL CONVENTION of the United States Potters' Association, held in Washington, D. C., at the New Willard Hotel, was by far one of the most successful conventions held in years by the association, and all of the members left the city well pleased with their convention experience, and the invited guests left, expressing many thanks and paying many compliments to the local committee for the elegant banquet, which was served the last evening of the convention, and other entertainment.

Several distinguished guests partook of the feast and responded to toasts. Among them were Senator Hanna; Congressman Grosvenor, of Ohio; Senator Keene, of New Jersey; Congressman Hopkins, of Illinois; Congressman Gardner, of Ohio; Congressman Dalzell, of Pennsylvania, and Congressman Loudenslager, of New Jersey.

In the election of officers, which took place Wednesday, December 3, Mr. Joseph G. Lee, secretary and treasurer of the Knowles, Taylor & Knowles Company, of East Liverpool, was elected president; James E. Norris, of Trenton, N. J., was elected first vice president; W. E. Wells, secretary and treasurer of the Homer Laughlin China Company, of East Liverpool, was elected second vice president; George S. Goodwin, president of the Goodwin Pottery Company, was elected treasurer, and Harry A. Keffer, president of the Sevres China Company, of East Liverpool, was elected secretary.

From the above it will be seen that East Liverpool has control of all of the important offices. Mr. Lee succeeded Charles Howell Cook, of the Cook Pottery Company, of Trenton, as president of the association, and the offices of secretary and treasurer of the organization remain the same as they have been for the past year.

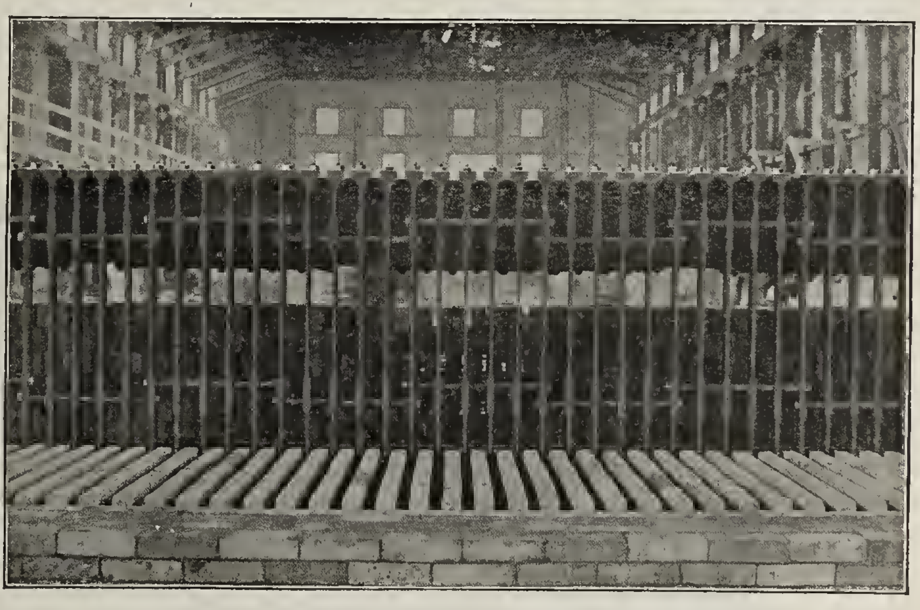


Plate 14.—Brick Lift Depositing a Stack of Bricks on Kiln Floor Blocks; This Was Taken During the Construction of Kiln Before Partition Walls Were Built.

The executive committee consists of Col. John N. Taylor; William Burgess, of Trenton, N. J.; Charles W. Franzheim, of Wheeling, W. Va.; W. L. Smith, of East Liverpool; J. A. Campbell and Daniel Willetts, both of Trenton, and F. A. Sebring, of Sebring, O.

The design committee consists of W. E. Wells, Henry Brunt, J. W. Vodrey, E. M. Knowles, of East Liverpool, and Charles Howell Cook, of Trenton.

The statistics committee consists of L. I. Aaron, H. A. Mc-

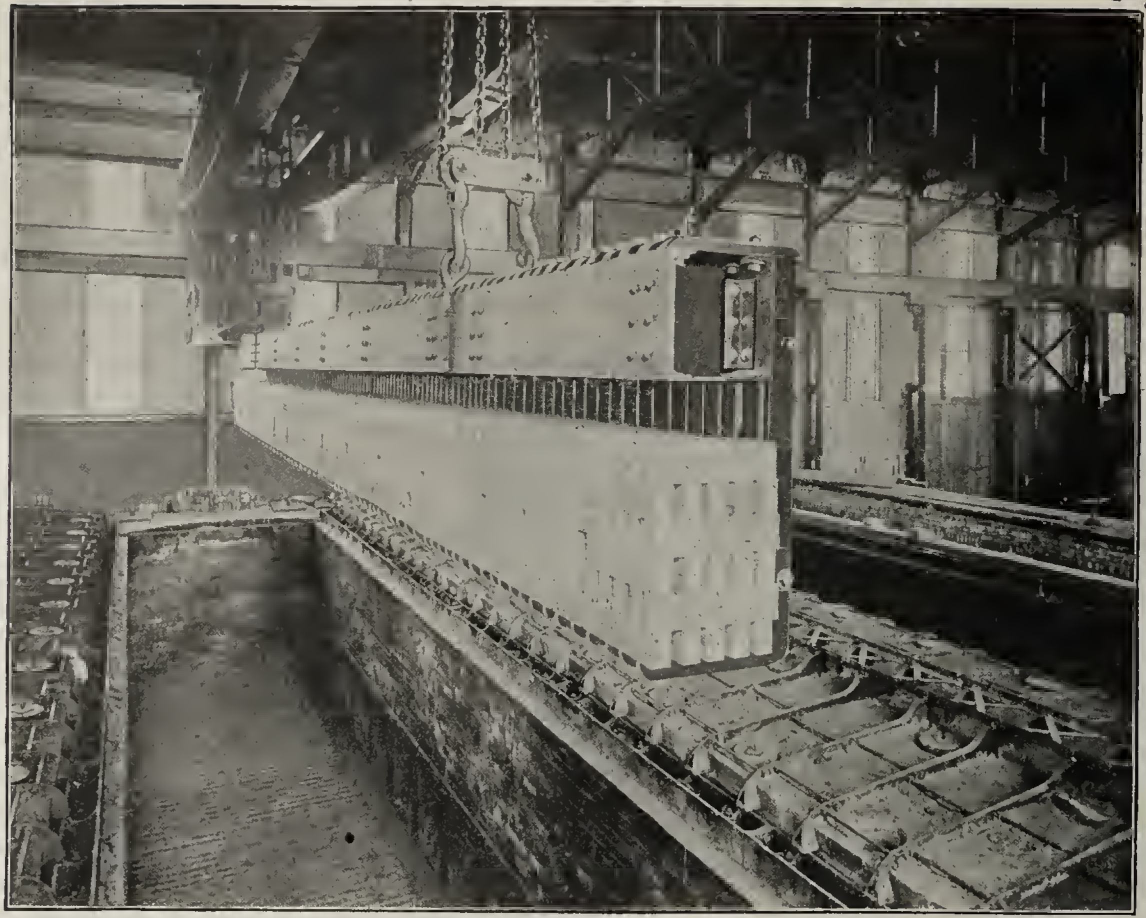


Plate 13.—Kiln Chamber with Crown Removed, and the Crane with Stack of Dried Bricks Ready for Deposit in the Kiln. (See page 541.)

Nicol, of East Liverpool; J. A. Campbell, of Trenton, and Thomas Carr, of Wheeling.

The auditing committee consists of Howard B. Moses, of Trenton; George C. Thompson, East Liverpool; C. I. Aaron, Pittsburg.

The machinery committee consists of Ernest Mayer, Beaver Falls, Pa.; W. L. Taylor, East Liverpool; W. H. Deidrick, Salineville, O.; C. C. Thompson, D. E. McNicol, East Liverpool; James Pass, Syracuse, N. Y.

Membership Committee—N. A. Frederick, William Cartwright, J. R. Warner, East Liverpool; James E. Norris, Trenton.

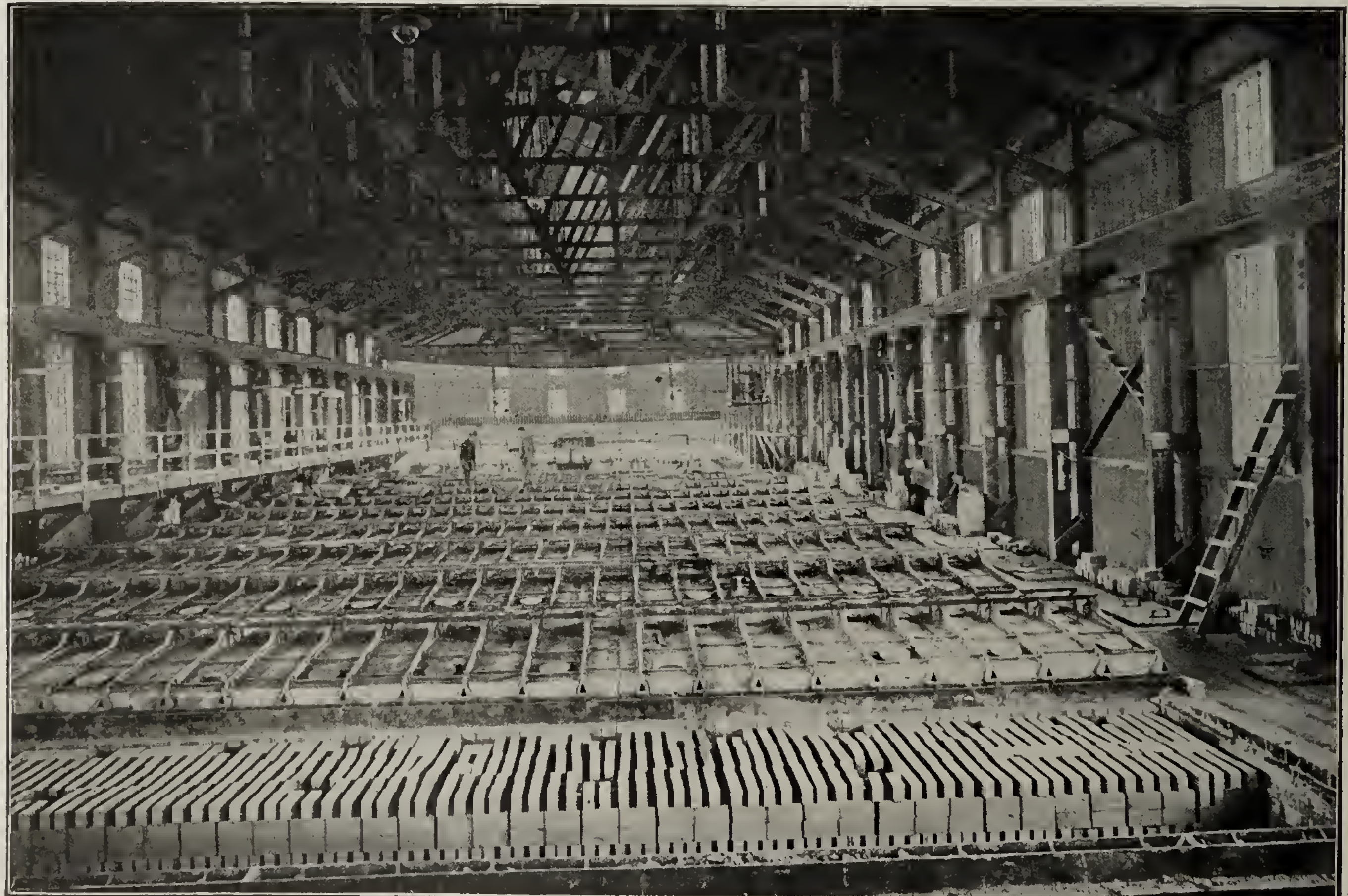


Plate 15.—Kiln with Chamber of Green Brick in the Foreground Ready for Reception of Kiln Cover. (See page 541.)

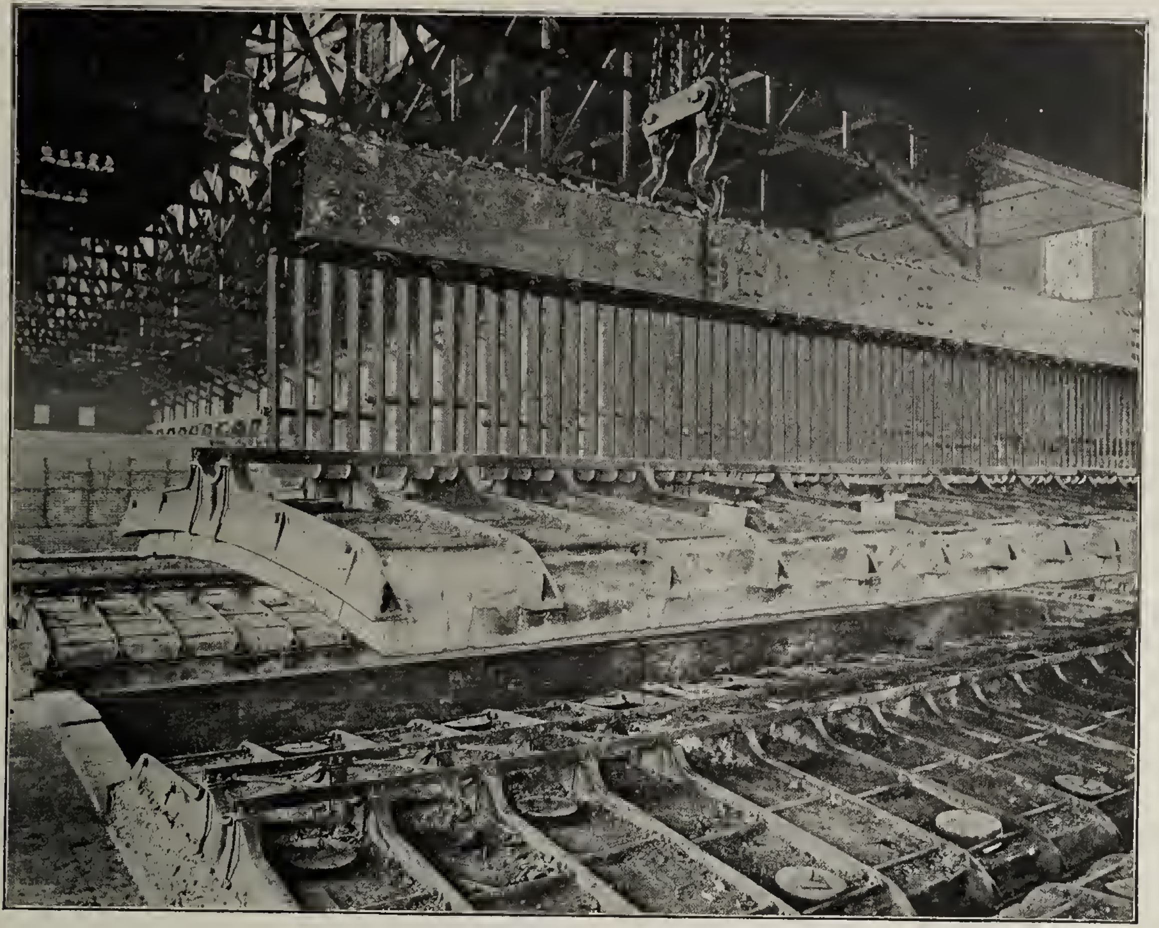


Plate 16.—Removable Kiln Crown Being Handled by Crane and Lift. (See page 542.)

Selling Committee—C. W. Franzheim, Wheeling; Thomas Carr, also of Wheeling; C. H. Cooke, Trenton; W. W. Harker, W. E. Wells and John N. Taylor, East Liverpool.

Reception Committee—William Burgess, H. B. Moses, Trenton; W. L. Smith, East Liverpool.

Kilns and Fuel Committee—James Pass, Syracuse; Moses Caleer, James Campbell, H. N. Warker, W. E. Vodrey, East Liverpool; J. E. Jeffords, Philadelphia.

Historical Committee—George S. Goodwin, East Liverpool.

Transportation—H. P. Kniblock, F. B. Lawrence, East Liverpool; J. A. Campbell, Daniel Willetts, Trenton.

The convention opened Tuesday morning at 11:30. The meeting was called to order by President Charles Howell Cooke, who made the following opening address:

"In calling to order the twenty-fourth annual convention of the United States Potters' Association we pass into the quar-

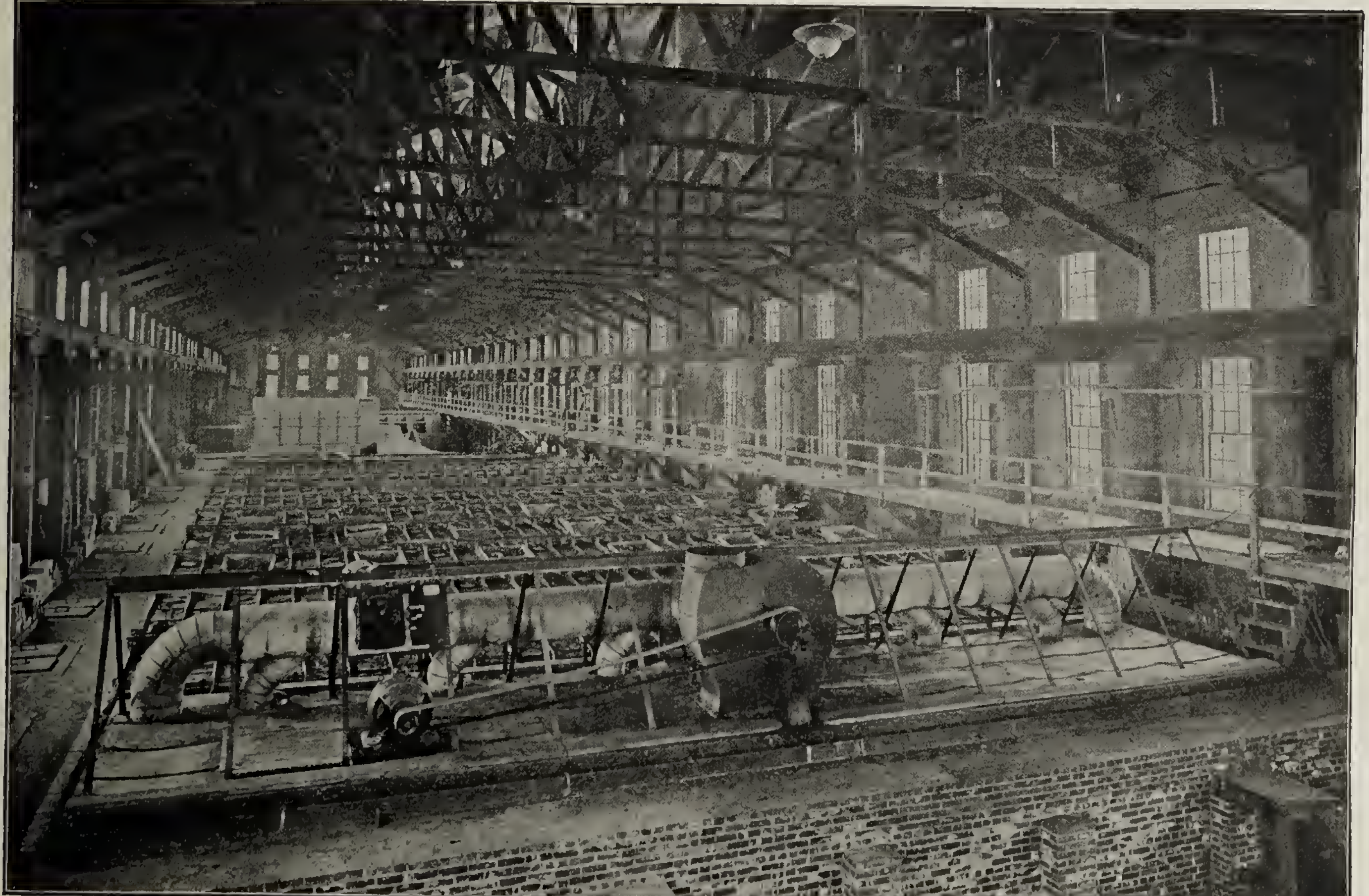


Plate 17.—Portable Draft Apparatus for Kiln. (See page 542.)

ter-century mark of our history, a history full of toil and persistent effort, and having for its record some failures as well as successes. Yet we have ever been, and are to-day, determined to continue our work for the betterment of every interest of the American pottery industry. The increased capacity of the old plants, the introduction of new improvements and appliances, the devising and furnishing of added conveniences, the applied inventive genius of our American machinists, all testify to the fact that we are determined that the pottery industry shall be among the foremost. Our success is not evidenced alone by these increased capacities for manufacturing importance, as this growth is, but is very satisfactorily shown in the advancement we have made in the kind and quality of our goods.

Most commendable has been the progress in the manufacture of china, both for the hotel and private home—such progress in beauty and sterling quality as has made it a warrant of both, that it bears an American stamp and name. Sanitary, with its varied and complete line of convenience and appointment, its bath and stationary tubs, sinks, etc., of superior design, workmanship and quality, all testify to the application of brain and earnest and thoughtful endeavor in the perfecting of these lines. Progress in decorative and art ware has been with the growth of taste and a cult distinctly American, winning its way to favor in such a way as to secure recognition both at home and abroad. All of this advancement shows a determination to solidly as well as rapidly put the American product to the fore with the American pluck and genius.

In its power of invention and adoption there can be no doubt of the future of our industry. A part of the work of this organization has been to watch carefully that unwise legislation did not hinder the growth of our industry. To secure the enactment of such laws as should foster and encourage the development of pottery manufacture in America and to help in every possible way in the administration of those laws. In return for this we pledged ourselves to aid in the development of our country's material prosperity, to give to the American people the product of the American pottery in both useful and ornamental, and that without added burden as proof that we heave dealt in good faith with our national Legislature and have kept our pledge to the people. We point with pride to the fact that during the past five years we have doubled the output of the American pottery product. In the year of 1897 our product did not exceed $10,000,000 per year, while in 1902 a reasonable estimate places it at $20,000,000.

We direct attention to the fact that this great result has been accomplished during the last four years, or since the enactment of the Bindley tariff bill. We have, under its wise provision, not only doubled our ouput, but have done so with two very gratifying facts to our credit, first of which is that the American people are being supplied with American goods of far better quality at a less cost than ever in our history as a result of a careful, painstaking effort of the individual firms of our organization. Second, we have kept our pledge to our workmen as well as to the people, and to-day the wages paid in general to operatives in the potteries are higher than ever in the history of American potting. We ask of the American people their patronage and support of our operatives, fair treatment, good feeling and hearty co-operation, and we say to our government give us good, wisely enacted and judiciously and rightfully enforced laws, and we, the American potters, pledge our best efforts to the building up of such an industry as will be both a credit to the country and people. To this end, gentlemen, let us pledge, each to the other, our best united efforts."

Several prominent speakers were then introduced to the appreciative audience, among whom was Special Commissioner Blakely, of the St. Louis Exposition, who was cordially received and who dwelt briefly upon the merits of a display at the St. Louis Exposition, and which was heartily indorsed by other speakers who spoke after him, among whom was Senator M. A. Hanna, of Ohio. Mr. Hanna was introduced to the convention, and after assuring his hearers that he was with them heart and soul in the forwarding of American interests told a story of "Billy" Mason and his success in holding his seat in the Senate. "It seems that there was a candidate who believed that he could be elected if he could get some of the old war horses to come into his territory and assist in bringing the voters to a realization of their candidate's merits. To his telegram, "Come over," he received the answer: "Can't; got enough trouble to stay where I am." (Laughter.) I am satisfied where I am. More than satisfied if I can sustain the cause of American industries. Mr. Hanna then told a story of a life insurance solicitor who was tackling a minister on the subject of taking out a policy in his company, and after dilating long and faithfully on the merits of his particular company the minister finally said to him: "My friend, I am already insured." "Who with?" was the question put by the persistent solicitor. "I am insured with Christ," was the solemn reply. "Oh, rats!" said the agent, "I am not taking fire insurance."

COST OF ACCIDENTS—THEIR PREVENTION.

The Insurance Press, of New York, is responsible for the statement that 11,000,000 accidents occur in the United States every year, or about 30,000 every day. Of course, a very large percentage of the casualties are mere scratches, and the total itself need not be alarming. But when it is said that the proportion of deaths from accidents has increased from 53.7 in 1,000 in 1890 to 57.6 in 1,000 in 1900, and when it is said that nearly 6 per cent. of all deaths in the United States are due to accidents would hardly affect more than one person in each subject.

We presume that the primary cause, the psychological cause, if the expression may be permitted, is found in the restlessness and impatience of our national character. Although the statistics bring out the curious fact that Italians are more likely to die from accident in the United States than the rest of us, nevertheless the American will "take chances" when the average European of equal intelligence will not. And the increase both of accidents and deaths from accidents shows that we are not improving in this respect; in fact, some of our popular sports, like football and automobile racing, apparently owe their fascination to the chance of getting hurt.

How large a proportion of the accidents occur from running machinery the figures do not show, but the number of accidents seems greatest in the distinctively industrial States. And certainly a larger proportion of the accidents are likely to be serious in mills and factories. The number of killed and maimed would be larger, though, except from explosions, the accidents would hardly affect more than one person in each accident.

In few mills and factories has the question of guarding running machinery received adequate attention. But in some the matter has been overdone, doubtless because of some shocking experience. The running parts of machinery should be guarded without restricting freedom of action on the part of the operatives. In some European mills and factories guards are occasionally placed where they bring in an element of positive danger. The principal use of guards should be for such things as setscrews, gears, shaft ends and the like, which may take one unawares. Dangerous places are better fenced off so that only those who know the danger shall approach them. In many cases this is better than guarding the running parts.

In a list of 4,000 accidents from machinery given by a recent writer one-quarter of them were due to attempting to clean machinery while in motion. A very large proportion of all accidents occurring in mills and factories comes from shifting belts. These two facts indicate the line of personal precaution which, indeed, can never be superseded by any amount of safe-guarding the running parts.—American Miller.

Mention The Clay-Worker.
When writing to Advertisers,
Mention THE CLAY-WORKER.

Written for The Clay-Worker.

WITH THE MILWAUKEE BRICKMAKERS.

THE BRICKMAKING SEASON in Milwaukee has practically closed at all the yards, and during the winter months the manufacturers will supply the trade from their reserve stocks. Owing to the very damp season the reserve this year is none too large, although it is not expected that there will be a shortage. Thus far there has been no interference with building operations on account of bad weather. Many large apartment houses are nearing completion, and the rapidity with which they are filled with tenants gives assurance that several new structures of the same character will go up early in the spring.

The indications grow stronger and stronger that next year Milwaukee will see a considerable addition to its quota of brick pavement. A large amount of new paving of various character is assured, and the sentiment in favor of brick, particularly for certain sections, has been developing in a very healthy manner. An argument in its favor is found in the complete satisfaction and durability of the few blocks of brick pavement that have been laid.

Mr. Kraatz "Looks Pleasant When He Thinks of His Reduced Coal Bills."

P. S. Youngren went to South Carolina early this month, where he will erect a brick kiln. Mr. Youngren put up the continuous dry kiln for the Burnham yards, which have given the best of satisfaction.

The Milwaukee Building and Supply Company has recently been given the brick orders for new public school buildings in the Nineteenth and Twentieth wards of this city. Each building will require about 1,000,000 brick.

The third annual meeting of the Wisconsin Clayworkers' Association will be held at Green Bay, Jan. 27, 28 and 29. The association met in Milwaukee last year, and it is likely that there will be a large delegation of Milwaukee manufacturers and dealers in attendance.

Mr. Emil Kraatz, of the Kraatz Brick Company, contemplates increasing the capacity of his yard by the addition of a Chambers machine. He is much pleased with the Boss system of burning, which he installed on his up-draft kilns the past season. He smiles when he contemplates the saving in fuel bills, which the Boss system has enabled him to make. It works so satisfactorily that he intends to change all his kilns as rapidly as he can so he can burn altogether in that way.

The Boss System of Burning a Great Money Saver.

As will be seen by the accompanying photos, the Boss method makes very little change in the appearance of the kiln. The flues through which the forced draft is carried are made of sewer pipe or drain tile laid just under the surface of the ground. From these the draft is introduced into the arches through patented fire boxes. Mr. Kraatz has found that he can burn with the cheapest of slack coal, and in less time than by the old process. Sometimes the whole arches clog a little with soot, but this annoyance is quickly overcome by throwing into the fire a piece of inch gas pipe about three or four inches long in which is placed a charge of powder, the ends of the pipe being stopped up with wooden plugs. The discharge of the powder dislodges the soot, as the writer can testify from an ocular demonstration. Expressing some curiosity to see how the scheme worked, he was told to mount the ladder and keep his eye on the top of the kiln. He did so, and within a minute after the explosion came down from the ladder looking like a chimney sweep. We advise those who visit the Kraatz yard to view this part of the ceremony from a distance; for, like the can to the dog, it is fun for Kraatz, but tough on the victim.

THE SUPERIORITY OF THE AMERICAN MECHANIC.

They say it is our machines, but it is the man behind the machines that makes this country famous, says Wood and Iron, San Francisco. It is the man behind it all that makes the machine a reality in the first place, and, though the machines are great things in themselves, and are now getting to a point where they can be operated in a pinch without great skill on the part of the operator, still it is the pushing American operating a machine that makes things count, and he is a sort of a man before the machine. In this man before the machine there is often the making or marring of the success of an industry, and a peculiar thing about it is that a casual glance or even a test of a day or two will not enable one to discern the superior man from the ordinary. Still, if careful attention is paid to what is going on in a factory, a peculiar difference may be found in the men before the machines. One man will run his machine along smoothly, turning out his usual amount of work day after day, while another will work by fits and starts, apparently breaking records at times, but so frequently breaking belts and things that his work in the end will not compare favorably with that of the quiet man. Then there is the man of energy and brains who will do more work at any machine than anyone else, and this is the man who will make his way in the world, for if you don't find him out and give him the opportunities he deserves, he will find them somewhere else. This is the man that makes America famous, and the more of him you have in your factory, the better you will be equipped to meet all competition.

The Engine and Fan Operating on a Boss Kiln at Kraatz's Yard.

If you want experienced help read the "Want" ads. in the Clay-Worker.

BY THE LIGHT OF THE KILN FIRE

Brickyard Lessons Better Than Foot Ball.

"THIS FOOTBALL nonsense is the ruin of good boys," apostrophized the nightly lounger on the woodpile. "I say ruin of good boys, but I mean it is a cancer that is bound to destroy all of our nicely arranged educational plans in the end. For this simple reason, we feed our boys and girls on goody-goody Sabbath school literature in their lessons and then turn the boys loose at recess to kick and punch and gouge and bruise and maim like Hottentots and Commanches.

"In other words, we bring them up indoors like hot-house buds of Christianity and let them loose in the yard like Beelzebub's hellions, and then we expect our boys to become quiet, sober, decent, thoughtful men. I tell you it is absurd to expect anything out of football scrimmages but a class of men whose brains and intellects are in their feet or somewhere between there and their heads.

"We have been many centuries gradually working up to our present level of civilization, and our level is not yet so high but that the original brutal savage about evenly divides the house with the graces of civilization even in the best men we have.

"Then, don't you suppose these brutal orgies, called sport, cultivate and encourage a revival of the original savage in us? You can just bet it does, and for proof of it let me ask you to choose some model boy of your acquaintance whose teachers have let him get into the football current, and watch how rapidly his tender graces disappear and the ferocious and selfish savage traits appear.

"Of course, I believe in sport and exercise, but this football business is not sport, but systematized savagery. It is deplorable how blind our teachers are to the wickedness they encourage.

The Strenuous Brickyard Curriculum.

"If I had a boy and I wished to make him hardy and self-reliant I would teach him to use his hands in self-defense, but he would never, with my consent, become a football hyena. If my boy was, say, twelve years of age, I'd hunt me out a brickyard where they made brick and burnt them in the simple ways of thirty years ago, and I'd move my family close to that yard. Then in vacation time I'd say to my boy, 'Now, John Algernon Fitzhenry Augustus, you've closed your books, and I don't want you to think even how much two times two is, nor how far by your joggerfry it is from Chicago to Boston, nor how to parse the simple sentence, "He throwed con at your uncle." '

" 'None of those things you studied all the term should have place in your think-jar for the next few weeks, but I propose to treat you to a sample of the higher education—the nobler curriculum of the brickyard.' And that boy would spend most of his vacation making himself useful and bone-tired, where big men work until they are bone-tired. He would sand the bricks and lug the water, and load barrows for the setter, and soak the tread and break lumps on the bank, and when the kiln was ready to fire he would go on at night to wheel wood to twelve arches at least, and lug mud for the after tender and daub mouths after him. And then, when vacation was ended, that boy would go back to school with a grip on his mental faculties that would drive him along in his studies at a rate that would draw his fond tutor's wondering attention from the absorbing contemplation of a football murder in the schoolhouse yard.

"Does it teach a boy manliness and self-reliance to work in a brickyard? It does, indeed, and more, it brings to him a sense of appreciation of the good things in life that he otherwise was inclined to look upon as commonplace and uninviting.

"I wheeled wood at night to twelve arches when I was twelve years old, and the memory of it will be green with me should I live for a thousand years. I was a timid boy and weakly and the darkness of night appalled me. But the glamour of the kiln fire caught me, and I found myself enlisted for the wood barrow before I realized what it meant, and then I was ashamed to back out.

A Burning Memory.

"I remember how I went to work the first night and got along wood enough before dark to last until morning. I was happy, for I had dodged the dreadful necessity of going alone to the dark woodpiles. I thought to repeat it the next night, but darkness fell with barely a start made on my pile, and as the shades of night grew thicker, darker and darker grew the spirits within me, until with fear and homesickness (and I was within 200 yards of my home) I could have bellowed. But I didn't. No, sir. None of those men was going to know that I was afraid to go to that woodpile, and nobody was going to have it to say that I wasn't able to keep twelve arches in wood. And so I took my life in my hands and hauled my barrow to the pile, loaded it with wonderful rapidity and sped with it toward the kiln with every hair of my head tingling like red-hot pins. And the pile by the arches grew rapidly until the burner commanded me to stop.

"And then I crawled into the arch of a new kiln on top of some old sheeting that was used to cover the brick rows in wet weather, and slept the sleep of innocence till aroused by a hideous sound—the voice of the after tender—and felt my face disagreebly stiff and crinkled. Oh! what a sick awakening! It was still dark. The woodpile was low—gone to the stretchers. My bones ached. My stomach was violent, and my face—well, the very thought of the feeling of my face at that time disgusts me now.

"As I dragged myself into the light to find my wheelbarrow a loud laugh went up, and I knew that whatever ailed my face, they could see it, and I clawed at it and found that my brother, the after tender, had carefully daubed my childlike physiog with mud. I didn't have time even to wash. They must have wood at once or, I sincerely believed, the kiln was ruined. Then again I took my life in my hands and went into the outer darkness in search of wood. The fallen angels leaving heaven felt pretty badly if they felt worse than I did going out of the glow of the arches into the night.

"I was sick and homesick, and sleepy and tired, and frightened and my hands were blistered.

"Around me was the darkness made darker by contrast with the light of the kiln and a mass of dark woods a few rods away. In the opposite direction a light burned in a room, and how my heart swelled with longing to just get a glance at the loved face of my mother, who was sleeping where that light burned. So far away under the circumstances, and yet so near under any other combination of cricumstances. The stillness of that dread darkest hour before the morning appalled me. My fear and loneliness became so great that my senses were benumbed and my work dragged listlessly. It seemed the darkness would never end, when, oh, joy! There is a faint shade of gray in the East. Do I imagine it or is it true? It is only imagination. No, there it is brighter now, and gradually from the peaceful face of nature the night robes were lifted, and again it was day. Fear was gone, but in its place came a weariness that no words can describe.

"After about forty years of anguish, which was by the clock a little over two hours, the day crew came on, and the boy who hauled wood with a horse because it was day gave me a jawing for leaving him only the stretchers of the pile.

"And so the nights of my first kiln passed, and with them gradually went my fears and my sufferings, for I became hardened by exposure, and in one week had grown from the most timid sort of child to a fairly brave and self-reliant young man.

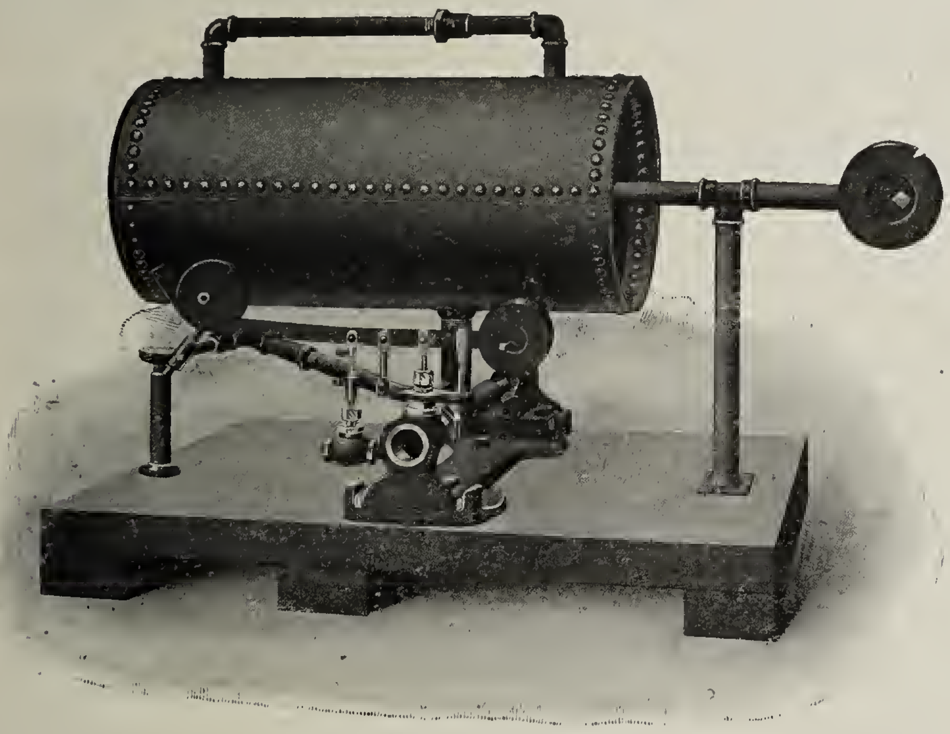
"I ain't much on bravery yet, but I think what a coward I might have been had I not been put through a course in the brickyard. I certainly had brutal qualities in me, and have some yet, unfortunately, but I shudder to think what I would have developed into had they put me at football instead of the brickyard.

"We ought to have more work for the head and hands and less for the feet and stomach in our recreations, but, then, I'm only an old fossil from the mud bank and I don't count for much. Good night, boys!" And the lounger was gone.

THE DREAMER.

THE MOREHEAD RETURN TRAP.

THE CONDENSATION from any steam-heating or cooking apparatus must be removed. The more quickly the condensation is removed, the drier and more effective will be the heating surfaces. It is the greatest extravagance to waste it, as it is pure water and hot. The most effective way to utilize the heat it contains is to deliver it into the boiler before it vaporizes. In no other manner can the condensation be handled so quickly and with the same economy as with a Return Trap.



The Morehead Return Trap.

The Morehead Return Trap is constructed of steel, the heads and longitudinal seams being closely riveted and caulked, to withstand any pressure carried on the boiler, without breaking, which is impossible with cast-iron traps. It is the embodiment of simplicity, there being no rubber joints to blow out or leak, and only one valve, which is on the outside. All working parts are on the outside in plain sight, and easily accessible. There is no ball or globe float inside the receiver to collapse, leak, rust or stick.

This trap is located six feet or more above the water-line of boiler. The water from the condensing surfaces is forced by the pressure of steam from behind, through a pipe leading to the trap, with a swing-check valve close to the latter. As soon as sufficient water has entered receiver to overcome weight on arm, the receiver tilts down, allowing water to pass through discharge pipe, at the same time opening the steam valve, which has a pipe connected with dome of boiler.

By equalizing the pressure on the surface of the water in receiver with that in boiler, the water, in simple obedience to the laws of gravity, flows into the boiler. As soon as the receiver is empty it tilts back, as before, and again refills. The trap is prompt in opening and closing, its action being due entirely to gravity. When once set up it requires no further attention. It takes the water from the condensing surfaces, whether they are above or below the water level in the boiler, and automatically returns it to the boiler at the temperature due to the pressure at which the steam is condensed. There is no outlet by which the steam can be wasted. It is quick and positive in delivering the water into the boiler against any pressure and regardless of fluctuations of pressure. It supplies all the water needed in the boiler from the main water pipe, providing there is enough pressure on main to lift the water to the trap, thus performing the duties of a pump or injector. It operates equally well with high or low pressure coils, or coils using exhaust steam, allowing no condensation to collect in them.

For a boiler plant of 200 h. p., having an efficiency of 65 per cent. and an evaporation of 6,900 lbs. of water per hour from and at 212 degrees under average conditions, the saving effected by a Morehead Return Trap for a year is more than twice the cost of installing one large enough to handle such a plant.

Where a Morehead Return Trap is not employed, the usual way of handling condensation is by means of a pump. A comparison of the two methods shows many points of advantage in favor of the former. A pump will not lift water at a temperature exceeding 212 degrees—a Morehead Return Trap will. A pump consumes an extravagant amount of steam to do very little work.

For example, an ordinary duplex boiler-feed pump requires from 90 to 120 lbs. of steam per horse-power hour. A common slide valve engine seldom consumes less than 40 lbs. per horse-power. The Morehead Return Trap consumes less than 10 lbs. per horse-power. The pressure is admitted to the surface of the water and is automatically shut off before the tank is empty. The steam used is only such as is condensed by the latent heat passing from it into the water in the tank, which is all put back into the boiler.

A Morehead Return Trap requires practically no attention; needs no lubrication; will not race or run away; never sticks; is noiseless; requires little room and no foundation.

Full information, prices, etc., of the Morehead Return Trap may be obtained by addressing the American Blower Co., of Detroit, Mich., or any of their branch offices.

NOT WHAT—BUT THE WAY ITS TOLD.

It has often been said that the public does not want to hear new things, but rather old ones told in a novel manner or with novel application. Hence the value of the truism, "Tell a man something he knows, and he will assert you are a wiso man," so the statement of a self-evident fact, with which every-one is familiar, is the strongest argument possible with certain minds. State it epigrammatically, and you have a form of advertisement which will catch the eye and rivet the attention of the majority of the advertisement-reading public.—Fame.

Written for The Clay-Worker.

IN THE BRICKYARDS OF PHILADELPHIA.

A Memorable Season.

IF OUR BRICKMAKERS had occasion to grumble at the heavy rainfall in the early part of the year, they surely now have a like occasion to wear a broad stretcher smile at the big compensation offered them by sweet dame Nature. For the past five weeks we have revelled in the glory of Indian summer, splendid for brickmaking.

No better place than the northwest section of the city could be pointed out as illustrating the activity and success of our brickmakers during the past year. Here the real estate dealers and operators, having seemingly exhausted the category of architectural designs, moderate priced two and three-story houses have been erected with every form of design calculated to attract the public eyes. Faced with Roman brick, with the entire structure built up of good or first-class hard, salmon being rejected; tile roofs and the facades relieved with a small but fanciful detail in terra cotta, and these houses are being erected in hundreds, aye, thousands, in the environment of

Murtha & Early's Brick Plant at Twenty-first and Butler Streets.

Inside the office I found Charlie Murtha doing the strenuous life on the keyboard of his Remington typewriter, looking superbly well and satisfied with the world at large. No small wonder, when you think of the vast strides they have made during the past four years; more than doubled their output in that short time. Of course, the boys had to hustle. The two soft-mud Penfield machines, and the one stiff-mud Penfield, and six hand gangs were kept going almost day and night, and in one day the record was made of a hauling of 196,000. Their average is 125,000 daily. On their order books are to be found such contracts as are to be identified with the erection of Harris' silk mills. This will consist of five separate buildings, calling for nearly five million hard and stretcher bricks. Several sewers to be opened in this section will absorb another four million hard. Another operation for Sol Greenburg, consisting of 234 two and three-story dwelling houses, means an absorption of 6,500,000, and in the conduits of the Keystone Telephone Company a demand for two million must be met. Between the Philadelphia Brewing Company building and the John Fielding pork packing establishment and the power house of the Keystone Telephone Company another two million are ordered. Thus it will be seen, without counting the multifarious small jobs, which always creep in as auxiliary or supplemental issues, twenty-five million will but reach a minimum figure for this year's output.

Again, following the market quotations, we find there is some degree of encouragement and profit in the present rate of selling salmon at $6.50; hard, $9 in bulk; machine stretcher, $12; hand-made stretcher, $14 and up.

And thus I left jovial Charlie Murtha, assured both for him and his employes that the Christmas board, the culminating issue of the year's hard work, would not lack the good cheer of the season.

I find that New York, under pressure, has been feeling the pulse of the market of Philadelphia. Stretchers are wanted, but for once the Quaker City boys have been able to twist their heads in the direction of a negative, not defiantly, but boldly, in the vernacular of the Southerner: "No, sirree, I'm obliged to yer, but we really cawn't fill yer order, inasmuch as we haven't ther bricks to du it with. There's too grate a difference in the freight rates from this city to New York and New York to we 'uns."

This has always been a sore place on the shoulder of the Quakers, while New York can send bricks into this city at rates of $2.80 per thousand the Quaker is squeezed to the tune of $4 in New York. Why? I've never been able to learn, at least not satisfactorily.

Our friends up in Reading have a rate of $2.40. This is fair, but their manifest declares it to be a six-pound brick, and the local is only five pounds. Well, a word to the wise is sufficient.

The old Dingee yard, at Twenty-fifth and York streets, has been sold, and Anthony M. Lane, a former real estate operator, has made the purchase. Well, we know that under the Dingee administration it was a good plant, and a successful one. Therefore, knowing Mr. Lane to possess the necessary acumen and executive ability, let's wish him every form of success.

As I stepped off the car at Fifty-eighth and Haverford avenues my eyes and hand alighted on Michael Carroll. Verily, his form of grace at Christmas will be, "Thank God! I'm living!" The old story, a bolting horse, a steady driver, but a nasty turn, a spill and a silent form. Then six weeks in the hospital, full of the subtle mysteries of a world unseen. But skill and 64 stitches from the occipital to the frontal saved him and in a cheery voice, he greets you all a Merry Christmas.

Eugene Carroll,

With the aid of brother Peter, has completely dismantled the old yard at Fifty-eighth and Haverford avenue, and now has the hand and machine yard under the one cover at Fifty-eighth and Girard avenue, a cozy and trim-looking plant, indeed. The two Martin soft-mud machines and two hand gangs have worked merrily on through the season at the rate of 75,000 daily. The yard as it now stands possesses a good dryer and eight ten-arch kilns with an aggregate capacity of 1,400,000, and in its dual capacity could turn out nearly twenty million annually.

The output for this year, notwithstanding the insufficient coal supply, will reach approximately sixteen millions, with orders enough upon the books to run half the plant all through the winter. It is interesting to note the difference in the scale of prices between the northwest section and this, the western section. The ruling figures here are:

Hand-made stretcher, $14; press, $21; Martin stretcher, $10.50; hard, $8.50; salmon, $6.50.

Curious enough, the Carrolls had to shut down after the conclusion of the coal strike, there being no coal along their line. Four kilns stood at the mercy of the atmospheric changes. Providence, however, usually protects those that follow a good religion, and Eugene was able to burn without spoiling a brick. There is work enough before them to carry the good work and better the profitable contract right through tbe year 1903. As a starter an order came in for hard or stretcher for an operation of 140 two-story houses at Fifty-second and Parrish streets; also an operation of 120 houses at Fifty-first and Arch streets, and twenty-four two-story houses at Fifty-second and Arch streets. Considering this as Fifty-eighth street, it will be readily seen that this means short hauling and what the boys choose to call a roast turkey dinner for a quarter.

T. B. McAvoy & Sons,

Always working, ever congenial, report their full share of the year's business and profit. During the season they have made large shipments to New York State, Baltimore and through the South to Savannah, Ga., and Havanna. The demand for sewer bottoms and pavers on the outside fully atone for any lack of the city's requisition for the McAvoy paver. During this year the contracts for paving streets has been below the average, and an approximate estimate might be made that about eight, and certainly not more than ten, miles of streets have been laid for this year.

Up at Perkiomen Junction the Christmas period will be spent in renovating and cleaning up. This might be said to be due to the shortage of the coal supply. Anyway, the opportunity offers, and a new roof will go up on the dryer, new tunnel from the kilns, new storage bins, and, as the yard is empty, heigho ho! there's lots of room for labor. The small stock carried over from 1901 was swallowed up in the early spring rush, and the only hardship suffered by the McAvoys was in getting the brick out to supply the demand. The output for this year will run up above the ten-million notch.

Alex McAvoy

Also reports a good healthy condition physically, financially, socially and brickallically. We must coin a new word for him, being a good fellow, ambitious and a little out of town. Frank, the genial, is about town, well and hearty, on the lookout for a good thing. Don't be surprised if you hear from me one of these days with a description of a nice, trim plant, and a shingle over the entrance bearing the name of one we all like, and who likes and understands a brickyard as well as anyone between here and Purington's yard.

"Hello! Hello! Is that you, Keyser?" "Yes. How's The Clay-Worker?" "Modest and true, black and white in details, but to be warm and comfortable as an antidote to the cold weather, read all over. Ah!"

"Busy? Well, rather. Say, we're clean out of salmon, haven't any hard to sell nor a hand-made stretcher to offer. Busy booking orders and wondering where in the fire we are going to get them. There ain't a hand-made press brick to be had, and we've got to work hard all through the winter to fill orders. We'll shut down at Christmas to overhaul the engine and boilers, and then pitch in for all we're worth. Here, down in the Neck, we are getting $6 for hard and $9.50 for hand, so I guess when we sit down to our turkey dinner Webster & Nephew will read on the menu ten million for this year's output."

"Remember me to Mr. Randall." "Same to you and many of them." And thus, all along the line, the hearty reciprocations to one's good wishes float merrily on the air. Well, here's to continued prosperity. May the Christmas board groan with The Clay-Worker's good cheer, and may every clayworker cheerfully groan under the pressure of steady work through the year 1903.

W. P. LOCKINGTON.

OFFICIAL ANNOUNCEMENT.

The Seventeenth Annual Convention of the National Brick Manufacturers' Association and the American Ceramic Society To Be Held at Boston, Mass., February 2 to 14, 1903.

AS PREVIOUSLY ANNOUNCED, the Seventeenth Annual Convention of the National Brick Manufacturers' Association and the Fifth Yearly Meeting of the American Ceramic Society will be held in Boston, Mass., February 2 to 14, 1903. The deliberative sessions of each body will divide the first week, as in former years. That is, the Ceramic Society will meet Monday and Tuesday, the 2nd and 3rd, and the N. B. M. A. meetings will begin Wednesday afternoon, February 4, and continue through the week, as heretofore. The annual associational dinner or banquet will take place Wednesday evening.

Hotel Headquarters.

Headquarters during the convention will be at the Brunswick Hotel, one of Boston's largest and best hostelries. A minimum rate of $4.00 per day (American plan) will be made for rooms occupied by one person. When rooms are occupied by two or more the minimum rate will be $3.50 per day. The Brunswick is located on Boylston street and faces Copley square, one of the most famous spots in Boston, about which is grouped the magnificent Public Library, the Museum of Fine Arts and the great Trinity Church. The latter is considered by many architects the finest structure architecturally in the United States. The Brunswick may be reached by street car from either of the union stations—there are now but two, North and South stations. The elevated railway passes both stations and runs into and through the underground station at Tremont street, where passengers can transfer to the Boyleston street trolley line, which passes the door of the Brunswick.

Convention Hall and Exhibition Room.

The local committee has secured the exclusive use of Copley Hall for the entire week—February 2 to 7, inclusive—for convention and exhibition purposes. It is located across the street and one block south from the Brunswick, and is a large and thoroughly comfortable hall, which will afford ample accommodations for display of machinery, etc., etc. Those desiring to make exhibits are requested to advise the Secretary as to amount of floor space wanted and character of exhibit; whether it will consist of heavy machinery or models.

Reduced Railroad Rates.

Reduced railroad rates on the certificate plan have been applied for covering the two weeks ending February 14. The second week will be devoted to side trips to the various brick, tile and pottery plants in and about Boston and the neighboring cities. There are many interesting places within a radius of one hundred miles of Boston, such as Plymouth, Providence, R. I., Portland, Me., and Concord, N. H., while New Haven, Conn., and New York City are considered nearby towns, and will doubtless be visited by many of the delegates.

Boston a Great Convention City.

Boston's attractions are many and varied, and as this will be our first meeting in New England, a large attendance is anticipated. While Boston, though called the Hub, is somewhat one side of center geographically, it is so easily reached by fast through trains from every section of the country that its one-sidedness in location is but a slight disadvantage which is more than offset, many times over, by its many-sidedness in all other respects.

No city in all the nation possesses more of interest to the progressive workers in every calling than does Boston. It is one of the great head centers of industrial, commercial and educational influences which tend toward the advancement and betterment of all mankind. No city is richer in historical lore. The Old South Church and Bunker Hill are dear to the hearts of every American citizen, while in modern institutions of learning she leads the world, and so is an ideal meeting place for educational bodies like the N. B. M. A. and the Ceramic Society.

All sessions of the Convention are open to the public. Those who are interested directly or indirectly in clay work of any character are invited to join the Association and attend the Convention. Members and their families, or friends who may accompany them, will be entitled to reduced railroad and hotel rates. Those desiring further information relative to the requisites of membership, etc., are requested to communicate with the Secretary at Indianapolis.

THE EXECUTIVE COMMITTEE.
GEORGE M. FISKE, President.
THEO. A. RANDALL, Secretary.

The brickyards at Kansas City are running night and day, especially the dry press yards. Flanagan Bros., at Second street and Lydia avenue, have put in their second Berg press to keep up with their orders. The Kansas City Hydraulic Company is very busy, and the Dwyer Brick Works has recently added a Berg press to their already large dry press plant also a new Williams pulverizer for grinding their shale. All the yards, however, are having a good deal of trouble this fall in securing teams to handle their brick. The architects have lots of work on their boards, and the outlook is good for another prosperous season. Several of the brickmakers in this vicinity will go to the Boston convention if they are able to get away.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Fire Brick Plant Wanted.

Editor Clay-Worker:

Herewith find two dollars for my subscription to The Clay-Worker. I have been in Europe for four months and just returned, but I have to hunt up my Clay-Worker to see what has been doing in the States. We, the Trimble heirs, have just leased one vein of 240 acres of the big vein coal, as it is known in George's Creek. It is of excellent steaming qualities and we have some valuable fire clay and shale deposits. We are looking for an enterprising and energetic brickmaker to come along and start up a plant, as there is a great demand for this quality of clay, and if such a man turns up, as we expect he will in the near future, I think he will be well satisfied.

JOHN COUPE,

Mt. Savage, Md., December 12, 1902.

A Small but Successful Plant.

Editor Clay-Worker:

Inclosed find $2.00 in payment of subscription to your valued and appreciated journal, which I always peruse with interest and believe it now to be indispensable to every brickmaker.

My plant is not a very large one, yet, even in spite of rather bad weather in September, I have made between two and three million brick the past season, every one of which I have disposed of at a top-notch price. And had I the brick I could easily have tripled the business. I am now building extra clay sheds and making improvements which will enable me to more than double my business next season, and have already contracts booked for several million for spring, 1903, delivery. I use a Chambers end cut machine of 30,000 daily capacity and a Martin dry pan; also make some by hand process.

Wishing you the success your efforts on behalf of clayworkers so richly deserve, I remain, very truly yours,

FRANK DEBELUIS.

Orangeville P. O., Md., Nov. 21, 1902.

A CRY FOR JUSTICE.

Editor Clay-Worker:

Some time since I noticed the remarks of your correspondent, "Nicodemus," as to the use of asphalt in Washington, instead of brick, for street pavements.

There is one serious obection to asphalt that seems not to be generally noticed, and that is that the constant wear of its surface produces a very fine dust that penetrates our houses and settles on everything. This dust, from its nature, is much worse in its effect upon lace curtains and all articles in the house than ordinary dust, as all women who have had experience and have given the subject attention agree. In consequence a year or two since I tried to induce our commissioners to adopt brick instead of asphalt, more especially for the residence streets, and gave them copies of the Clay-Worker having descriptions of brick pavements in other cities.

Commissioner Ross, since deceased, manifested an interest in the matter and expressed much gratification for the information furnished, but whether the matter was ever considered by the board I am unable to say, but, as your correspondent intimates, asphalt still "holds the fort."

Another objection to this asphalt dust, raised by some of the medical fraternity, is that it is specially injurious to the lungs, throat, etc., much more so than ordinary dust. Being a layman, of course, I express no opinion on this point, but I am clear in the opinion that to substitute brick for asphalt on many of the streets would be a decided improvement. But, as I suppose you are aware, the taxpayers and citizens have no control of this or any other matter, as the citizens of the District of Columbia have no voice either in the local or national government.

As my wife puts it, "We are where the negro was and the woman is—we have no rights that any one is bound to respect," to which I add, to make it complete, "except the right to be taxed and abused on the floor of Congress, where we have no chance to be heard in reply!" It is, indeed, most remarkable that while the capital of every monarchy in Europe has its own local government, elected by the taxpayers, the capital of the greatest republic on earth, and where we would naturally expect to see the most perfect exhibition of a republican government, the tax-paying citizen has no voice whatever!

To quote the words of a former senator, "The government of the District is an absolute despotism! It is the only place, at least under the American flag, in which the citizens have no voice in the selection of men appointed to rule over them or in the disposition of the taxes they are compelled to pay." But I forbear, lest my indignation overcomes my prudence, and, besides, the Clay-Worker is not devoted to the discussion of such subjects, though I question whether many, if any, of its readers are aware of these facts—and for which the men they send to Congress are directly responsible.

Washington, D. C., Nov. 9, 1902. W. C. DODGE.

THE HUDSON RIVER ATTRACTIONS.

Points and Things of Special Interest to Those Who Will Attend the Boston Convention.

Editor Clay-Worker:

I was very much pleased to see in The Clay-worker that the next meeting of the National Brick Manufacturers' Association is going to be held in Boston. I predict that while this may seem a little at one end of the brick universe we will have a large attendance, for the reason that there are a large number of brickmakers in New England who have not attended any of our previous meetings. They have considered them too far away and relied upon The Clay-Worker to tell them what we were doing.

Then, again, there are so many points of interest in and about Boston that many of the members of the association will avail themselves of this opportunity to see what they can in addition to the valuable information which is secured at these meetings, which none of our clay journals have or can possibly publish. Those buttonhole talks which one sees going on in all corners and available spaces in the hotel, in the exhibition room and in the hotel lobbies, have a value which no one as yet has been able to estimate, and I doubt if it can be. Boston is not very far from New York city. Anyone desiring to travel along the Hudson river to and from the convention would be well repaid for the trouble, even in midwinter.

It would, I am sure, be taking up too much of your valuable space to try and enumerate the many points of interest from Albany to New York city, whether they travel over the New York Central or the West Shore railroad. Outside of the brickmaking part of it the capitol at Albany, the Catskill mountains, on which it is said Rip Van Winkle slept for twenty years, and, I might say, is still sleeping, for if one travels over the New York Central side of the river they will see in the mountains a perfect head. By taking notice from Hudson to about twenty miles down the river they can perhaps make out who the party looks like. I have my own idea, for, as I said above, it is a perfect head. I refrain from naming him. He is, however, clean shaven, rather dark and weighs from 180 pounds to as many million tons, more or less, depending entirely on how much of the mountain you would require to have him complete.

Farther down one comes to West Point and the Highlands, which must be seen to be appreciated. West Point requires no words of mine to bring it to the notice of any of the members of the N. B. M. A., and New York city is always interesting. One can spend a day, a week or a month there if he has the time to spare, and still not see all the points and things of interest.

In regard to the brickmaking on the Hudson, this is mostly what is known as common brick, made by the soft-mud process. There is at Catskill the plant of the Eastern Paving Brick Company, which is the largest plant of its kind east of Chicago and which is worth the trouble for anyone interested to see. They have, I believe, the largest continuous kiln in the world—certainly it is the largest I ever saw, and it is claimed to be very successful. They have also eleven Eudaly down-draft kilns. At Haverstraw, a little farther down the river on the West Shore, I should say that there are more brick made in a given space than in any other place in the world, and all along the river can be seen immense plants on either side, and when one considers that the total output on the Hudson is over a billion of brick a year, they will concede that there must be a large number of plants. As a rule they do not manufacture in the winter months, but one cannot fail to be impressed with the number or capacity of these plants, and the delegates will be well repaid for the trouble and time required to visit them on their way to the convention. It is almost impossible to make some people believe that there are brick barges, so called, which will carry over one half million brick at a time, and yet there are quite a number of such boats carrying brick to the New York market.

Hoping to see you once more, brothers of brick and clay, at our next convention, I am fraternally, RIP VAN.

Buffalo Brick and Building News.

Editor Clay-Worker:

Well, the brickmaking season is over on our summer yards and all hands gone into winter quarters, with the exception of Brush Bros. They have arranged to double their usual winter output so as to have some on hand in the spring, as it is a well-known fact that we seldom get new brick in this locality before the middle of May, and the supply will all be exhausted before that time.

The boys can now close the books for the year, and know that the balance is on the right side, as it has been the best season for sales and prices in a number of years.

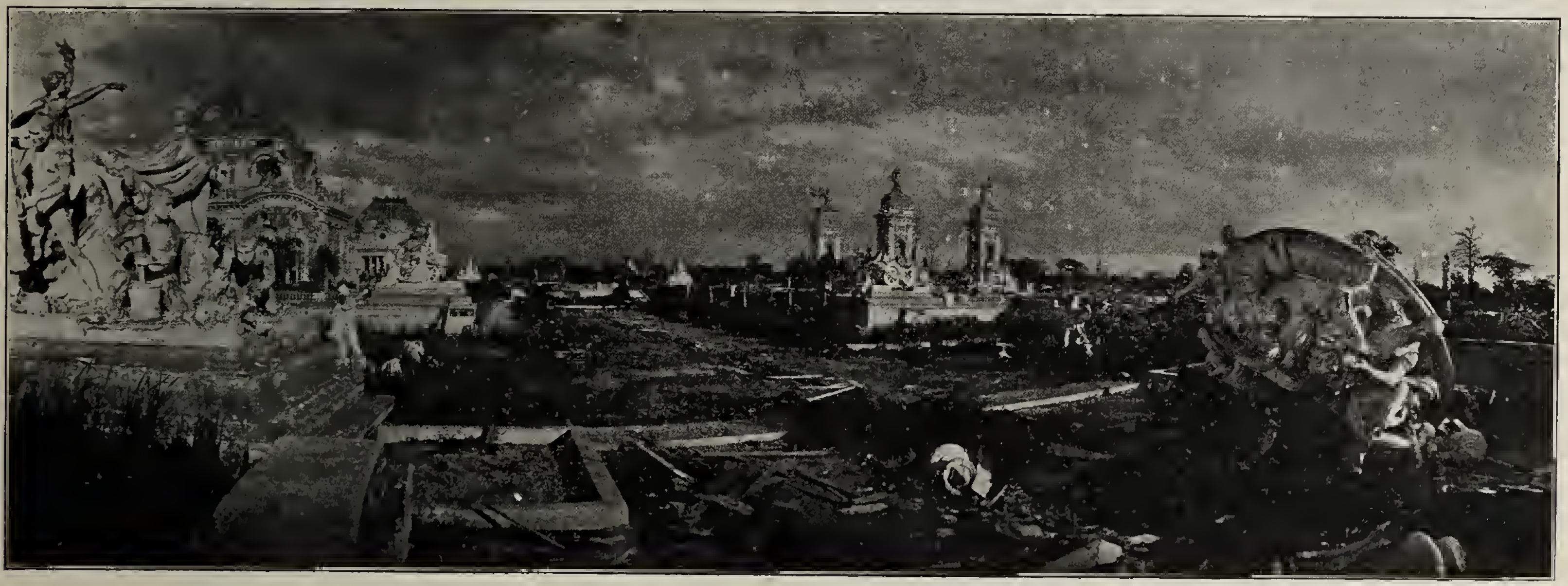
New Building in Sight.

The number of permits issued for November was 136, amounting to $324,828. New work is coming on all the time. The Snow Steam Pump Works are going to build an addition to their already large plant—a new shop 534x110 feet, to cost $110,000—and plans are out for a new flat-iron building ten stories high at the northwest corner of Main and Niagara streets. The new Armory will take millions of brick, and the contractors at the big steel plant are using all the brick they can get. Contractor Rock Haven told me that they had been obliged during the last summer to send as far east as Haverstraw, N. Y., for brick, the D., L. & W. railroad making them a very low rate to this city.

Our Superintendent of Education, in his report recommends the building of seven new school houses to accommodate the younger element of our ever-growing and increasing population. There are now sixty-seven schools, with three high schools—the last, the West Side High School, costing over $300,000. There are over 60,000 registered pupils, besides the 22,000 attending the private or parochial schools. A great deal is being done for the coming generation.

The agreement among the members of the Buffalo Brick Association expires Jan. 1, but it will undoubtedly be renewed with some slight changes, as the advantages derived from being in an association are so great that any member would be foolish to withdraw. It establishes a uniform price, insures prompt deliveries, collections good, losses reduced to a minimum—less than 1 per cent. on gross sales.

Owing to the fact that the output for the past season was not equal to the demand, it is said one of the yards now lying idle, or rather, not making common brick, will have to start up and make brick in order to supply the increased demand.


A Modern Athens—Ruins of the Pan-American Exposition.

Modern Athens.

It is said by those who have traveled abroad that outside of Greece and Rome, the most classic ruins to be found in the world to-day are the ruins out at the Pan-American grounds. The accompanying photo. will give an idea of the way things look out there—the group of statuary, with the now famous Temple of Music on the left, and the Triumphal Bridge in the distance. The work of destruction slowly continues. The sale of the material has something to do with the slow progress of the work. I heard of one party who is a contracting architect and builder, who purchased 800,000 of the brick at $3 per thousand. As he had figured his brick at $6.75 when taking the contract and the owner had consented to their use in the building, he did the very unusual thing of giving the owner the benefit of his cheap purchase, amounting to some $2,400. It paid the contracting architect in the long run, as the aforesaid owner has since then secured for him several important contracts. NORTON.

Wants to Know More About Continuous Kilns.

Editor Clay-Worker:

In the October number of The Clay-Worker, page 336, is the statement: "For burning 1,000,000 brick a continuous kiln can be built for about $2,900, and if there is no danger of sub-soil water, one can be built for one-half this amount." I would like to know more about such a kiln. My plant is so situated that I can build into a dry hill.

I will move my yard to an adjoining town in the spring. Expect to start with an output of 32,000 per day, the same that I made here, and believe I can within a year run this up to 50,000 or more per day, as I will hold most of the trade I have now and get more. I have looked up the question of drying brick, and with the supply of wood very limited and now selling for $2.50 per cord for bass and elm, and soft coal above $5, I will have to depend upon "Old Sol" to dry our product. I have worked out nearly all the details for the new yard. The dry sheds are my own get up—at least, I have never seen any like them—and if you wish it, will send you a sketch of same. Also a description of the plant, with the arrangement and division of the work, how much is expected of each man, etc.

AMOS.

Written for The Clay-Worker.

DETROIT BRICK AND BUILDING NOTES.

A STRONG DEMAND is still experienced by the brick manufacturers of this vicinity. Prices remain unchanged, builders selling at $6.50 and $7.

It is a safe prediction that nearly all the manufacturers in this locality will equip their plants with a steam shovel for use in the clay bank. A number have already signified their intention of so doing in the early future.

A visit to the plant of Wolf & Dei shows the firm are making great improvements. At present they are very busy building a large and costly four-tunnel brick dryer.

The firm of Proctor Bros., composed of Wm. H. and Otis M., who have been identified in the brickmaking industry here for several years, has decided to retire from active business, and will offer their plant, together with fifty acres of good clay land, for sale.

Haggerty & Son will commence operations shortly after New Year, when their new brick dryer will be in commission.

There is a big demand for brick just at present. Architects report they have enough work on hand to keep them busy for some time. Architect Van Leyan reports that he has completed plans for a new hospital at Kalamazoo, and the order for the brick will soon be out for the manufacturer's consideration.

McDonald & Son are at present very busy filling orders. Throughout the season they have had their share of the immense demand for brick. They have a good supply on hand, with one green kiln yet to burn. Many improvements are contemplated before next spring at both their plants.

Brick-paved streets are steadily gaining in public favor. The past season has witnessed the tearing up of many streets paved with cedar blocks and repaved with brick. The estimates for next season's brick paving on concrete call for five miles of new paving.

Manufacturers here, and those in particular whose plants are situated on Michigan avenue, and who must use that thoroughfare to gain entrance to the city, have suffered great annoyance and damage to horses, harness and wagons owing to the terrible condition of the avenue. It is next to impassable. Why the authorities do not improve the road is beyond understanding. That portion of the road within the city limits will soon be repaired. The Department of Public Works will have the avenue repaved with brick on concrete foundation.

In the demand for building permits for the first week in December it was noticeable that there was a slight decrease in the number of brick structures, aside from dwellings and apartment houses; only two brick manufactories were recorded.

The steam shovel installed by the Lonyo Brick Company in the early part of the season has given good satisfaction. The firm will make many changes toward the further improvement of their plant before the opening of the season. Under the direction of their energetic and tireless manager, Mr. Andrew Lonyo, the firm has enjoyed a huge business during the whole season.

Dysarz, Hass & Stubbe, a new firm here, report they have done big business and have no cause for complaint. They were the successful firm to obtain the order for the new Galeacan Church, school house and rectory building, requiring several million brick, the building of which will begin in the near future.

Never before has the brickmaking industry in Detroit been so prosperous as for the season of 1902. So great has this industry grown that it is attracting men of means who are eager to secure desirable locations and establish plants. To say that new plants of modern construction and improvements will be in operation at the beginning of next season is a foregone conclusion. Should the demand for brick be as great in 1903 as for the season just passed several more new plants will indeed be a welcome addition.

Plans were received in Detroit on Dec. 2 for a monster hostelry—a twelve-story building. The structure as planned will extend 94 feet on Park street, 122 feet on Washington avenue and 212 feet on Bagley avenue. It has been suggested to build a fine new theater in connection with the hotel, but no theater or auditorium is contemplated in the design furnished by Architect Starrett, of Thompson, Starrett & Co., of New York. The building when completed will contain 480 rooms, gymnasiums, baths, and all the most modern equipment are included in the plan. The building and site will foot up to $1,250,000. The idea of the promoters is to form a joint stock company to build and own the hotel, which will be leased. Mr. Homer Warren, of Homer Warren & Co., of this city, is interested in the project to a great extent. D. DALE.

Written for The Clay-Worker.

ST. LOUIS BRICK AND BUILDING NEWS.

BUSINESS HAS BEEN quite good in the clay industry in Missouri the last few weeks. While a great many brick have been contracted for, the majority of them have been sold for future delivery. These have not been called for as rapidly as was hoped for, and the yards are being loaded up. Still many are being delivered. The weather, recently, has not been the best for building, and that probably accounts for the few calls for the brick that have been contracted for.

The report of the local building commissioner shows that permits were issued during November for buildings estimated to cost $959,824, compared with $759,301 during the same month of last year. These figures, while smaller than for the preceding month, show the same proportion of gain over last year that has prevailed during the greater part of this year, and local contractors regard the situation as very healthy. Different from former months, the greater part of this was in small lots, showing a greater amount of residence and flat work than during any other month of this year. This is the class of business which is most profitable to brickmakers, and in which there is the least competition. Local building promises to be healthy during the whole winter, as there is a large amount of projected work for the cold weather which will go forward on bright days.

An Unusual Labor Trouble.

Because ornamental brick which are not made by union labor are used in Belleville, a suspension of brick building operations occurred a few days ago. An effort will be made to adjust the affair. From the statements made by both sides it appears that non-union brick of an ornamental character is being used in finishing brick buildings of Belleville. The builders claim that they cannot get this ornamental brick with the assurance that it is made by union labor. The hod-carriers and the bricklayers have not objected to laying the brick, but the drivers employed by the Belleville brickyards, it is said, refuse to haul brick from the local union yards as long as the non-union ornamental brick is handled by the hod-carriers and the bricklayers. In order to bring about a settlement of the difficulty the Belleville Builders' Exchange voted to lay off the bricklayers and the hod-carriers until the trouble was adjusted. This, it is believed, will be accomplished in a day or two, as it is said if the differences are not settled quickly much inconvenience and a grave setback to the Belleville building operations will result.

Articles of incorporation were filed a few days ago by the Mound City Roofing Tile Company, with a capital stock of $50,000, divided into 500 shares of $100 each, one-half paid up. The shareholders are: W. P. Grath, 444; W. C. Mitchell, 28; James Masterson, 28.

Work of rebuilding the plant of the Stoneware Pipe Company at East Alton, which was destroyed by fire last June, as the result of an explosion caused by water from Wood river getting into the hot furnaces, will be completed in a few days, and the plant will soon be in operation. The tile works has been enlarged and the output will be greater. Delays in the arrival of construction materials has caused a long delay in the completion of the new plant.

An Extensive and Valuable Clay Deposit.

What is thought to be a valuable deposit of clay has been discovered in Jerseyville, Ill. It was made by a contractor, who was constructing a sewer system for the business portion of the city. The sewers will extend in a southwesterly direction. In making the necessary excavations a few days ago in the section of the city known as Barr's addition, the contractor came upon the clay deposit at the depth of four feet. The workmen dug into the clay for five more feet. The deposit has been found for a distance of 1,000 feet, and the strata is thought to extend over an area of at least forty acres.

Various tests have been made by Prof. E. B. Shafer, of the Jerseyville High School, and from reports the clay could be used for the manufacture of crucibles, so well does it stand the various heat tests. It has also been made into brick of the buff or the Milwaukee kind. This class of brick is of the greatest commercial value, and the extent of the deposit is so great that Jerseyville capitalists are considering the erection of a plant at once to put the product on the market.

The St. Louis Market.

Prices of brick have not changed since my last letter. Merchantable brick are $7.75; strictly hard, $8.25; red pressed brick, $17.50, and sidewalk and paving brick, $8.50.

The Anthony Ittner Brick Company have secured the contract for furnishing 3,500,000 for the Yeatman school, that will be erected the coming spring. Mr. George W. Ittner, a member of the above firm, was recently married to Miss Caylona Evans, one of the prettiest girls in St. Louis. After an extended trip through the South they will be at home at their new residence, No. 1722 Simpson Place.

Mr. W. F. Scott, the vice president and general manager of the Fernholtz Brick Machinery Company, who has been on a trip to the Northwest, has returned home. He reports that business is quite good with his firm.

The Evans & Howard Fire Brick Company are quite busy. Mr. George Jones, the secretary of the company, who has been at Hot Springs, has returned home, feeling much better after his sojourn at that place for several weeks.

The Largest Stocking of the Season—What Santa Is Expected to Fill for St. Louis.

The Illinois Supply and Construction Company have been doing a nice lot of business recently. They have been placing quite a number of their specialties with various brick manufacturers.

The Newbern (Ill.) Press Brick Works have been very busy lately, and they are working full time on orders.

The Albion Vitrified Company, of Alton, Ill., has been incorporated in that city with a capital stock of $40,000, for the manufacture of vitrified brick, building blocks, terra cotta, sewer pipe and cement. The Southern Railway Company grants the company some valuable concessions, including the free use of the shale on its right-of-way along the fifty-foot cut at Alton. The company was organized by the election of Dr. J. W. Lacey; president; Dr. W. H. Brosman, vice president; Walter Colyer, secretary, and B. F. Michels, treasurer.

Carl A. Schmiedeke, seventy-eight years old, a resident of St. Louis for more than fifty-five years, died at his home, No.

3319 LaSalle street, a few days ago, after a lingering illness. Mr. Schmiedeke engaged in the clay mining business shortly after arriving here, and has been connected with many of the largest clay industries in and about St. Louis. In 1875, after a series of experiments, Mr. Schmiedeke introduced a new process of manufacturing pipe clay from the clay deposits which abounded near what is now Cheltenham. He also discovered many rich veins of the soils from which the present pipe clay and vitrified brick are manufactured. The funeral took place from his home to the New Bethlehem Cemetery, on North Broadway. He is survived by his wife and eleven children, all grown and living in St. Louis. He is also survived by eighteen grandchildren and two great-grandchildren.

Written for The Clay-Worker.

PITTSBURG AND WESTERN PENNSYLVANIA CLAY INDUSTRIES.

The SCALE HOUSE at the No. W. plant of Reese-Hammond Company, at Bolivar, Pa., was destroyed by fire some time ago, entailing a loss of several thousand dollars.

The General Fireproofing Company, of Pittsburg, has secured control of a large plot of land near Youngstown, O., and will erect a plant at a cost of $500,000, the work being awarded to the Pittsburg Construction Company.

The Cumberland Basic Brick Company, in which Baltimore and Pittsburg capital is largely interested, and which was formed several months ago, has purchased 2,622 acres of fire clay land at Frostburg, Md., a short distance from Mt. Savage, and will erect a modern plant at once.

The Keystone Fireproofing Company, of Pittsburg, recently formed with a capitalization of $100,000, has secured a site at West Wingfield, Butler county, Pa., and will install a plant for the manufacture of fireproofing brick and sewer pipe. The company is chartered under the laws of Pennsylvania, and among those interested in the enterprise are F. W. McKee, G. H. Albertson, E. J. Frauenheim, J. A. Frauenheim and A. M. Duff, of Pittsburg. The company owns a tract of 1,400 acres of clay land in Butler county.

The West Pittsburg Stone and Cement Company has been formed with a capital of $1,000,000 and will construct an immense plant in West Pittsburg where Wood, Harmon & Co. are developing a new industrial town. The main purpose of the new company is to manufacture building stone from concrete. Among the promoters are J. W. and Robert Garland and J. M. Cunningham, of Pittsburg.

Emil Swensson, the well known Pittsburg consulting engineer is at the head of a company which will engage in the manufacture of cement by a new process. A company has been formed and a plant will be erected in the Pittsburg district.

The American Potteries Company, of Pittsburg, has secured an important interest in a number of plants at East Liverpool, O. A. M. Moreland, of Pittsburg, is at the head of the company.

The work on the immense new potteries at Derry, Pa., on the Pennsylvania railroad, east of Pittsburg, is well under way, the construction work being in charge of Keeling & Ridge. These industries include the Derry China Company and the Keeling & Ridge Brick and Tile Company.

Pittsburg capitalists who own the Massillon Stove and Fire Brick Company suffered a heavy loss during the month, the plant being totally destroyed by fire. The loss was about $40,000.

The Osceola Fire and Silica Brick Company has about completed its large plant at Osceola, Pa. The new plant will have an annual capacity of 25,000,000 brick.

The brick works operated by S. L. Bigger & Company, of Harrisburg, Pa., has been sold to the McCormick estate and a new plant with a capacity of 100,000 shale brick is being added.

Smith Bros.' Brick Company, at Glenshaw, Pa., near Pittsburg, recently completed the installation of a new dryer furnished by the Barron Dryer Company, of Chicago. The company has opened an office in the Park building, Pittsburg.

The Copley Cement Company, of Copley, Pa., will install a large cement plant at that place, New York and Philadelphia capital being interested.

The plans of the International Cement Company, of Philadelphia, for the erection of a large plant at Elizabeth, on the Monongahela, near Pittsburg, are fast maturing. The new plant will cost $250,000, and blast furnace slag will be utilized in the manufacture of cement.

The Mountain State Sand Company, of Romney, W. Va., is preparing to develop valuable silica deposits near that place.

Among the recent additions to the Harbison-Walker Refractories Company, of Pittsburg, is the Portsmouth and Kentucky Fire Brick Company. The acquisition of this property increases the output of the big combination about 150,000 bricks daily.

GILBERT.

BAD FIRE AT STOCKTON, CAL.

One of the most disastrous fires in the history of the clayworking industry of California occurred on Monday morning, November 17, when the main building of the Stockton Brick and Pottery Company was burned to the ground, entailing a loss of $50,000, which was fully covered by insurance.

The dimensions of this building was 150 ft. x 240 ft. and was two stories, excluding engine and boiler room, and was fully equipped to make sewer pipe, fire brick, all shades of building and enameled brick, terra cotta and sanitary ware.

The fire originated by one of the many fire boxes giving way, and the flames reached the roof before the main line of crude oil could be turned off, and many fine specimens of Reckstone ware, together with some fine glazed brick, were destroyed.

CONVENTION DATES.

The Illinois Clayworkers' Association will hold its twenty-fifth annual convention at Bloomington, Ill., Jan. 6 and 7, 1903.

The Iowa Brick, Tile and Drainage Association will hold its twenty-third annual convention at Ames, Iowa, January 21 and 22, 1903.

The Wisconsin Clayworkers' Association will hold its third annual convention at Green Bay, Wis., Jan. 27 to 29, 1903.

The American Ceramic Society will hold its fifth annual convention at Boston, Mass., Feb. 2 and 3, 1903.

The National Brick Manufacturers' Association will hold its seventeenth annual convention at Boston, Mass., Feb. 4 to 7, 1903.

THROUGH TO FLORIDA.

A Southern Trip Without Changing Cars.

Through passenger service over the Pennsylvania Lines via Louisville, Chattanooga, Atlanta and Macon to Jacksonville and St. Augustine will be established Jan. 5, 1903, on and after which date a drawing-room sleeping car will leave Indianapolis 3:40 a. m. and run through on the Florida Limited, of sleeping cars, dining and observation cars.

Passengers may be in Chattanooga, Tenn., for dinner same day; in Rome, Ga., at 3:15; Atlanta, 10:30 p. m.; Macon at midnight, and Jacksonville or St. Augustine the second morning without leaving the train. Returning from Florida and the South the service will be equally convenient via Louisville and the Pennsylvania Lines. Details about it may be ascertained by consulting ticket agents Pennsylvania Lines, or addressing W. W. RICHARDSON,

District Passenger Agent, Indianapolis, Ind.

HUNTERS' RATES VIA PENNSYLVANIA LINES

To Arkansas, Louisiana, Missouri, Wisconsin and Michigan.

Hunters' tickets, with long return limit and liberal stopover privileges on sale to many points in above-named territory from certain points on the Pennsylvania Lines. For full information and particulars as to rates, tickets, limits, etc., call on agents Pennsylvania Lines, or address W. W. Richardson, D. P. A., Indianapolis.

The discovery that laziness is a disease caused by a germ opens a great field for bacteriologists to search for an antitoxin.

Written for The Clay-Worker.

WESTERN OHIO NOTES.

Edward Nicholson, Joseph Nicholson and Charles Rosser, of the Toronto Fire Clay Company, of Toronto, O., have bought some coal property at Empire, O., about five miles above their Toronto plant, and are making arrangements to mine coal on an extensive scale, supplying several clay works in that vicinity in addition to their own.

The new sewer pipe and brick works of the Myers Clay Manufacturing Company, located in the north end of Toronto, O., started for the first time, on Nov. 20, making fire brick. This company will manufacture fire brick exclusively until spring, when sewer pipe and general fire clay products will be placed on the market from this plant.

Capt. John Porter has closed his Irondale (O.) fire brick works to install new machinery and boilers and make other necessary improvements. He will continue the shipment of coal from his mine.

Upon a petition filed Nov. 22 in the Common Pleas Court of Columbiana county, sitting in Lisbon, O., by Zerna Clark, Isaac B. Clark, Frank S. Clark, Harman Michaels and Edward W. Michaels, owners of all the stock of the Buckeye Brick Works Company, situated at Wellsville, O., asking for a dissolution of the company and the appointment of a receiver to close up the business of the concern, the court appointed J. C. Catlett temporary receiver, under a bond of $5,000, who will manage and operate the works under the direction of the court. The petition sets forth that the corporation is now indebted to the aggregate amount of $97,657.45, and the assets are estimated at $84,700. Owing to a scarcity of money, the company was unable to employ enough hands to operate the works to its capacity, and the output was reduced from 30,000 bricks per day to less than 14,000. The plant is fully equipped with the best of clayworking machinery, and several kilns of brick are still in the process of burning. The principal creditors are the First National Bank of Wellsville, $14,000; Perpetual Savings and Loan Company, $9,700; Central Building and Loan Company, $9,000; Central Loan Company, $2,500; P. M. Smith and others, all of Wellsville, $5,500; Smith & Hargest, $3,150, and J. C. Catlett, $3,075. Also Wellsville parties and the City National Bank of Canton, O., $20,000. The company was formed about twelve years ago, and is incorporated under the laws of Ohio with an authorized capital stock of $50,000.

A large tract of fire clay land was recently purchased by the Mack Manufacturing Company, of New Cumberland, W. Va., adjacent to their present properties, for $8,000.

The Dillonvale Brick and Tile Company, of Dillonvale, Jefferson county, Ohio, started the manufacture of brick the middle of November. Elwood Walker, of Mt. Pleasant, O., is the superintendent.

J. L. M.

A CLAY-WORKER EPOCH.

With our January issue The Clay-Worker begins its Twentieth year. We propose to celebrate the event by issuing an immense anniversary number, which in matter and make-up will mark a new standard of excellence in the clay field. A year ago we promised to give our readers the handsomest and best publication issued in their interest up to that time, and we did it. We now propose to excel that effort and so mark another epoch in clay literature. Our Twentieth Anniversary number will be a 10,000 edition. It will be beautifully illustrated and contain an unusual amount of instructive and entertaining matter. It will be, in brief, the clay journal de luxe of the year, and will be read by the progressive, responsible manufacturers of brick, tile and pottery throughout the United States and Canada. Advertisers who want to reach these good people will please take due notice and govern themselves accordingly. Those who have anything to sell that clayworkers can use to advantage will find our Twentieth Anniversary issue the best single medium of the year. To insure insertion, ad copy should reach us not later than Jan. 1, 1903. Those desiring special display are requested to send in their cuts and copy as early in December as possible.

CONVENTION OF CANADIAN CLAYWORKERS.

As announced in the November Clay-Worker, the brick and tile manufacturers of Ontario gathered at London Nov. 18 and formed an association similar to those in vogue in the States. About two score of manufacturers from different sections of the province answered the invitation and were enrolled on the membership roster, and as many more, who were prevented in one way and another from being in attendance, sent their regrets and expressed a desire to become members. The following are the officers chosen for the ensuing year:

List of Officers.

President—B. E. Bechtel, Waterloo, Ont.

Vice President—Robert J. McCormick, Warwick.

Secretary—Alexander Johnson, London.

Treasurer—Henry James, Delaware.

Executive Committee—Messrs. J. W. Cawrse, London, and John Karn, Brownsville.

Those in attendance indulged in a banquet, at which congratulatory speeches were made on the success of the organization, which will undoubtedly prove of much benefit to all engaged in the clayworking industries of Ontario.

B. E. Bechtel, Waterloo, Ont.

TRADE NOTES.

The Shawmut Clay Manufacturing Company, of New York, have ordered a large drying apparatus from the American Blower Company, of Detroit, Mich., for installation at Shawmut, Pa.

We are in receipt of the following notice from the Diamond Brick and Tile Company, Kansas City, Mo., under date of December 13: "The Diamond Brick and Tile Company, of Kansas City, Mo., has this day sold its plant, trade-mark and business to the Kansas City Hydraulic Press Brick Company, who will continue to operate the plant for the manufacture of "Diamond" vitrified bricks. The purchaser will also continue the business and fill all of the outstanding contracts of the selling company."

W. B. Lower, Sioux City, Ia., writes that he has just closed a deal whereby both of his brick plants at that place will be transferred January 1, 1903, to E. N. and G. N. Fairchild, who paid in the neighborhood of $150,000 for same. The capacity of both plants will be materially increased by the erection of an additional continuous kiln and the installation of new machinery. Mr. Lower says, although he is going out of the brick business, he wants to be kept on the list of Clay-Worker subscribers, as he desires to keep in touch with the clayworking business generally.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

NINETEENTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

Foreign subscriptions 65 cents additional.

☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
27 Monument Place.] T. A. RANDALL & CO., Indianapolis.

XXXVIII. DECEMBER, 1902. No. 6.

CURRENT COMMENT.

Have you renewed your subscription to The Clay-Worker?

* * *

This is a very appropriate time for the performance of that small but all-important detail.

* * *

In this connection we may suggest that a yearly subscription for The Clay-Worker will prove a very pleasing Christmas gift for your superintendent or foreman.

* * *

If they are doing their best they deserve to be remembered, and the monthly visits of The Clay-Worker will remind them of your thoughtfulness and will undoubtedly prove helpful and so enable them to do more and better work. In no way can the progressive manufacturer invest so small an amount so profitably.

* * *

The largest stocking of the season is that shown on page 555 of this issue. To fill it is an undertaking that only a Santa Claus might attempt. Let us hope that by another Christmas time we shall see the great St. Louis Exposition which commemorates the knitting of this stocking, well nigh completed.

* * *

With this issue we close our thirty-eighth volume, or nineteenth year. Though but a brief period in the world's history, this is a long time in the life of a trade magazine. While brickmaking is one of the oldest as well as the most important industries, it was non-progressive until about the time that The Clay-Worker appeared upon the scene. During the past twenty years the clay industry has made more progress than in all its previous history.

* * *

We do not mean to intimate by this that The Clay-Worker is entitled to credit for all the improvements introduced during these years, but it has done its part and been an important factor in the great work, for it has been a vehicle through which the progressive and enterprising workers have been able to record their achievements and exchange experiences. It is this interchange of ideas, more than anything else, which makes progress possible in all industrial effort. So we feel that The Clay-Worker is performing its mission and deserves well the generous support accorded it by representative clayworkers.

* * *

The annual index which accompanies this issue, itself evidences the thorough and efficient work done. Every branch of the clay business is studied carefully and the best thoughts of the brightest minds identified with the industry are laid before our readers from month to month, and the complete volumes make a valuable library of up-to-date information that can be obtained in no other way. Appreciating this, some of our most successful manufacturers have the volumes bound in leather each year, and so preserve them in substantial form for reference purposes. It is an example that many others might follow with much benefit. It may be remarked in this connection that The Clay-Worker is the only clay journal that issues an annual index.

THE OLD YEAR.

There is only one fault to be found with the year just passing—it has been too short. A short year is always a good year, for only good things pass quickly. To clayworkers generally the old year has been most properous. The manufacturer who has not had more than he could do comfortably the whole year through is an exception. Every indication points to a continuance of the happy conditions which make 1902 a pleasant memory. We can hardly hope 1903 will be a better year, but it is well for our readers to prepare for such an emergency by thoroughly overhauling their plants and installing the best and most improved appliances. For further particulars in this connection see our ad. pages.

CHRISTMAS GREETINGS.

When old Santa Claus and General Prosperity join hands there is something doing. The two have been in close touch for several successive seasons, and now they are traveling together, literally, hand in hand, and our stockings must be long and strong to hold all the good things which Santa, with the General's assistance, will bring from the year's harvest, which is unprecedented. We know of men who will take canceled mortgages from their Christmas stockings, and other friends we know who will kindle fires with canceled notes as they empty this modern cornucopia. We can remember times when Santa's visit was looked forward to with fear and dread by the pater familias, but now that dear, old, fat Santa comes leaning on the strong arm of the General, he is welcomed with open arms and joyous hearts by young and old alike. Many a man whose few remaining locks are as gray as Santa's will this yuletide renew his youth, be a boy again and celebrate the joyous Christmas time with unfeigned pleasure. So we hope it will be in the household of every reader of The Clay-Worker, to each of whom we extend the greeting of a Merry Christmas and a Happy New Year.

PROOF OF THE DURABILITY OF PAVING BRICK.

A good example of the durability of vitrified paving brick is to be found in the pavement on South Meridian street, one of the busiest wholesale thoroughfares of Indianapolis, where trenches have been dug within the last month for the laying of pipes for a new heating system. This pavement has been down for eight years and subject to very heavy traffic, yet the brick, which were furnished by the Wabash Clay Company, Veedersburg, Ind., when taken up showed a wear of from one-fourth to three-eighths of an inch only, with an occasional brick showing one-half-inch wear. This is a good, practical test of the Wabash brick, and the result should be very gratifying to the company and to the city as well.

THE NATIONAL CONVENTION.

The N. B. M. A. has been fortunate always in the selection of its meeting places, and never more so than this year. Boston is attractive to all classes for many reasons. Its historical interest is second to no other city in our country. As a municipality, it is unique in a number of ways. It has good sanitary laws and they are enforced to the letter. In the latter respect it affords an object lesson that nearly all of our larger cities might emulate to their decided advantage. Boston is the governmental head of one of our most civilized and best organized communities: The State of Massachusetts probably does more things well than any other State in the Union. As a Commonwealth she has stood at the head of every prominent organic social movement that has in any great way effected our well being. Politically, technically, scientifically and artistically, in short, in all things educational, Massachusetts stands pre-eminent. Beginning with the famous tea party, Boston has always stood in the forefront of every important movement looking toward the elevation of American citizenship. It is a good place for men prominent in their local affairs, as members of the N. B. M. A. usually are, to visit, for there is that in the atmosphere of Boston which breathes of purity and virility, both politically and socially. On previous pages our readers will find some interesting information about Old Boston. In our next number we will tell of New Boston and what may be seen there of particular interest to clayworkers.

THE ELIMINATION OF HAND LABOR IN BRICKMAKING.

Mr. J. Parker B. Fiske's paper under the above caption will, we are sure, prove intensely interesting to all our readers, for he tells of a new and entirely novel method of handling brick in bulk from machine to dryer, dryer to kiln and kiln to car by mechanical means. His method, which is now in successful operation at their new plant, erected during the past season, is entirely different from anything that has heretofore been undertaken, and demonstrates that it is possible to handle the brick in bulk mechanically, instead of by hand, a brick at a time, as has been done heretofore. This doing away with hand labor is a very important matter to every brickmaker, and to brick users as well, for if by this process brick can be made cheaper the consumer will be benefited equally with the manufacturer. This will mean the more general use of brick as a structural material. Builders will cease to build inflammable frame structures that must be painted every year or two to prevent decay, if they can build of brick as cheaply as with wood. Hence it is to be devoutly hoped that Mr. Fiske's process may prove entirely successful, as, indeed, it seems to be. To appreciate fully all that Mr. Fiske has done one must visit the plant and witness all the different operations, the like of which has never before been seen in connection with the manufacture of brick. Those who attend the national convention will be afforded an opportunity of thoroughly inspecting the plant. We are indebted to the Ceramic Society for the use of the matter and illustrations for this most interesting article.

The Silent Partner No Longer Silent.

Dear Mr. Randall:

Your report of the Cleveland convention and announcement of the Boston meeting duly received. I am very well pleased with the selection of Boston, but would have preferred going there in warmer weather and south in the winter, especially as I notice there is a dearth of coal in Boston. We manage to get enough here to keep warm, but can only get one ton at a time. If nothing happens to prevent, I will be in Boston, as will my "silent partner." However, since she has been attending convention she is no longer silent at this time of the year. With best wishes, I am

Yours truly,

Wilkesbarre, Pa. GEORGE T. DICKOVER.

TRADE LITERATURE.

The Barney Brick Conveyor is the subject of a neat little folder, profusely illustrated, received from the Jeffrey Manufacturing Company, of Columbus, O. Brickmakers who wish to know something about handling the brick on the yard mechanically, instead of by hand, will find this folder very interesting. Ask for Circular No. 74 when writing for it.

The Kells Foundry and Machine Company, of Hudson, Mich., have out a new pocket catalogue, which illustrates and describes the "Kells" original brick and tile machine. The points of superiority of this machine are told tersely, and a line of cutting tables, disintegrators and elevators are also illustrated. It also contains a price list of the machines and renewable parts. A copy can be had for the asking.

"Opinions" is the title of a very pretty brochure received from the Leader Manufacturing Company, of Decatur, Ill. It contains a series of testimonials from brick and tile manufacturers who have used "Leader" machinery with both pleasure and profit. It has a double cover, the outer one being of parchment tissue. which gives it a very dainty appearance. Our readers are requested to mention The Clay-Worker when writing for a copy.

The "New South" Brickmaking Machinery, manufactured by J. C. Steele & Sons, of Statesville, N. C., is well illustrated in their new catalogue for 1903. Their line includes a series of auger machines, cutting tables, pug mills, represses, brick trucks, clay cars and other brickyard supplies, all of which are fully described. The catalogue also contains a large number of testimonial letters from satisfied users of "New South" machinery. Write for a copy, mentioning The Clay-Worker.

The C. W. Raymond Company, of Dayton, O., are sending out a very unique post card, on the back of which is pictured a tropic scene. The central figure is a large cauldron, beneath which is a roaring fire, the red flames being well portrayed. Near it sits a Hottentot, whose mouth is fairly watering in anticipation of the hot stuff in course of preparation. Near him is a bunch of tracts, a pair of boots and a clerical plug hat, and the inscription, "There is something good in the pot," and there is—but what it is we refuse to divulge. Our readers who want to know must write to Dayton for the novelty.

The Eastern Machinery Company, of New Haven, Conn., have out a new catalogue of their "New Haven No. 2" horizontal brick machine. The important features of this successful machine are given in detail, in connection with a series of outline sketches showing the manner of setting the machine. Another unusual feature is a statement of the attractions of New Haven, Conn., which is described as "the brightest, the cleanest, the most attractive city in New England." The reader is assured that a cordial welcome awaits him if he will stop off at New Haven at any time, particularly convention time.

The Forty-fourth Annual Catalogue of clayworking machinery, just issued by H. Brewer & Co., of Tecumseh, Mich., is an exceptionally attractive book. The cover is of a dark gray, rough-surfaced paper, and the title is embossed in bright red ink, which makes a pleasing and constrasty combination. Within the covers there is considerable good brick literature, including a treatise on auger brick and tile machinery, their construction and operation. Several pages are devoted to hollow building blocks and the manner of their use. The illustrations of their auger machines, of which there are a variety of styles, and their mold brick machine, cutting tables. etc., are unsually good, and the catalogue as a whole is one of the best of the season. They will be pleased to mail a copy to anyone desiring it.

Written for The Clay-Worker.

A SONG OF CHRISTMAS.

Sing a song of Christmas,
  Of the happy long ago,
When the bricks were under cover,
  And the world was white with snow;
When with joy we hailed the morning,
  And the day was filled with joy
And a blessed satisfaction
  To each mother's blessed boy.

Sing a song of Christmas,
  Of the merry long ago,
When the music of the morning
  Caught our spirits in a glow;
And there was no joy nor sorrow,
  Care nor pain, but all delight
From the earliest hour of morning
  To the joyous Christmas night.

Sing a song of Christmas,
  Of the merry long ago,
For the Christmas times no longer
  Are the times we used to know.
They have lost the sweet completeness
  And the tender grace has fled.
And we barely catch its echo
  In the memory of our dead.

Sing a song of Christmas,
  Of the happy long ago,
For the strains of bitter weeping
  Drown the songs we used to know;
And the joys that had no limit
  All too soon have come to cease,
And the song of hope is changed
  To a prayer for rest and peace.

Sing a song of Christmas,
  Of the blessed long ago,
For our bricks are under cover
  And our hair is white as snow;
And we're waiting for the morning
  When all sorrowing shall cease,
And we'll sing a song of Christmas
  In the realm of light and peace.

—B. J. DUNN.

Written for The Clay-Worker.

GOD'S OWN.

B. J. D.

At Christmas time, great Baer he spread a feast
  And had for guests the nabobs of the land;
  His board with splendor shone; his lavish hand
Outstripped the fabled stories of the East.

And thus he prayed before the feast began:
  "I thank thee, God, that thou has seen in me
  A man well fit to aid and honor thee.
Dispenser of thy goods am I; no man
Has ever found such favor in thy sight."
  And then like pampered swine they fed.
  Next morning at his door a man lay dead—
Bleak want had claimed a victim in the night.

At Christmas time within an humble cot
  Poor John he spread his mean and scanty meal,
  And drew the friendless in and made them feel
That warmth and sunshine still made light their lot.

And thus prayed he, this humble man of toil:
  "Oh, God, how good thou art; how sinful I.
  How hast thou followed me with loving eye
Through cares that deaden and through slips that soil.
I thank thee, God, for this, thy bounty spread,
  That night three saints—three spirits pure and clear—
Went up to God, and John was at their head.
  And for these friends who share with me its cheer."

TABLE OF CONTENTS.

Boston—Old and New........ 517
The Modern Clayworker..... 520
Light and Heat.............. 523
What Is an Economical Burn 524
With the Illinois Clayworkers 525
Brick and Bricklaying....... 528
The Key to Business Progress 529
Obituary—Charles A. Freeman 530
Down in Maine............... 531
Dryer Stacks 531
Foreign Scrapings 532
Clay Dust 534
The Elimination of Hand Labor in Brickmaking..... 535
Annual Convention of the United States Potters' Association 543
The superiority of the American Mechanic 547
By the Light of the Kiln Fire 548
Morehead Return Trap....... 549
Official Announcement 551
Convention of Canadian Clayworkers 553
Convention Dates 552

CORRESPONDENCE:

Brickmaking in Arkansas... 522
Prosperity in Montana....... 528
With the Milwaukee Brickmakers 547
In the Brickyards of Philadelphia 550
Fire Brick Plant Wanted....551a
A Small but Successful Plant 551a
The Hudson River Attractions 551a
A Cry for Justice............551a
Buffalo Brick and Building News 551b
Wants to Know More About Continuous Kilns 551c
Detroit Brick and Building Notes 551c
St. Louis Brick and Building News 551c
Pittsburg and Western Pennsylvania Clay Industries... 552
Western Ohio Notes.......... 553
Pacific Coast News.......... 560
Pottery News 562
The "Silent Partner" No Longer Silent 555
The Chicago Situation....... 558

EDITORIAL:

Clay-Worker Epoch, A....... 553
Current Comment 554
The Old Year.................. 554
Christmas Greetings 554
Proof of the Durability of Paving Brick 554
The Elimination of Hand Labor in Brickmaking...... 555
Trade Literature 555
The National Convention City 555
Editorial Notes and Clippings 564

MISCELLANY:

Old Things Made New—Maybe 523
A Good Story, or Maybe a "Dream" 543
Not What—But the Way It's Cost of Accidents—Their Prevention 546
Told 549
Bad Fire at Stockton......... 552

Index to Advertisements on Front Inside Cover Page.

WANTED, FOR SALE, ETC.

FOR SALE.

After less than six months' use, 15,000 feet of 1-inch wrought iron pipe; lot of valves and fittings; one Bundy steam trap; one receiving tank; 7,000 feet of 12-pound steel rail; 335 double-deck dryer cars; 3 wrought body transfer cars.

CHAMBERS BROS & CO.,
52nd & Media Sts., Philadelphia, Pa.
12 1 1

WANTED—Situation as superintendent of brick plant or as burner; 15 years experience. Will be ready to accept any suitable position by the 15th of March. Address
12 2 c J. G. B., care Clay-Worker.

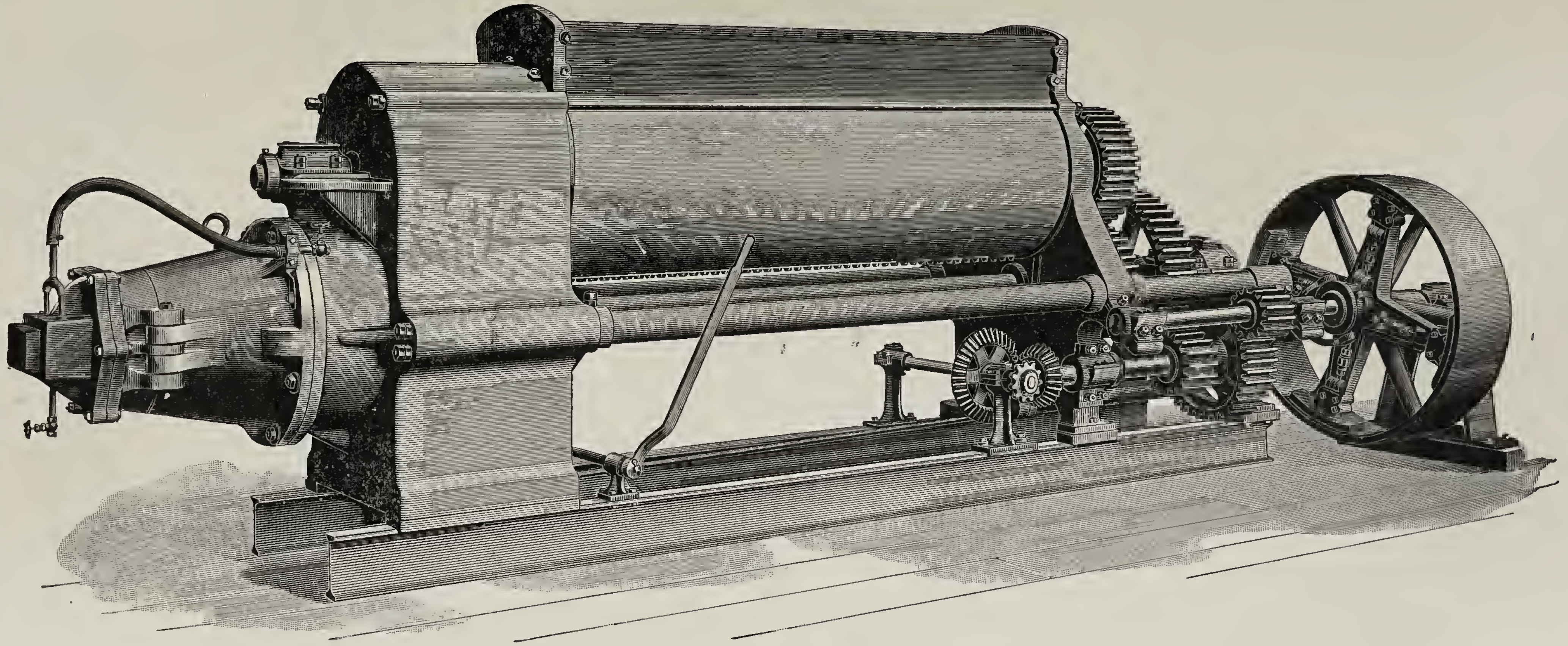
WANTED—Good steady position as burner in a press brick or roofing tile plant by an experienced man, who has visited a good brickmaking school in Germany. Good references. Continuous kiln preferred. Address
C. R. F.,
12 2 p m Care Clay-Worker.

WANTED—Position as superintendent of brick factory, dry press or plastic process, by energetic young man of twenty-eight, having mechanical engineering education and seven years' practical brickyard experience. Construction work a specialty. Address
CONSTRUCTOR,
12 1 c m Care Clay-Worker.

For Sale, Wanted, Etc., Ads. Continued on Pages 568, 569 and 570.

THE HEAVY
BRICK MACHINERY

Is made by Raymond. ✠ *It is not as Cheap as some others, but it lasts.* ✠ *It has Staying Qualities.* ✠ *You Avoid Expensive Break Downs, and Incidentally Break ups by using it.* ✠ ✠ ✠ ✠ ✠



WE DON'T MAKE all the Brick Machinery sold in the U. S., but those who use it say it is the best. We have every reason to believe this is true because that is just what we try to make. We can attribute the unprecedented demand for our machinery to no other reason than the fact that it is strong and heavy and satisfies the trade. Users of our machinery are our friends because they get good value for their money.

The C. W. Raymond Co.
DAYTON, OHIO, U. S. A.

NEW YORK OFFICE: 39 and 41 Cortlandt Street.

Written for The Clay-Worker.

THE CHICAGO SITUATION.

A Record-Breaking Year.

THIS IS DECEMBER IN CHICAGO, likewise—strange as it may seem—in New York and London, and every other spot on the globe, with the possible exception of Venezuela, where it is rumored that the calendar has been turned backward in order that the "Peace—Goodwill" idea may not interfere with the present epidemic of blockades and revolutions. As the month ends most of the brick and material dealers in the city will close up their business for the year 1902, which will then pass into industrial history as a record-breaker.

Activity in the building world during 1900 took a wonderful start and increased toward the close of the year—natural falling off due to cold weather being allowed for. The rate of building in 1901 and the consequent business among material manufacturers and dealers was considered phenomenal, but even the records of 1901, splendid as they are, fall, according to prominent Chicago dealers, before those of the year just closing. Actual figures have not yet been compiled for the closing year, but the general summing up of the situation is this: Factories, large and small, warehouses, depots, apartment buildings of every description, from the most elaborate to the smallest and plainest, business blocks and residences, all in great numbers, have been erected in the past twelvemonth, and the trade is looking forward to continued if not increased activity in the new year of 1903.

Labor troubles have not affected building in Chicago this year to any appreciable extent. Early in the year the high price of, or in some cases the almost utter impossibility of, securing constructive steel threatened to hold back building generally throughout the West, and greatly to impair what promised, and has finally proved, to be an exceedingly prosperous year. The freight handlers' strike in July also threatened to spoil things, and did just at the time offer something of a hindrance to progress of building. These impediments were, however, slight, and did not influence at all the "good business" feeling and general confidence or affect the demand for building material. New plans on a large scale continued to be figured and bid on, and work on large enterprises for which contracts were closed early in the year has either been completed or is rapidly nearing completion.

A few of the many big jobs which Chicago brick dealers have handled during the year are the Battle Creek Sanitarium, the Tribune building, the huge depot for the Chicago, Rock Island & Pacific and Lake Shore railroads, the National Biscuit building, the Tyller & Hippach warehouse, and the United States Express Company's new quarters at Congress and Desplaines streets.

Many other pieces of work, and big ones, too, have been handled during the year by such firms as the Chicago Hydraulic, S. S. Kimball & Co., the American Terra Cotta Company, the Northwestern Terra Cotta Company, and Dee & Co. The growing popularity of brick as a building material is evidenced by Myron Church, a prominent Chicago architect, who says that in dwellings and other small buildings brick is coming more and more to take the place of frame and plaster for inner walls.

Large Buildings and What They Represent.

The Tribune building and the great station being erected for the Chicago, Rock Island & Pacific and Lake Shore & Michigan Southern railroads are worthy of special mention. The Tribune building, with its immaculate finish, both within and without, is a veritable temple of journalism. The white enameled brick and the Kittanning impervious face brick, made in Kittanning, Pa., supplied by the Thomas Moulding Company, of this city, who are also supplying the brick for the new enameled brick front to be placed on the First National Bank building in Chicago. Some idea of the magnitude of the Tribune job may be gained from the following figures compiled before it was fully decided to add four additional stories to the twelve already built. The amount of material used seems almost incredible. Into the supports and framework of the great structure have gone 8,791,580 pounds of steel. To clothe the giant skeleton 4,000,000 bricks and 3,400 cubic feet of stone were needed. Fifty-eight thousand linear feet of great piping were found necessary to supply water, gas and heat. Twelve thousand seven hundred and fifty square feet of roofing material were needed to protect the tenants of the building from Chicago's inclement weather. The interior finish required the use of 75,000 square yards of plaster. And figures for such incidentals as doors, plate-glass for windows, rubber matting for floors, and so forth, are on the same large scale.

Even these figures, however, will seem small when compared with those representing the amount of material to be used in covering the enormous steel framework of the great Lake Shore passenger depot, covering the area bounded by Sherman and LaSalle streets. The brick used in this structure will also be furnished by the Thomas Moulding Company.

Charles Bonner & Co. furnished or are furnishing the brick used in the following buildings: The National Biscuit Company's new building between Morgan and Waller streets, on Washington boulevard, No. 6 colonial vitrified; Tyller & Hyppach's warehouse, 500 feet frontage and six stories, Nos. 6 and 7 colonial vitrified, and the DuPont building, Twenty-second and Halsted streets, sand mold bricks; also the Frederick Goetz building, and several smaller jobs.

No Raise in Price of Brick.

Prices on brick during the past year have remained about stationary, instead of rising, as they were generally expected to do, common building brick selling for $6 delivered. The phenomenal demand for clay product seemed strangely enough to have little or no effect upon market prices during the busy season, and this in spite of the fact that prices on almost everything else were being boosted right along. In this connection a good story is told of a German butcher. One of his customers, entering the market one evening, remarked with a groan as he paid his bill: "This is worse than hard times."

"Not so bad yet," replied the marketman absently, "I vas builting me vun goot brick house already."

Similar low prices are not expected to prevail next year, however. Even December trade thus far has been unusually brisk and local dealers stand united in saying that they look forward to a most prosperous year in 1903. The one great complaint of the dealers during the past year has been that they have been unable to fill orders anywhere near as fast as they came in. The demand for clay product material has been out of proportion to the amount which brick manufacturers in all parts of the country have been able to turn out. The strange thing is that this has not materially affected prices before this. That it must in the immediate future—probably with the beginning of the new year—is considered certain.

The new University of Chicago buildings are rapidly nearing completion. All of these except the completed Press building are of stone. The Press building, which contains the university's editorial and press rooms, law libraries and lecture rooms and book store, is a four-story building built, except for the foundation, of vitrified brick. In the other buildings the inner walls, as in all the other university buildings, are of red pressed brick. Hitchcock hall, than which there is probably not another dormitory in the world more elaborate in architecture and finish within and without, was completed and ready for residence by the first of October. The Commons hall, the Clubhouse, University Tower, from which will ring the 'Varsity chimes, and the Mandel assembly hall are now ready for the tile roofing, which is supplied by the Akron Tile and Roofing Company, Akron, O., and furnished by George B. Engle of Chicago. The same tile has been used on all the other university buildings, with the exception of the Press building, which is a flat-roofed affair, and the present School of Education building, which is only temporary in character and will be torn down or removed within two or three years (sooner, according to present plans), and will also be used upon the new structure now being erected on the Midway for the School of Education.

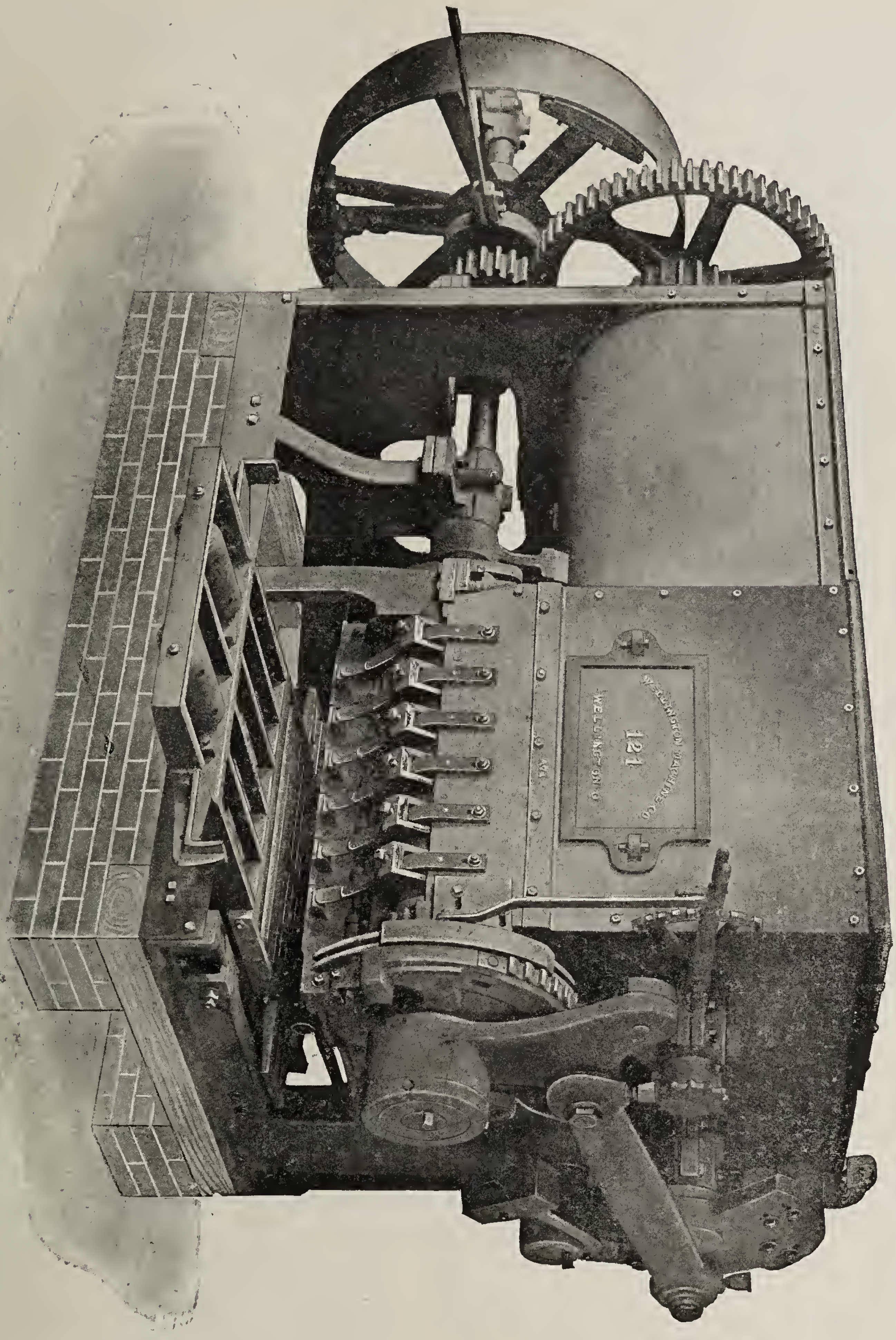
SCRIB.

The "Big No. 6" "Monarch" Brick Machine.

OVER
175
"Monarch"
Brick
Machines
in use.

OVER
500
"Quaker"
Machines
in use.

WRITE
to us
regarding
Disintegrators,
Pug Mills,
Mould
Sanders,
Sand Dryers,
Smooth-roll
Crushers,
Moulds,
Barrows,
Trucks,
Winding
Drums,
Dump Carts,
Elevators,
Dump Tables
and all
kinds of
Kiln
Castings.



REMEMBER:
You are losing money wheeling brick unless you have our
ROLLER-BEARING BARROWS.

The Wellington Machine Co.,

WELLINGTON,
OHIO.

Send for Catalogue.

Written for The Clay-Worker.

PACIFIC COAST NEWS.

The IMMENSE INCREASE in building which has been noted throughout the Pacific coast during the past year is now having its natural effect upon the brick trade. From all parts of the coast comes news of various important brick plants which are about to be installed. A goodly number of these will be fitted for the manufacturing of terra cotta, pressed brick and other high-class clay products for building.

James H. Flood, who is erecting a fine twelve-story building of stone, steel and brick on Market street, to cost over a million dollars, has awarded a contract to Gladding, McBean & Co. for the concrete and terra cotta work for $142,270.

The Stockton Brick and Terra Cotta Company, of Stockton, Cal., is said to be considering the question of locating a branch of the works at Lodi, about twenty or twenty-five miles from Stockton.

A new company is soon to be formed for the purpose of engaging in the manufacture of brick on a large scale at Santa Barbara, Cal. The market there is growing beyond the present supply and it is proposed to meet it. During the present year there were 2,000,000 brick made there and nearly as many more shipped in. The new company will invest between $15,000 and $20,000 in the plant. The latest machinery will be used and all kinds of brick will be manufactured. The company is being organized by H. S. Garland and others.

Development on the clay deposits of the Los Angeles Pressed Brick Company, on the San Joaquin grant, below Rincon, Southern Califorina, is progressing rapidly. The largest output to date is thirty tons a day. It is expected that this amount will be greatly exceeded by later developments.

The C. W. Raymond Company, of Seattle, Wash., manufacturers of vitrified paving brick, contemplates the erection of a plant at Oakland, Cal., if the soil in that vicinity should prove satisfactory for that purpose and sufficient inducement is received. J. E. Ballou, a member of the firm, stated in a communication to a member of the Oakland Council that he expected to go to Oakland in January to investigate everything pertaining to the successful operation of such a plant.

Architects at Salt Lake, Utah, declare that it is unnecessary to send East for enameled or vitrified brick, as the clays required for that class of brick all exist in the vicinity of Salt Lake. For $10,000, it is said, an excellent plant, suitable for the manufacture of this class of brick can be erected near Salt Lake. Enameled brick that cost $110 per thousand laid down at Salt Lake could then be turned out there for $60 per thousand. A quantity of clay suited for paving brick was sent to Dayton, O., a short time ago, and the returned manufactured article was extremely hard. It is claimed by local contractors that there is clay near Salt Lake suitable for terra cotta work, and that the reason it has not been made use of before is that none of the experimenters knew how to handle it.

Noel Duncan, who has been in the employ of the Tesla Coal Company, at Carnegie, in the San Joaquin valley, has been in Sonoma county the last few weeks, seeking a location for a brickyard for that company.

The plant of the Stockton Brick and Terra Cotta Company, at Stockton, Cal., was almost completely destroyed by fire on the morning of November 17. The cause of the fire is generally supposed to be a crack in one of the kilns. The loss on the plant is estimated to be $20,000, with an insurance of $18,500. The plant will be rebuilt on the site of the old one as soon as the necessary arrangements can be made. This is the second heavy loss of the interests represented by the company within a few months. In July their briquette and cement factory, just west of Stockton, was totally destroyed by fire, entailing a loss of nearly $100,000. The briquette factory has been rebuilt and the manufacture of that fuel will commence again about the first of the year. The coal bunkers are in progress of construction.

James McLaughlin, a contractor and builder of Santa Rosa, N. M., is about ready to start a brickyard at Tucucari. He has the contract for the new brick building for the First National Bank.

The sewer pipe works at Terracotta, north of Elsinore, Cal., have been sold to E. G. Durant & Son and Mr. Green. Preparations are being made to begin the manufacture of roof tile, building blocks and brick by the end of the month. The works have been idle for several years past, and members of the company have left for the East to purchase modern machinery and appliances. Many carloads of Elsinore clay are shipped every week for manufacture to Los Angeles and other places, the clay being of exceptionally fine quality.

According to statistics furnished by J. A. Ferguson, commissioner of the Bureau of Arigculture, Labor and Industry of Montana, the manufacture of brick of various kinds, and of kindred clay products as well, is yearly on the increase, the showing for 1901 being particularly interesting. During the last year the total value of clay products amounted to $454,560, as compared with $319,065 for 1900, showing an increase of $13,495 for the year. Mr. Ferguson has the following figures for 1901, to be incorporated in the next report of his department: Production of common brick, 42,553,500, valued at $283,237; front building brick, 582,000, valued at $9,025; alumina fire brick, 2,582,000, of the value of $110,368; silica fire brick, 235,000, worth $10,330; paving brick, 110,000, valued at $1,100; sewer pipe and drain tile, 10,000 feet, valued at $2,000; fire clay, both rough and ground, 4,310 tons, worth $17,482; other clay manufactures, including hollow building blocks, assay goods and crushed silica, to the value of $21,018. A further idea of the value of the business to the State is shown from the statement that there is now invested in it $342,480, while it paid in wages to labor during 1901 $212,369.

John Kaar is burning another large kiln of brick at his yard on East L street, Kern City. His son George is in charge of the work.

SUNSET.

San Francisco, Cal., Dec. 5.

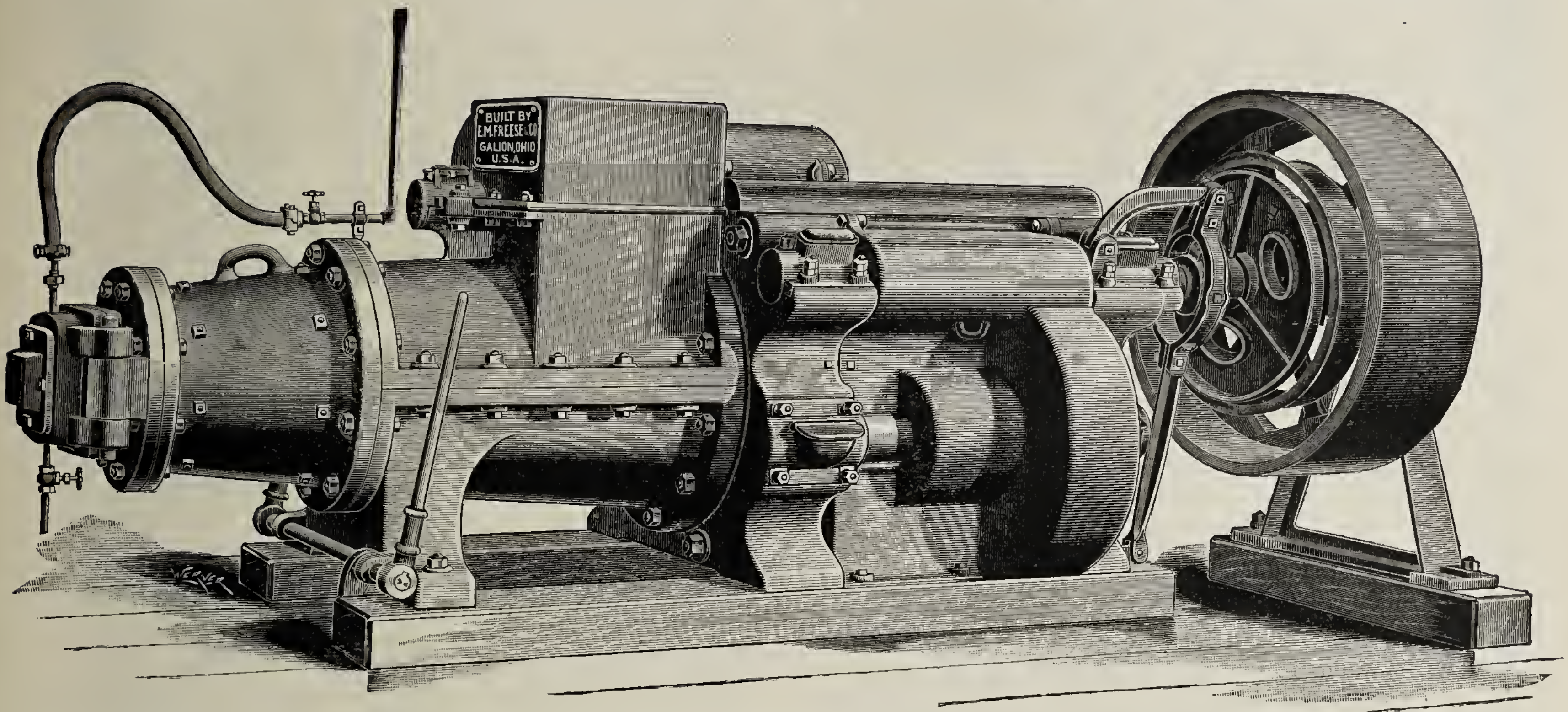
THE NUDE IN ART.

Artist—I'm going to call this picture "A Study."

Critic—I see! The lady is studying whether to take a warm bath or a cold one.

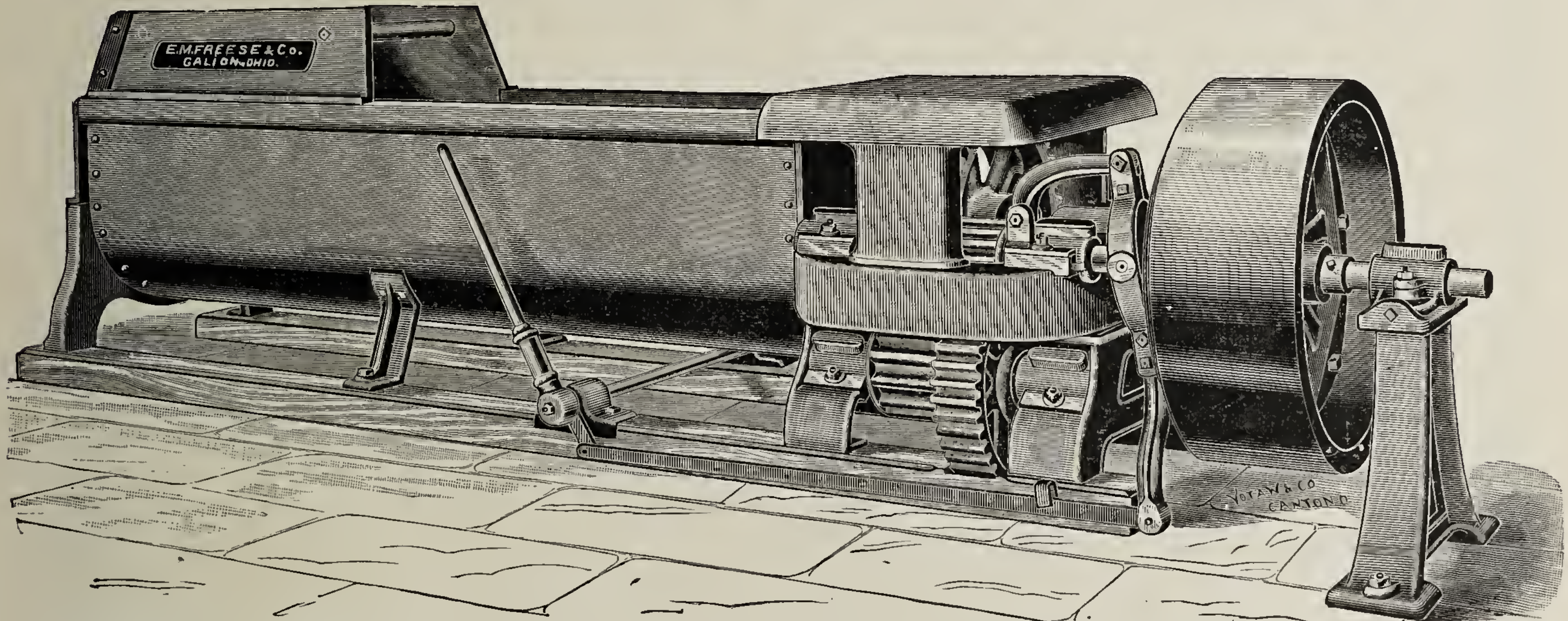
—Puck.

Our Mammoth Brick Machine



THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug-Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.
VOTAW & CO
CANTON O

THESE PUG-MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitted for making a fine quality of brick.

E. M. FREESE & CO., = = Galion, Ohio.

Mention The Clay-Worker.

See Ads. on Pages 596 and 597.

Written for The Clay-Worker.

POTTERY NEWS.

CAMERON, W. VA. is to have a pottery, but just what the name of the new concern will be has not, as yet, been decided upon. The plant will have a capacity of six kilns, and will employ from 150 to 200 men and women. The new pottery will have a main building 110x415 feet in size, and, in addition to this, there will be erected outbuildings for use as engine and boiler rooms. The plant will have its own power house and will be lighted by electricity from the same throughout. Whether or not six kilns will be erected as a starter has not been decided upon, but at least four of the complement will be erected at once and the other two may be added later on. The company has been incorporated under the laws of West Virginia, and the following officers have been elected: M. L. Bendemen, president; Alfred Hard, vice president; S. E. Strickline, secretary; A. E. Fox, treasurer. The capital stock of the new company will be $1,000,000. Mr. Strickline is at present manager of the Royal China Company, of East Liverpool.

The Mayer Pottery Company, of Beaver Falls, Pa., was shut down for a few days this month owing to an overstock of ware. The shut-down was for a few days only, however.

The Smith-Phillips China Company, of East Liverpool, is installing some new machinery, which will facilitate movements in their slip-house to quite an extent.

Coshocton, O., is to have a new pottery, which will go under the name of the Pope China Company. The company has been organized and will have a capital stock of $100,000, which will all be paid in. The new plant will have a capacity of four kilns to start with, which will, later on, however, be increased to six. The main buildings will be two stories in height and will be 100 feet wide and about 300 feet in length. The company will erect its plant at once and will build a thoroughly complete and up-to-date plant in every detail. Mr. Pope has for many years been connected with the Knowles, Taylor & Knowles Company, of East Liverpool, as manager of the decorating and engraving department of that concern.

The Maddock Pottery Company has been greatly hampered during the past few weeks by trouble with its workmen, which has been brewing for some weeks past. It is probable, however, that the matter will be satisfactorily arranged between the workmen and the firm, and, in fact, it has been partially or temporarily arranged already so that nothing serious will probably come from the disagreement.

The new works of the Dresden China Company, of Salineville, O., is almost completed and will very soon be ready for occupancy. All of the machinery has been installed with the exception of some of the lighter machinery which is for use in the clay shops. It is probable that the plant will be in complete operation by the first week in January.

It is reported that Mr. F. A. Sebring, president of the Sebring Pottery Company, of Sebring, O., has made the city of Minerva, O., an offer to erect a six-kiln plant in that city, providing that the city will make a loan of $50,000. If they can come to terms, it is an undisputed fact that the Sebring people will erect the plant at once. Mr. Sebring is president of two plants in Sebring, O. The Sebring Pottery Company and the Sebring China Company, controlling the stock of both these companies and being a heavy stockholder in the other two plants located in their city.

The Richmond Kaolin Company has been incorporated at Jersey City, N. J., to do business in that city with a capital stock of $200,000. The company will open kaolin mines in Florida, on lands which they own. The incorporators are L. B. Dailey, K. K. McLaren and E. W. Ditmar. The company will begin operations at once.

The Kaolin Mining and Manufacturing Company, of Jersey City, N. J., has also been incorporated with a capital stock of $200,000. The incorporators of the new company are J. F. O'Brien, Elijah Caldwell and George Sourbridge. The company's charter gives it the privilege of mining and manufacturing and also dealing in all kinds of clays and clay products.

The new works of the Meyers Clay Manufacturing Company, of Toronto, O., has just started up. The company's product will consist entirely of brick until spring, when the capacity will be devoted to the manufacture of pipe.

The new works of the Anderson Poreclain Company, of East Liverpool, are rapidly nearing completion, and already the new company has started to install the machinery for the manufacture of electrical wiring tubes, which will constitute their entire production for the present, although a dry pressed line will be added later. Two kilns are to be erected and one of these is ready to top out now, so that the company will not be delayed on account of its kilns not being ready for it when the works is completed.

Several of the plants controlled by the Trenton Potteries Company, of Trenton, N. J., were forced to shut down the last of the month for want of coal. Trenton has surely had her troubles in keeping her plants supplied with coal. It used to be a surprise when a plant was forced to close for a few days on account of lack of fuel, but now it is nothing for a plant to lie idle for a week at a time, as it seems utterly impossible to get coal at all times.

The Wheeling Potteries Company has been incorporated under the laws of the States of West Virginia and will take over the plants of the Wheeling Pottery Company, the Riverside Pottery Company and the Avon Faience Company. The capital stock of the new company is $1,250,000. The incorporators are C. W. Fransheim, W. J. Mays, G. K. Wheat, W. A. Isett, J. J. Holloway, W. F. Sitfell, W. A. Wilson, Joseph Speidel, William Kirback, H. E. Franzheim, George Wise and J. A. Miller. The plants that went into the combination were before virtually owned by the same concern, and thus the changing into one company practically makes no change in the ownership nor management.

The Parkersburg Pottery Company, of Parkersburg, W. Va., has been organized and will erect a two-kiln plant in that city for the production of stoneware at once. Those interested are H. B. Stout, W. S. Keever and J. J. Kane. The order for the machinery for the new works have already been placed, and it is expected by the new company to have the erection of the works started by January and to get the same in operation by March 1, 1903.

There is some talk of a new pottery being built at Wellsburg, W. Va. E. J. Owen, formerly connected with the East Liverpool Potteries Company, of East Liverpool, O., as secretary, is promoting the deal. It is thought, however, that this deal will hardly go through, but that Mr. Owen has associated himself with Mr. Sebring in the new pottery being promoted at Minerva, O. These are two men of exceptional business qualifications and a successful plant is assured should the gentlemen take hold of the affair.

The new works of the Crooksville China Company, of Crooksville, O., will start up in full December 1. The slip-house and clay departments of the Crooksville company have been in operation for the past two weeks, but the manufacturing department will not start up until the 1st, and the other departments will be thrown into operation as fast as the ware starts to come through. The plant has a capacity of five kilns and has been in process of construction since June, 1902.

The J. W. McCoy Pottery Company, of Roseville, O., are turning out a new art ware, which is known under the name of "Mont Pelee ware," and it looks it. The ware is made of a particularly fine white body, and the glaze is made of a sort of lava color and has an effect which does, indeed, look like what might come from Mont Pelee. On the whole, however, the ware is extremely artistic.

TOM POTTER.

East Liverpool.

FOR BOSTON

A complete service of fast and finely equipped trains for travel between the west and Boston over the

Lake Shore
& Michigan Southern Ry.

Especially adapted to this travel is the fast "New England Express No. 16," running from

Chicago to Boston in 26 Hours,

the well-known and favorite "Chicago and Boston Special No. 10," the famous "Lake Shore Limited No. 19," and "Fast Mail No. 32"

Good, fast service in connection with the Lake Shore from St. Louis, Indianapolis, Cincinnati, and, in fact, from all points in the west, southwest and south.

For particulars, sleeping car space, etc., address

C. F. Daly,
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A. J. Smith,
Gen. Pass. and Ticket Agt.
Cleveland, Ohio.

EDITORIAL NOTES AND CLIPPINGS.

Frank L. Suffern has decided to locate a brick plant at Houston, Tex.

Thomas Robinson will start a brick plant at Carthagena, O., in the spring.

Josiah Smith, of Utah, will engage in the brick business at Alberta, Canada.

Larimer & Davis are organizing a company at Ebensburg, Pa., for the manufacture of brick.

The plant of the Adrian (Mich.) Brick and Tile Machinery Company suffered a slight loss by fire recently.

W. H. Picklesimer writes that a vitrified paving brick plant will in all probability be located at Tellico Plains, Tenn.

C. B. Sykes is at the head of a concern at Galion, O., that will erect an immense shale brick plant at that place.

The Moore Brick Company's plant, at Whippany, N. J., was sold at public sale recently to Robert B. McEwan for $26,000.

Saulte Ste. Marie, Mich., is to have a $50,000 cement plant. W. S. Fillmore, Gaylord, Mich., is at the head of the enterprise.

Rumbaugh Bros.' brick plant, at North Irwin, Pa., was almost completely destroyed by fire December 9, causing a loss of $15,000.

John De Groot writes that he expects to erect a stiff-mud brick plant at Lockesburg, Ark., and will be in the market for machinery, etc.

Mayer Bros.' pottery, Beaver Falls, Pa., was damaged $3,000 by fire December 13, which started in the packing and decorating department.

C. McCracken is making a number of improvements in his tile factory at Hoytsville, O., with a view of increasing the capacity of same.

T. McDonnell and D. K. Rinehart, of Bluffton, Ind., have purchased land near Montpelier, on which they will erect a brick plant in the spring.

The Crescent Brick Company has been incorporated at Denver, Col., by S. M. Morrison, W. D. Hitchcock and R. Clark. Capital stock, $23,000.

B. L. Queisser, of the Ohio Press Brick Company, Zanesville, O., has been elected president of the Zanesville Board of Trade, recently organized.

The Enid Vitrified Brick Company, Guthrie, Okla., has been incorporated for twenty years by Edmund Frantz and G. M. Barney with $50,000 capital.

W. B. Mershon & Co., of Saginaw, Mich., the well-known manufacturers of wood pellets, have erected, at a cost of several thousand dollars, a club house where their employes can secure meals at nominal cost. The house is strictly modern and contains reception rooms, lunch rooms and other necessary apartments.

The Olive Hill (Ky.) Fire Brick Company has certified to an increase in its capital stock from $50,000 to $150,000.

One of the kiln roofs at the plant of Witter & Breisinger, at Bucyrus, caught fire from an over-heated kiln recently, causing a hundred-dollar loss.

Dinsmore Bros., brick manufacturers at Fayette City, Pa., contemplate the manufacture of hollow block, in addition to their common building and fire brick.

Templin & Co., Florence, Col., write for a sample copy of The Clay-Worker, as they expect to open a brick and flower pot factory at that place in the spring.

The plant of the Western Brick Company, at Hastings, Neb., was badly damaged by fire November 30. The loss is estimated at $1,200, partly covered by insurance.

The Schwarz System Brick Company, of New York City, has been incorporated with $100,000 capital. The directors are S. Ettinger Frank, F. L. Zabriskie, S. G. Meeker, of New York City.

The Albion Vitrified Brick Company has been organized at Albion, Ill., with $40,000 capital stock. Preparations are being made for the erection of a plant to be ready for operation in the spring.

J. H. Welch, manager of the Memphis (Tenn.) Stoneware Company, writes that they have just started their new plant. They start out with five kilns, but expect to add to these during the year.

Two of the employes of the Diamond Fire Brick Company, Canon City, Col., were caught in a clay tunnel behind a fifty-foot cave-in, and it took several hours for other workmen to dig them out.

N. McCreaty & Co. will erect a large plant for the manufacture of sewer pipe and brick at Ekeyville, a suburb of Toronto, O. They expect to have the plant ready for operation early in the spring.

A. L. Stewart and others, of Rushville, Ind., will erect a brick and tile factory at Rushville in the spring. Mr. Stewart advises us that they will be in the market for a complete outfit for a first-class plant.

The Ziegler Filter and Pottery Company has been incorporated at Toledo, O., with $10,000 capital. The incorporators are Charles G. Ziegler, E. H. Taggart, E. D. Serafford, F. C. Motter and Robert Baur.

The strike at the Mount Savage Fire Brick Company's plant, Cumberland, Md., after being on for over three months, has been settled, the company increasing the wages of the men from $1.17 to $1.25 per day.

The Reese-Hammond Fire Brick Company, Bolivar, Pa., gave their employes a pleasant surprise December 1 in the shape of 20 to 40 per cent. advance in wages. Never before in the history of the fire brick business has an advance been given at this season of the year, but it has been the established policy

[CONTINUED ON PAGE 566.]

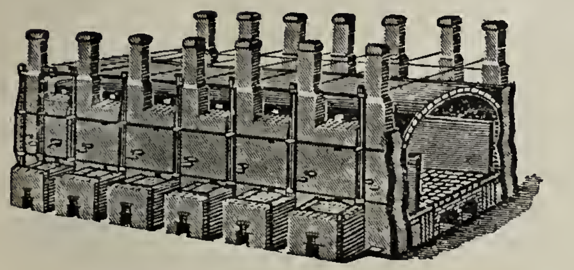
The Boss System of Brick Burning

requires no outside furnaces which are expensive to build and maintain; will burn slack and poor grades of fuel which can not be consumed with success in any other manner.

Send for . . .
Descriptive Catalogue.

JOHN C. BOSS, Elkhart, Indiana, U. S. A.

The Bushong Down Draft Kiln.



PATENTED JUNE 1896.

Streator, Ill., October 3, 1900.
M. M. BUSHONG, Esq.,
Phoenixville, Pa.

Dear Sir:—Answering yours of September the 27th, we have been using one of the Bushong Down Draft Kilns the past fifteen months and are well pleased with it. We get a larger percentage of No. 1 pavers with a little less fuel than any other kiln on the yard.

Yours truly,
THE BARR CLAY CO.,
Per C. C. Barr, Treas.

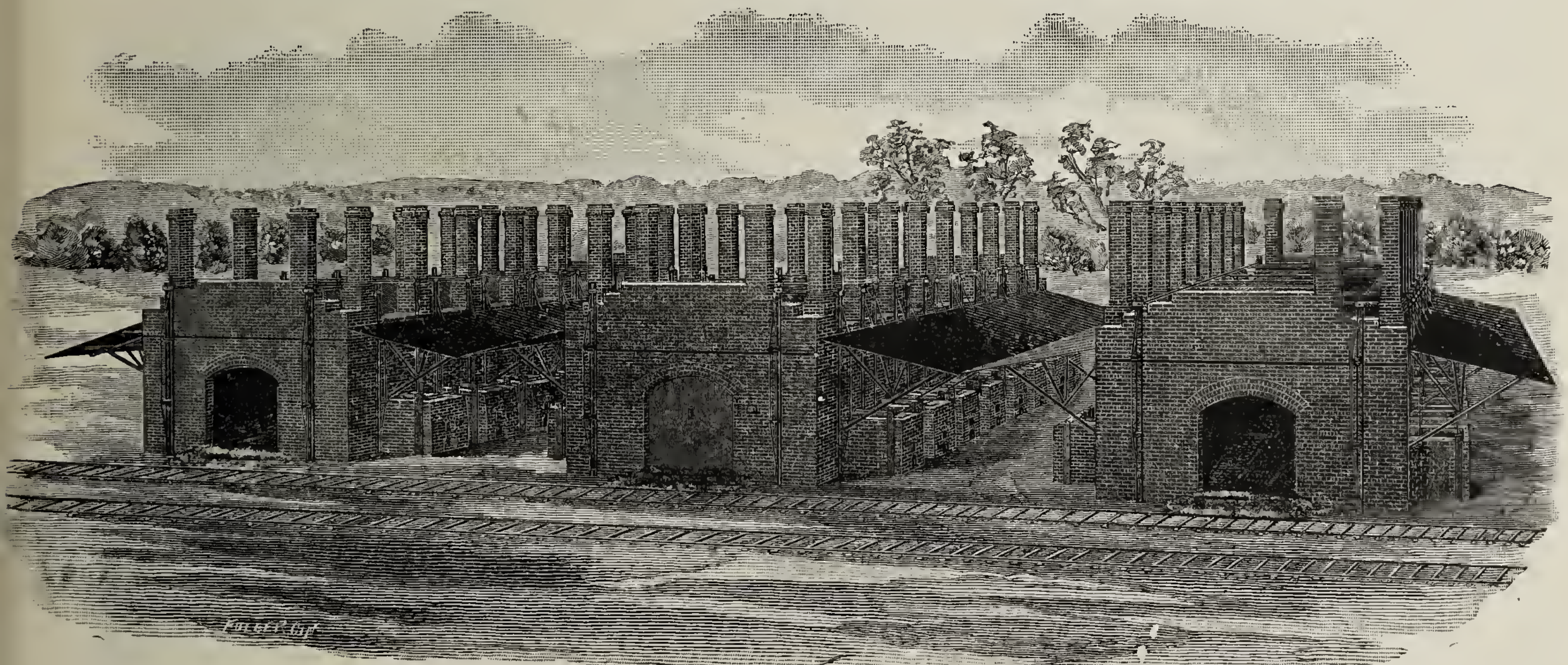
BURNS any kind of fuel.
USES less fuel than any other Kiln.
RESULTS are uniform.
NO damaged wares.
SAVES time and labor.

USED by some of the largest plants.
NO experiment.
IT'S success has been proven.
FULL control of drafts.
ONLY Kiln built that has Double Draft.
REDUCES burning time 24 to 48 hours.
MOST economical in construction.

M. M. BUSHONG, - Phoenixville, Pa.

The EUDALY DOWN DRAFT KILNS.

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM.



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant, Burns uniform and all hard. Economical in construction and operation.

The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

W. A. EUDALY, 509 Johnston Bldg. Cincinnati, Ohio.

EDITORIAL NOTES AND CLIPPINGS.—Continued.

of the Reese-Hammond people ever since they have been in business—more than thirty-five years—to give an advance in wages voluntarily whenever the business would justify.

Fire damaged the plant of the Baltimore (Md.) Terra Cotta Works November 21 to the extent of $20,000. Mr. D. M. Rittenhouse, the manager of the plant, says it is probable the burned portion will be rebuilt.

T. M. Hart, Gainesville, Tex., writes that he contemplates the establishment of a cement plant in that vicinity and would be pleased to receive catalogues of machinery and all necessary apparatus for such a plant.

The Cameron (W. Va.) Pottery Company has been chartered by M. L. Benedum, C. Y. Benedum, A. E. Fox, A. Howard, all of Cameron, and S. E. Stricklin, of East Liverpool, O. They have a capital stock of $100,000.

The Middletown (Pa.) Shale Brick Company has been chartered with a capital stock of $50,000. The incorporators are Simon C. Peters, Frank Nissley, Joseph H. Landis, H. O. Keener and Sarah R. Keener, all of Middletown.

W. F. Shay and Dr. F. S. Derr have a tract of land at Watsontown, Pa., on which there is a fine deposit of clay. Tests have been made that have been very satisfactory, and a plant will probably be erected to develop the clay.

In a recent letter, inclosing subscription, M. E. Ward advises us that he is building a 50,000 brick plant at Chanute, Kan. Mr. Ward says: "Do not want to let my subscription expire, as I cannot get along without The Clay-Worker."

William Alsip, the brick manufacturer of Winnipeg, Manitoba, has had a very successful year, having made and sold the last season about 4,000,000. He expects to increase the capacity of his plant to double that amount next year.

The plant of the Eufaula Brick Manufacturing Company, across the river from Eufaula, Ala., was destroyed by fire early in the morning, November 22. The origin of the fire is unknown. The loss is estimated at $10,000, with no insurance.

A. E. Matless, C. R. Joy and Charles Hood, of Keokuk, Ia., are at the head of a company organized under the name of the Buffalo (Kan.) Brick Company. Work on the plant will begin at once, and they expect to be in good running order by spring.

In a recent letter J. H. Horner, Canton, Ill., writes that he lost money the past season on account of poor facilities for drying his brick, and that he now contemplates putting in the rack and pallet system before the season opens up next year.

The Cronly Ceramic Company, Cronly, N. C., has been incorporated to manufacture ceramics, brick tile, terra cotta, etc., with $50,000 capital stock. The incorporators are William Gilchrist, G. H. Smith, of Wilmington; W. V. B. Van Dyck, and E. H. Ropalje.

J. Q. Dickinson, manager of the International Building Material Company, Norfolk, Va., writes that his company is going to manufacture cement and concrete products, and will be glad to receive catalogues from firms manufacturing the necessary machinery, etc.

A recent incorporation is that of the J. L. Evans Pressed Brick Company, of Addington, I. T., and Waureka, for twenty years, with $30,000 capital stock. The incorporators are John and Jennie Evans, C. W. Williams, of Addington, and M. W. Dimery, of Waureka.

Dr. Franz Meyer has opened an office as consulting metallurgical and chemical engineer at 68 Broad street, New York City. He was formerly manager of the Actien-Gesellschaft fuer Zink Industrie, vormals Wilhelm Grillo, in Oberhausen-Rhineland, Germany."

S. E. Dewey, Evarts, S. D., in sending in subscription to The Clay-Worker, states that he would be pleased to correspond with a responsible man with a small amount of capital to invest in a good brickyard where there is good clay and good facilities for manufacturing brick.

Barry, Ill., wants a brick plant. The Barry Adage is authority for the statement that they have good clay, suitable for both building and paving brick; that there is a good market for the product right at home, and all that is needed is the necessary enterprise to start a plant.

Gustav Isaacs, of New York City, will operate a large terra cotta factory at Perth Amboy, N. J. Some years ago Mr. Isaacs owned the plant of what is now the National Fireproofing Company, which he sold to Robert U. Lyle. The site he has recently purchased includes 250 acres of land and a large factory, which, although it is in running order, has not been operated for a number of years.

The works of the Renovo (Pa.) Fire Brick and Clay Company are undergoing some improvements. Additional kilns will be erected, and two miles of railroad is being built from the mines to the works. The capacity of the works will be doubled by adding grinding pans, crushers, etc.

The Bittner Brick Company is the name of a new concern which has just been organized at New Castle, Pa., by A. S. Good and E. B. Bittner, of New Castle; D. V. Murdock, of Fredericksburg, O., and F. J. Peffer, of Pittsburg. The capital stock is placed at $100,000.

That a good automatic cutter is in demand and appreciated by the trade is shown by the sales of the one manufactured by the C. W. Raymond Company, of Dayton, O., they having placed upwards of thirty during the season just closed. Their fall sales include one in Maine, two in New Jersey, four in Kansas and four west of the Rockies.

More kilns are to be added to the fire brick works of the West Branch Fire Brick Company, Renovo, Pa., thus adding largely to the capacity. The company has met with marked success in the sale of its product since starting the plant last June. The works are complete with the latest machinery for the rapid handling of its raw material.

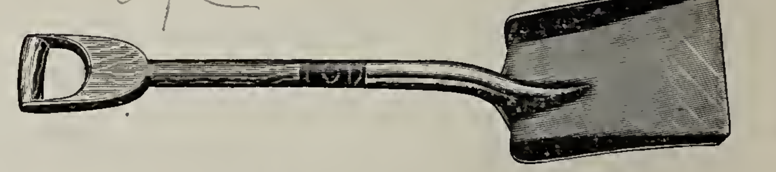
The American Brick Company, Berlin, Conn., one of the new concerns in that section, report a very busy season. In a recent letter they say: "We have finished our season's work with an output of 4,500,000 brick. This we consider good, as we commenced to erect our plant since March 1, 1902. We expect to make at least 7,000,000 brick next season."

Gladding, McBean & Co., San Francisco, Cal., are sending out notices to the trade of their removal to their new offices in the Rialto Building and new warehouse at 147 to 151 Munia street and 144 to 148 Natoma street, where they will be in a better position than ever to take care of their trade, and where they will also be pleased to receive visiting clayworkers.

J. W. Barney, formerly president of the Diamond Brick and Tile Company, Kansas City, Mo., advises us that he will from the first of the new year become associated with the St. Louis Hydraulic Press Brick Company, and will as a result move to St. Louis in the near future. We congratulate both Mr. Barney and the St. Louis Hydraulic Press Brick Company on the deal.

D. B. D. Smeltzer, of Iola, Kan., writes that he would like to correspond with parties looking for investment in a brick plant. The plant he offers for sale has an inexhaustible supply of shale, with a bountiful supply of natural gas, unlimited water supply, excellent railroad facilities and a good market. Parties interested are requested to address Mr. Smeltzer direct.

OK



Our Shovels Will Do the Work.

Made Extra Heavy if You Say.

Write to us for circulars and prices on our full line of Cleveland pattern, hollow back goods, which are warranted.

The Avery Stamping Co.,

CLEVELAND, OHIO.

The Latest Fountain Pen. Guaranteed by Makers. No Filler. No Lost Time. No Spoiled Fingers. Perfect. Simple.

REMARKABLE OFFER.

The Old Way.

We will send this famous gold pointed pen, post paid, and THE CLAY-WORKER for one year, to any address in the U. S. and Canada for...... $2.50

"POST" SELF FILLING CLEANING FOUNTAIN PEN.

Gen. Lew Wallace, the author of "Ben Hur," writes: "I have tried every kind in the market and unhesitatingly give the preference to the "Post."

ADDRESS THE CLAY-WORKER, INDIANAPOLIS, IND.

The New Way.

Pure Spirits Fermenti For Domestic and Medicinal Uses.

A stimulant administered promptly ofttimes saves life, hence pure whiskey, Spirits Fermenti, the doctors call it, should be kept in every household. To be perfectly sure that you are getting pure, unadulterated liquor, buy direct from the producer. By doing this you can also save a large per cent of the cost, which when purchased in the usual way goes to the druggist and dealer. The following illustration tells the story:

$16.00 Worth of Honest Whiskey for $9.00.

We make you the above special offer to secure your influence and add you to our list of regular patrons. However the offer only holds good till December 31st. Orders must be received prior to that date to be acceptable.

We picture above 20 bottles of our high class 8-year old Mountan Dew Whiskey worth 80 cents a quart, or $16.00 for the full lot. If you want to profit by this offer send your order at once. It will not be accepted after the date named. **We Guarantee** the whiskey to be pure and good just as stated. To avoid comment, all goods shipped in plain boxes iron strapped and sealed.

OUR RESPONSIBILITY: We are incorporated under the North Carolina State Law, with a capital of $100,000.00, and refer by special permission to The People's National Bank of Winston, Salem, and the Piedmont Savings Bank, the **LARGEST CAPITALIZED SAVINGS BANK** in our city. Address your letter plainly to

"Mountain Dew" possesses that rare quality of oily smoothness found only in whiskey of the highest type. It is a liquid joy.

1009

THIS COUPON GOOD FOR
SEVEN DOLLARS
on 20 quarts of "Mountain Dew" Whiskey at 80c. per bottle when cut out and returned to The Caspar Co., Winston-Salem, N. C., accompanied by $9 in cash, stamps, money order or check.

THE CASPAR CO., (Inc.)
WINSTON-SALEM, N. C.
Offices and Warehouses:
Nos. 1045, 1047 Liberty, 1, 3 and 5 Maple Streets.
Largest Mail Order Whiskey House in South.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than $1.00.

FOR SALE—Brick yard, with kilns, shed, racks, machinery, etc. Plenty of clay.

C. HOPE,
12 1 cm St. Michaels, Md.

WANTED—800 yards of light-weight track rails. State weight per yard; also price.

A. C. OCHS,
12 3 I Springfield, Minn.

WANTED—A practical stoneware man, familiar with glazing and burning, capable of taking charge of factory. Address

PARKERSBURG POTTERY CO.,
12 1 cm Parkersburg, W. Va.

WANTED—The agency for the sale of buff and gray brick for Cincinnati and vicinity for coming season. Address

B. T. HARDING,
12 1 d Builders' Exchange, Cincinnati.

FOR SALE.

Half mile second-hand, 12-lb. railroad iron, with turn tables, etc.

SALISBURY BRICK COMPANY,
12 1 cm Salisbury, Md.

FOR SALE CHEAP.

One E. M. Freese & Co. "A" special brick machine. Also one iron pug mill for same. Address

"B.,"
12 2 d Care Clay-Worker.

WANTED—Sober, industrious man as superintendent of paving brick works with capacity of 40,000 per day. Address, with references and past experience,

R. W. J.,
12 1 d Care Clay-Worker.

WANTED.

A practical superintendent wants a permanent position with a first-class company. Thorough knowledge of all grades of brick. References. Address

"F.,"
Care Clay-Worker.

FOR SALE—Modern brick plant, new machinery, railroad facilities good, good market. Reason for selling, some interested are dissatisfied. Correspondence solicited, and we guarantee this to be a bargain. Address

C. E. N.,
12 1 d Care Clay-Worker.

WANTED—An experienced tilemaker. One who has a practical knowledge of the business and desires a permanent situation. The right man can secure an interest in the business. Address

H. E. B.,
12 1 t r Care Clay-Worker.

FOR SALE.

We have an Eagle double repress, new, made by the American Clayworking Machinery Co., which we will sell cheap. Good as when it left the shop, but we have no use for it. Address

ROSSLYN BRICK CO.,
12 3 c Carnegie, Pa.

A RARE CHANCE.

A vitrified brick and tile plant for sale cheap and on very easy terms, or will trade for other property, or will form copartnership with a good, practical brick man with small capital. Inquire of

SANDERSON & WILSON H. & F. CO.,
12 2 cm Rich Hill, Mo.

WANTED—A situation, an Eastern location preferred, by an experienced superintendent who is now engaged in that capacity, but desires to change his location. Familiar with the soft-mud, stiff-clay and dry-press processes; also with the manufacture of hollow block, and capable of planning and erecting plants. Understands the management of men. A permanent situation in a desirable location the main object. Address

A STEADY MAN,
12 1 t r Care Clay-Worker.

See additional ads. under Table of Contents.

WANTED—A good brick burner, to burn in common up-draft kilns, with wood. State experience and salary expected.

TERPENING BRICK & TILE CO.,
12 2 c Prairie Grove, Ark.

WANTED—Position as salesman for brickyard supply house. Can erect and lay out plants. Best of references. Address

B. C. Z.,
12 1 d Care Clay-Worker.

WANTED—Situation as superintendent of brick plant, a man who has a thorough knowledge of burning paving, building and fire brick; also a machinist by trade and good organizer of men; of successful experience and strictly temperate. Address

FAUL,
12 1 c Care Clay-Worker.

WANTED—An experienced machine man; that is, a man thoroughly capable of taking charge of the manufacturing end of a stiff mud and brick plant, keeping same in good working order. The right man can secure a permanent situation and good salary. Address

HIGH CLASS,
12 1 d Care Clay-Worker.

WANTED—A young man, who comes from a family of brickmakers, is looking for a desirable location for the starting of a brick plant. Might buy an old plant if price and terms could be made to suit. Understands every detail of the business. Will be pleased to correspond with interested parties. Address

AMBITIOUS,
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WANTED.

One steam-shovel engineer.
Two kiln-burners.
Six all-around men for brick factory.

Steady work all the year around and good wages for experienced, temperate and reliable men. Write full particulars as to experience, age, etc.

THE FISKE BRICK CO.,
12 1 d Dover Point, N. H.

WANTED.

Leading man in plant manufacturing stiff mud, end cut building brick. Must be sober, energetic and capable of intelligently directing the care of automatic cut-off engines. Chambers Brothers' Co.'s brick machines and steam dryers. Man of family preferred. Steady employment. Address

WILLIAM H. COLLINS,
12 1 c 141-145 Water St., Norfolk, Va.

FOR SALE—A dry-pressed brick plant, with a three-mold Boyd press, Bonnet dry pan, Mansfield forty-horse-power engine, eighty-horse-power boiler, six round down-draft kilns, ten acres best shale (average 50 ft.), four feet gray limestone, four feet good coal, eight feet fire clay, pug mill and molds for making all standard shapes of hand-mold fire brick; dry floor (heated with exhaust steam), 150x40 ft. Situated two and a half miles from square of thriving town of 40,000 inhabitants in Ohio. Excellent railroad facilities, private switch. Have run this plant for seven years and never needed to advertise or a salesman. Good price for product. For full description, etc., address

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FOR SALE!

A Paying Brick Plant in One of the Best Towns in Mississippi.

The Right Place for the Right Man.

On account of the ill-health of the owner, a brick plant in a prosperous Mississippi town is offered for sale. The property includes a well-equipped plant with two 80 h. p. boilers, one 80 h. p. engine, Chambers Side-Cut Machine, two-track Standard Dryer, with all necessary cars etc., for turning out 40,000 brick daily twelve months in the year.

The property includes 42 acres of clay land, houses, barns, mules, wagons, etc. There is a good market for all the brick the plant can make at $7.00 per thousand.

The business will be sold either one-half or whole interest for cash or partial time payments. Sole reason for selling ill-health of present owner. Address

MISSISSIPPI,
12 I W Care Clay-Worker.

THE BEST IS THE CHEAPEST in trade journalism as in everything else. The Clay-Worker is the best magazine published in the interest of the Brick, Tile and Pottery trades. It contains more original and valuable matter than all its contemporaries combined. It is the most widely circulated and best read. $2.00 a year. Every issue worth more.

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Sewer and Culvert Pipe. Locomotive Tile.
Furnace and Boiler Tile. Fire Brick and Cupola Blocks.
Flue Lining and Chimney Pipe.
Sanitary Earthenware. All kinds of Fire Clay Products.

Let us quote you prices on Savage Fire Brick **FOR** Bag Walls, Kiln Linings, Boiler Settings.

Savage Fire Brick Co.,

Pittsburg Office, 810 Park Bldg. KEYSTONE JUNCTION, PA.

The Crown Fire Clay Co.,

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HIGH GRADE FIRE BRICK,

For Lining Kilns, Etc., a Specialty.

Also Hollow Blocks, Flue Linings, Wall Copings, Etc.

When writing for prices, state for what purpose brick are to be used.

——Catalog Free.

Too Many Brickmakers

Use Cheap Brick in Kiln Construction. The Best is the Cheapest no matter what it costs. We can supply your wants in strictly

High Grade Fire Brick,

At MODERATE PRICES.

SEVEN WORKS in two States on THREE COMPETING TRUNK LINES.

Reese-Hammond Fire Brick Co., General Offices, BOLIVAR, PA.

Correspondence Solicited. Annual Capacity 100,000,000.

FOR SALE—Swift's Wonder of the Age Grateless Furnace Kilns. Cost of construction less than ½. Write for particulars.
F. E. SWIFT,
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NO DRY PRESS BRICK PLANT complete without the Carmichael Clay Steamer.
T. W. CARMICHAEL,
Inventor and Manufacturer,
6 d tf Wellsburg, W. Va.

FOR SALE—Good dry-pressed brick plant, situated in county seat town in Iowa. Railroad, cheap coal, no competition, good demand for product, in good running order. Correspondence solicited. Inquire of
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12 2 c Guthrie Center, Ia.

FOR RENT—Brick-yard property, about forty acres, centrally located, within Louisville city limits; can be subdivided if desired. Call upon or address
UNION CEMENT AND LIME CO.,
11 1 2 d 421 W. Main st., Louisville, Ky.

FOR SALE—A lease, with the privilege of purchase, a tract of land lying near the mouth of the Illinois river, in Jersey County Ills., containing an inexhaustible supply of the finest shale, a vein of Gypsum, and also said to be underlaid with a fine vein of coal. Rail and river transportation. T. P. PLUMRIDGE.
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FOR SALE—Potts disintegrator, No. 2, complete, with new rolls and pulleys, run but a few weeks. Address M. J. LEE,
12 3 d Crawfordsville, Ind.

FOR SALE—About 24,000 head brick pallets, cheap. Address
BARTONVILLE BRICK CO.,
12 1 cm Peoria, Ill.

FOR SALE—A three-mold Boyd brick press which is in good condition. Have given up the dry-press process entirely, else would not sell this press. Will be sold cheap for cash or on time to thoroughly responsible parties. Address
NEW ENGLAND STEAM BRICK CO.,
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FOR SALE.

One 9-foot Dry Pan, iron frame.
One Arnold Steamer.
One Revolving Screen.
One Miller Hand Press.
One 15-H. P. Portable Engine and Boiler.
THE T. B. TOWNSEND BRICK & CONTRACTING CO.,
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The machinery of the Austin Brick and Tile Works, consisting of an 80-horsepower boiler and engine, an Auger brick and tile machine, pug mill, granulator, winding drum, cable and dump car, shafting, pulleys and belting, automatic brick and tile cutting tables, trucks, barrows, grates, kiln doors, bands, one Penfield elevator. Address BARR,
10 3 dm Care Clay-Worker.

WANTED

Brickmakers to know that we make high-grade brick barrows and trucks; also one and two-horse tip carts. We have same in stock and can ship promptly. Place your orders now for next year's wants.

The I. L. STILES
& SON BRICK CO.,
North Haven, Conn.

Continued on Next Page.

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FOR SALE — 100 Chambers cage roller-bearing dryer cars, wrought iron and pipe frames, with wooden and perforated pallets. Prices and better information given on application.

ASHEVILLE BRICK AND TILE CO.,
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WANTED.
One second-hand granulator.
One second-hand conical-shaped crusher.
One belt clay elevator.
One pug mill.
Address B,
9 4 d Care of Clay-Worker.

FOR SALE—An up-to-date Edison Mimeograph for duplicating letters, statements, etc. Used but little and guaranteed in perfect condition. A bargain for anyone desiring a machine of this sort. The equipment cost $16; will be sold for $10, cash on delivery. For full particulars, address
11 2 p COPYIST, care Clay-Worker.

Opportunity for Investment

In a first class brick plant so situated that it is possible to make it the largest and most profitable plant of its kind in the Northwest. Unlimited raw material; rail and water transportation; cheap fuel and a large field of markets. Plant kept running through winter months. Business now paying, but with added facilities it can be greatly enlarged. New capital desired with which to extend operations so that the business available can be taken care of. For particulars, address

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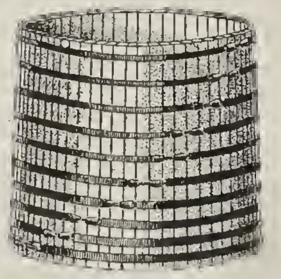
a life-time and will not burst nor collapse. This is the simple truth about the



CALDWELL TANKS

of Louisiana Red Gulf Cypress. Of course they have the first call among brickmakers. May we send catalogue and price-list?

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The Best Brick Drier

Is the Drier which dries the Brick safely, quickly and thoroughly in the shortest time and with the least cost and labor. This the **Phillip's Fan Dryer** will do. The first cost of construction is moderate and cost of operation is much less than old style dryers. Soft Mud, Stiff Clay or Dry Press Brick dried speedily and economically. The **PHILIP'S DRYER** is no experiment but is now in successful operation in a number of plants in the U. S. and Canada. **Phillip's Inside Fan Heater and Dryer,** proves to also be a "Condenser."

Relief from back pressure guaranteed.

Exhaust steam alone ample for heat supply.

If you are interested in the drying problem don't fail to write for circulars.

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January 23, 1902.

We are *very much pleased with the dryer. Obtain 3 lbs. of vacuum.* Have run continuously since starting (November, 1900), with *no repairs as yet. Made last year* of hollow blocks and brick *fifteen millions,* common brick measure. The Phillips is *the most perfect I ever saw for drying tile,* the best done under shed, or by any method. *We dry five and six-inch tile in five or six hours.*

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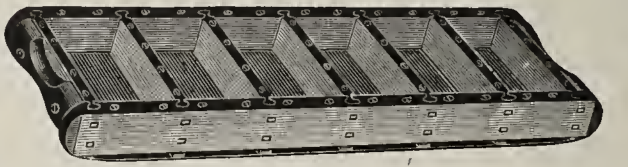
Brick and Tile Cutting Wires

For End-Cut, Side-Cut and Automatic Tables.

GEO. S. COX, East Liverpool, Ohio.

Satisfaction guaranteed. Send for samples and prices.

S. B. GRAY, Manufacturer of



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Six-Brick Machine Moulds	$1 50
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These Moulds are well made of the best materials, and are up to anybody's standard. If they are not so, send them back.

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Clay Technologist. Brickworks Engineer.

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Member and Ex-President of National Brick Manufacturers' Association of the United States.

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Expert service in exploiting and testing clay deposits, in designing and constructing brick plants and in investigating and correcting faults of manufacture.

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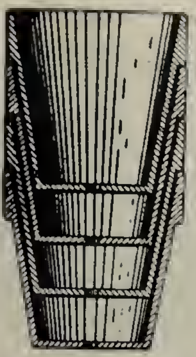

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No expert workmen required.
Capacity in 10 hours:
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Write for Circular and prices.

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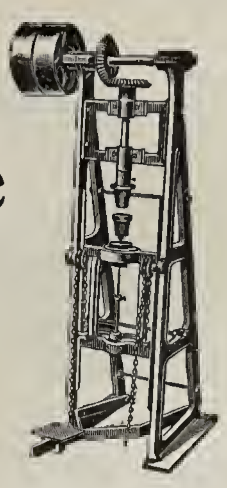

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For Brick, Terra Cotta, Sand, Cement, Etc.

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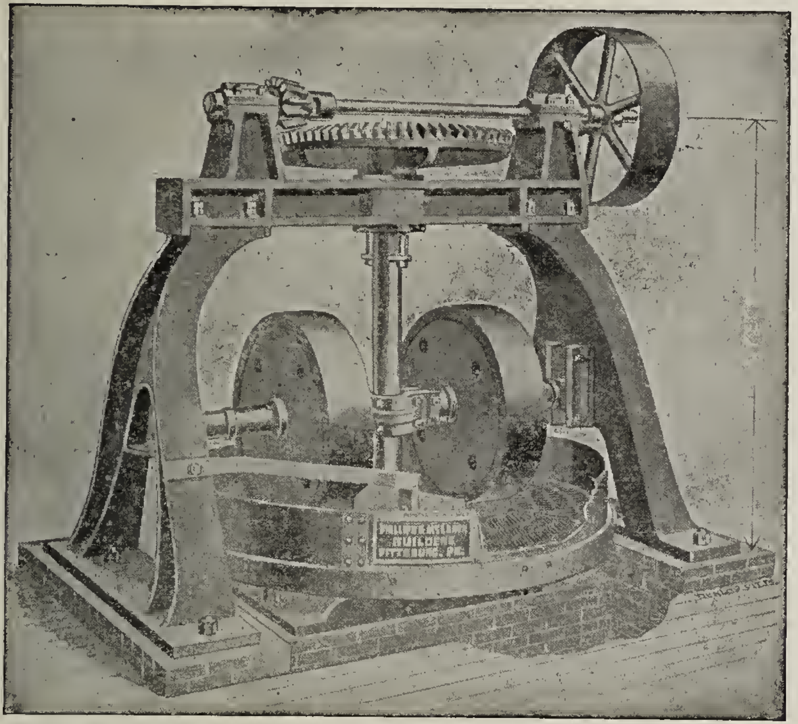

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"Old, Reliable, Time-Tried and True."

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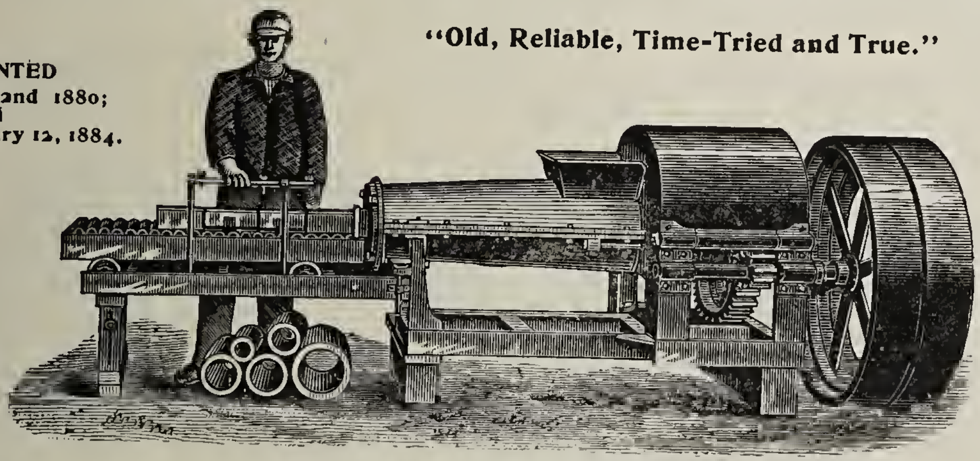

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THIS MACHINE works clay direct from the bank for both brick and tile. Bricks are taken direct from the machine to the hacks and need no repressing for the finest fronts. It has but one set of gears and makes all kinds of brick and different sizes of tile by changing dies. For strength and durability we except none. We challenge the world to produce a combined machine that will do the same amount of work with the same amount of power. We manufacture Crushers, Trucks and Barrows. End-cut, side-cut paving brick and Board Delivery—make perfect edges and corners.

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We have made an improvement on our No. 1 Machine by which we can make tile from 3 inches up to 12 inches and on our No. 2 Machine we can make tile from 2½ up to 10 inches.

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J. J. Koch. L. H. Ritterskamp.

Koch & Ritterskamp,

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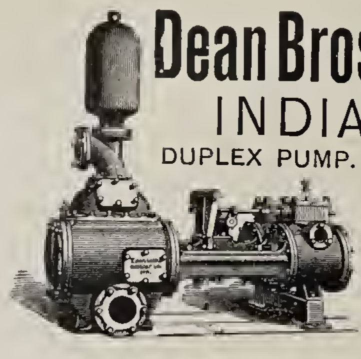
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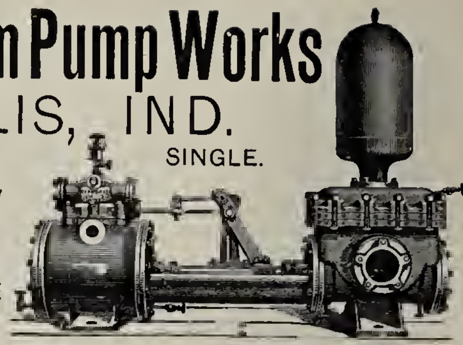
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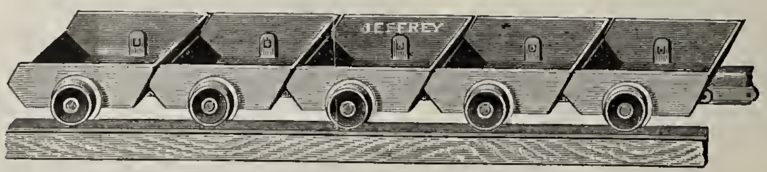

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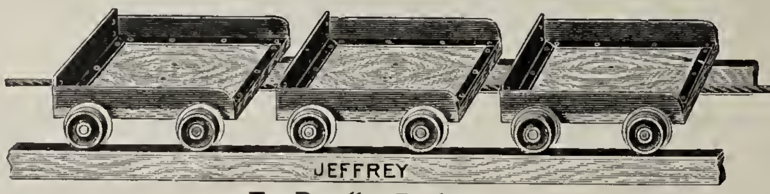

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$2.00 THE CLAY-WORKER, ONE YEAR, (IN ADVANCE) $2.00

Brick Pallets.

It is the opinion of the best Manufacturers that the Pallet System is the most economical method for making bricks. White pine lumber is conceded to be the best and most economical material for pallets. We make them. A word to the wise is sufficient. Send postal card for circulars.

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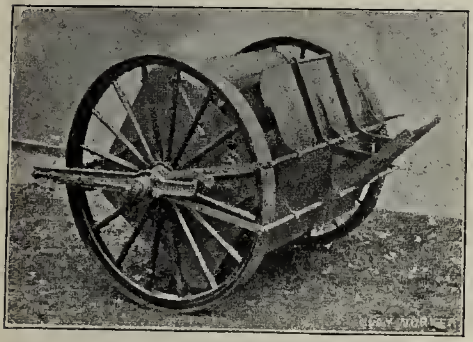

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The best and most economical method of gathering Clay for Brick and Tile Manufacturers.

Will save at least 50 per cent. over any other method.

Manufactured by

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GANDY STITCHED Cotton Duck BELTING.

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60-70% 70-80% 80-90% OXIDE.
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On December 24th, 25th and 31st, 1902, and January 1st, 1903, tickets will be on sale between all local points on the "Big Four Rout," Cin'ti Northern R. R. and D. & U. R. R.; also to many points on connecting lines in Central Passenger Association territory, at a rate of

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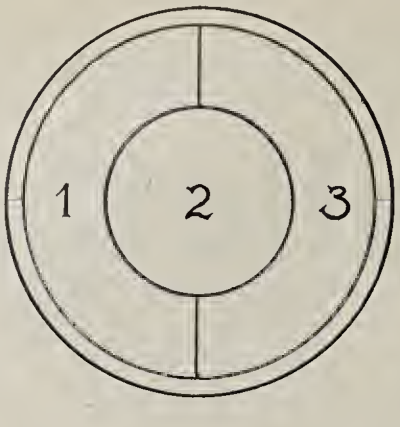

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Nothing complicated in construction. Simple, inexpensive, sure.
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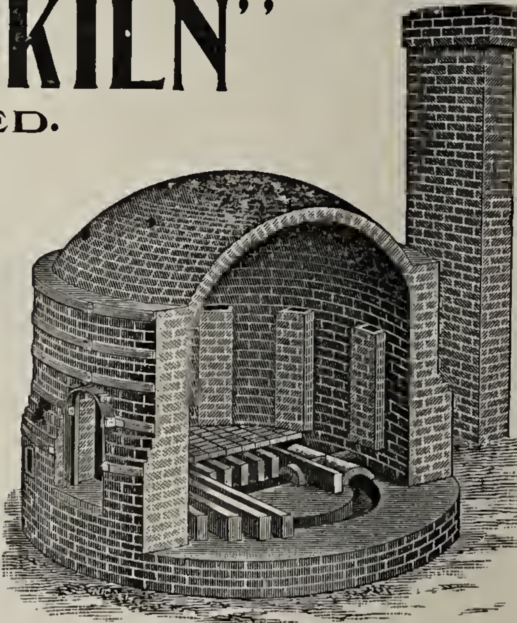

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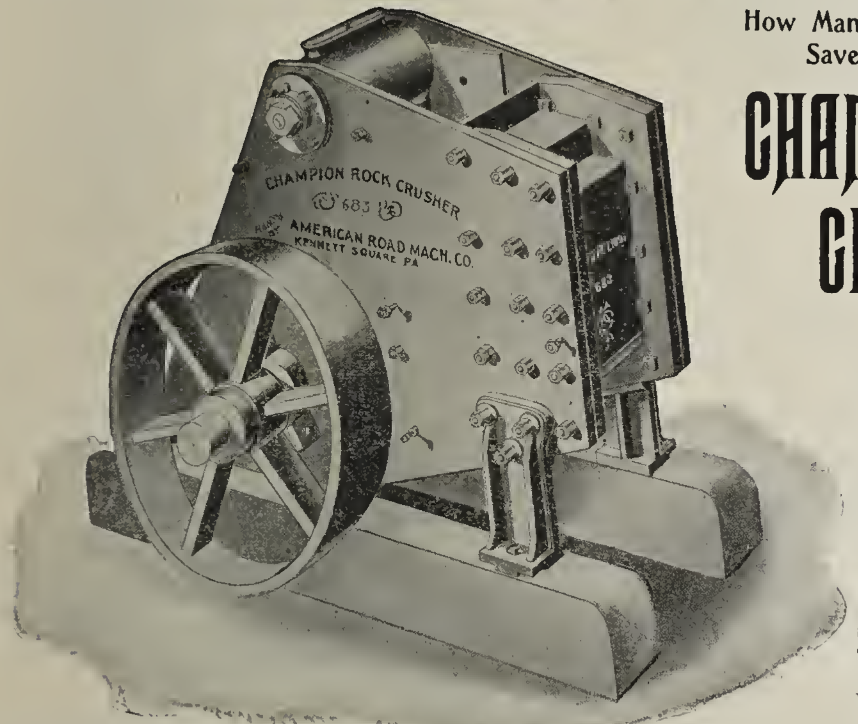

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The Champion is unequalled in crushing rock, shale, fire clay and other material.

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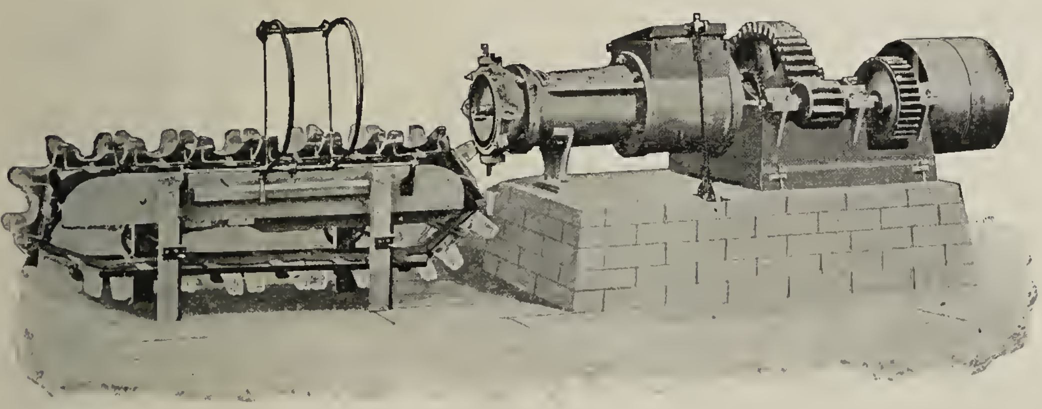
MADDEN & CO.,

Successors to NOLAN, MADDEN & CO.,

Manufacturers ... of **Tile and Brick Machines.**



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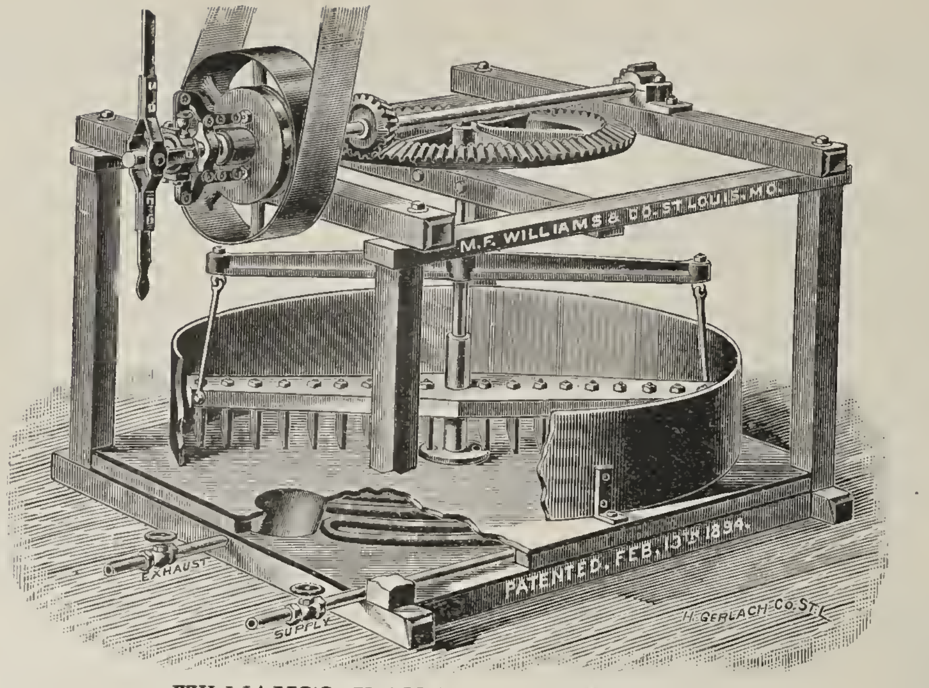

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WILLIAMS Sizing Machine for Arch Brick.
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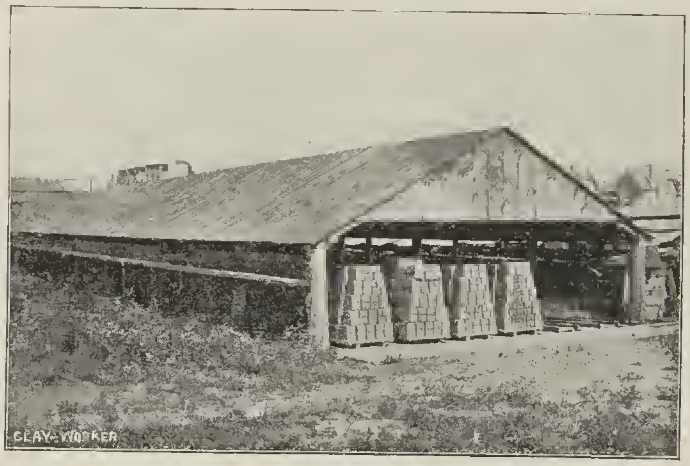
Read This... If you don't your competitor will.

Note also change in the cut each month.



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It is equally as efficient in large or small yards. It can be used either for open air or artificial drying. We guarantee that one man can take from 25,000 to 40,000 green brick from the machine and place them upon the hacks in one day of ten hours, and the same amount from the hacks to the kiln, and place them in easy position for the setters to handle them.

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Oxide Tin,
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STRENGTH, QUALITY, DURABILITY, TONE.
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Absolutely Highest Grade.

The wonderful tensile strength of Standard Wire specially adapts it

For Brick and Tile Cutting.

The price, too—an important consideration—is moderate.

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Put up in 1-lb. and 5-lb. coils.

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BEST, CHEAPEST—BECAUSE

Simplest. Most durable. Uses one-third fuel of others. Insures better product. Facilitates burning. Operates winter and summer. No danger of fire.

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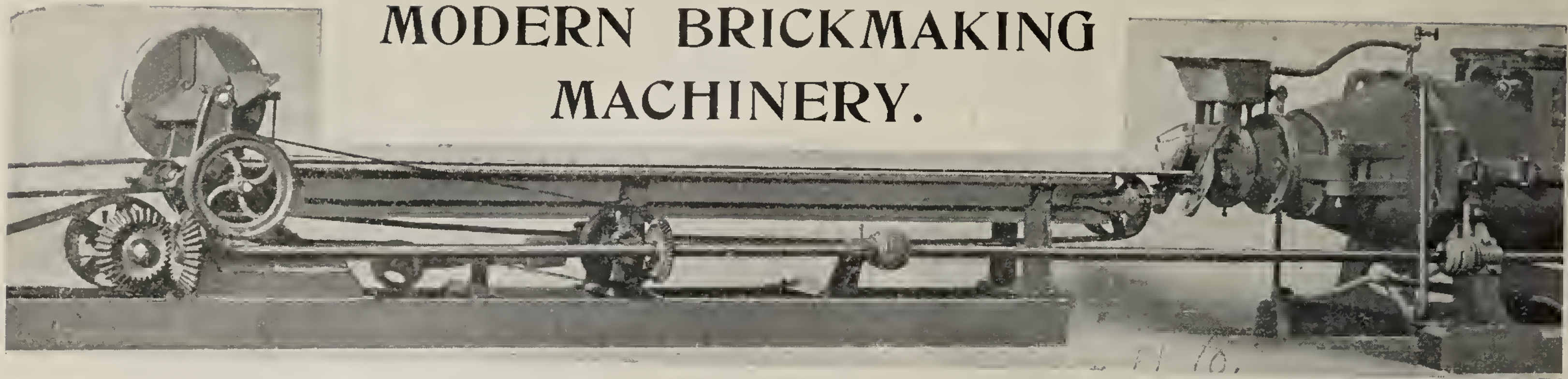

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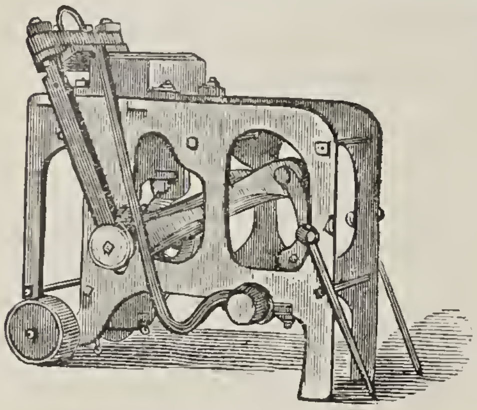

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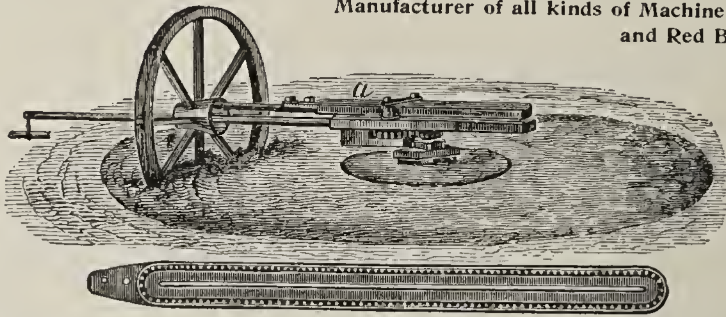

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THE DUNN CONTINUOUS BRICK KILN.

Burns 8000 brick with one ton of coal.
Requires only two men to operate it.
Is in full operation daily.
Absolutely the most successful kiln of its class ever offered American Brickmakers.

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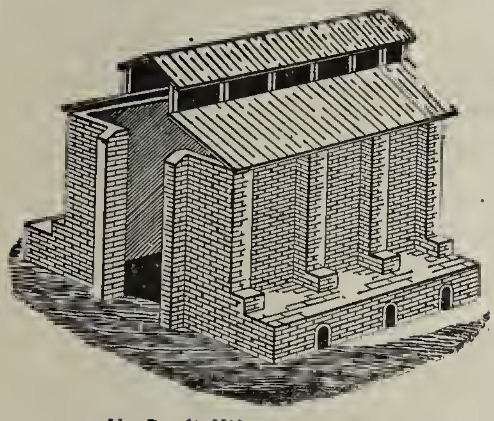

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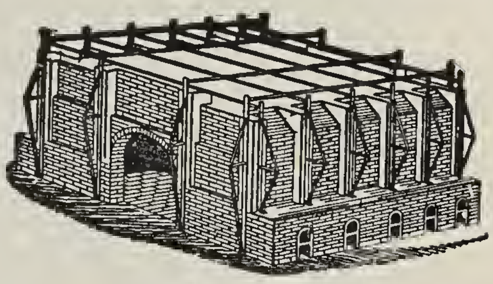
IMPROVED-KILNS

For Burning all Kinds of Wares.



Down-Draft Kiln.

Having had years of practical experience in the management and actual burning of all kinds of kilns, claim it to be THE BEST Up-Draft KILN IN THE MARKET.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns.

For further particulars and full explanation, address

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HAIGH'S SYSTEM OF CONTINUOUS KILNS

Arranged to suit all locations.

These Kilns Can be Seen Burning——

Roofing Tile, Dry Pressed Facing,

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POINTS OF SUPERIORITY. Cheapness in construction. Easy to understand and operate. Perfectly free from any nuisance. Will save more than one-half of the fuel used on other kilns. Specially adapted for utilizing waste heat for drying purposes, and which is being done most successfully.

A more successful kiln for burning paving brick will be hard to find than the one at the works of the Eastern Paving Brick Company, Catskill, N. Y.

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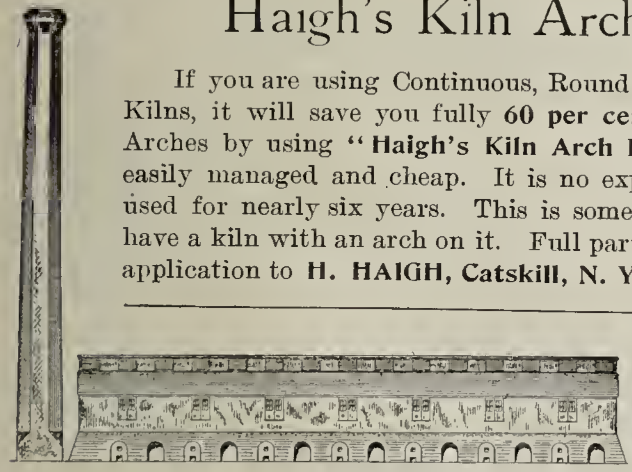
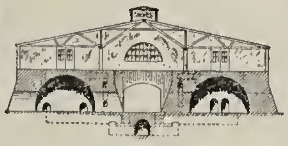
If you are using Continuous, Round or Square down draft Kilns, it will save you fully **60 per cent.** in repairs to Kiln Arches by using **"Haigh's Kiln Arch Raiser."** It is simple, easily managed and cheap. It is no experiment, having been used for nearly six years. This is something you need if you have a kiln with an arch on it. Full particulars will be sent on application to **H. HAIGH, Catskill, N. Y.**





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Manufacturers of
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My Dear Mr. Haigh—Replying to your letter of November 18th in which you make inquiry regarding the Haigh New System Kiln, permit me to say: We have had one of your kilns in continuous use during the past eight years and have burned roofing tile, trimmings and brick in the same, and I assure you that it is now giving us the most complete satisfaction with regard to the amount of fuel consumed and the results in the chambers.

We will be pleased at any time to have you refer to us.

Respectfully yours,
ALFRED CLAY COMPANY,
Per John J. Merrill, Pres.

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Brick Manufacturing Expert,
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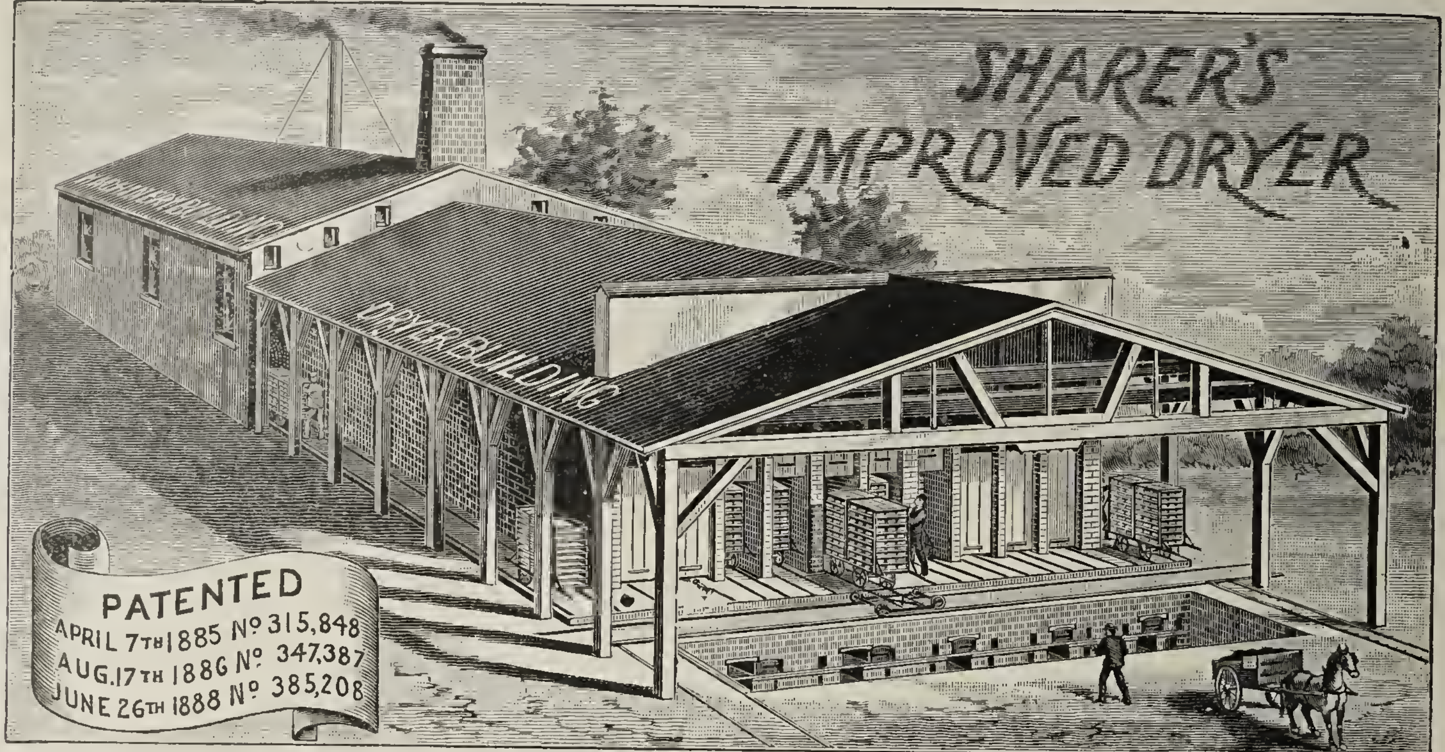
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IMPROVED DRYER
DRYER BUILDING
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APRIL 7th 1885 No 315,848
AUG. 17th 1886 No 347,387
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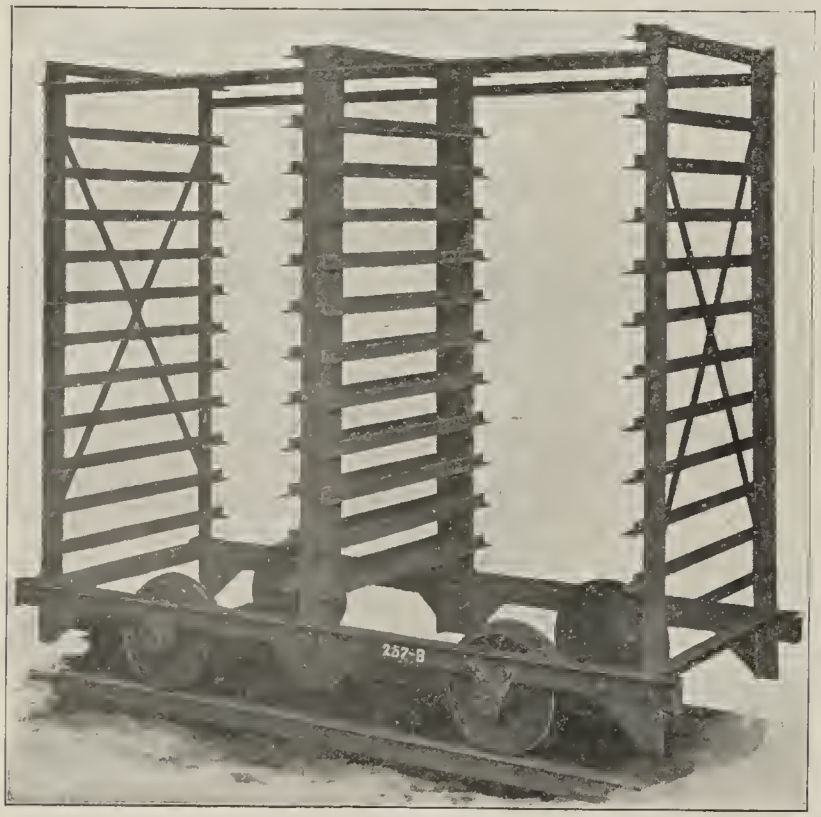
COMPLETE Dryer and Kiln outfits, and Complete Plants a specialty. Address **Geo. W. Sharer,** 2228 Tioga St., **Philadelphia, Pa.**



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Buy the Best.

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Dryer Cars

Are Our Specialty and we can produce a perfect product for that reason.

Special Cars of all kinds for light use made to order.

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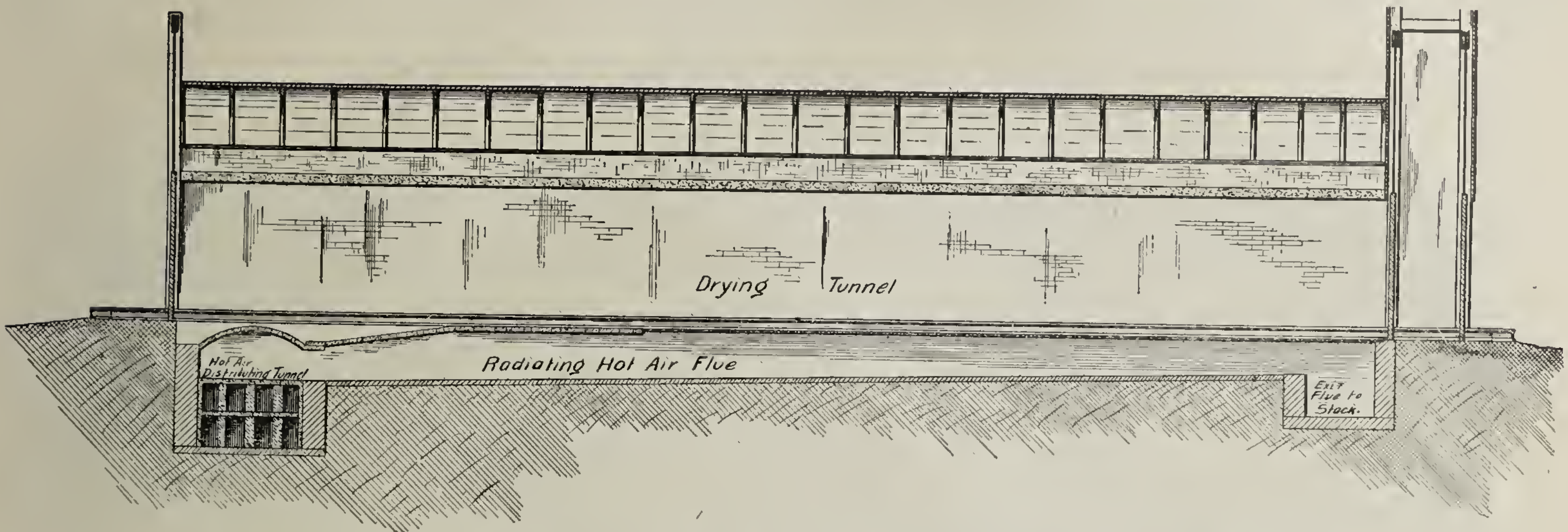
Economy Atomizers and Fuel Oil Burning Systems Have NO EQUAL.

Economy Waste and Direct Heat, and Radiating Floor Dryers are Constructed on SCIENTIFIC and UP-TO-DATE Principles.



PRACTICAL CONSTRUCTING ENGINEERS OF CLAY PLANTS.

ECONOMY DRYER AND OIL BURNING COMPANY,

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The NATIONAL DRIER

Is One of the Best Investments Ever Made at Our Plant.

CHRISTY FIRE CLAY CO.
ST. LOUIS.

The National Dry Kiln Co.,
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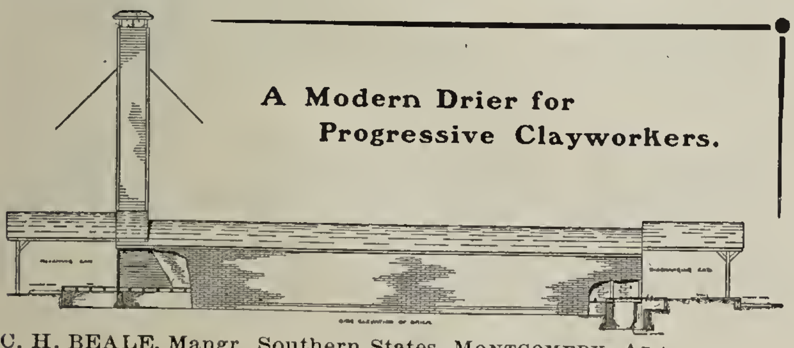
Gentlemen—We take pleasure in giving you the result of our experience with the Tunnel Drier System recently purchased from you. We find that the use of exhaust steam during the day time with about 40 lbs. pressure of live steam at night, dries our product thoroughly in 48 hours, and in view of the fact that our former system required an average of 120 hours, you can readily imagine that we are very much gratified. The economy of labor, saving of fuel, and increase of capacity resulting from the installation of your system, make the expenditure one of the best investments we have ever made at our plant. Yours truly,

W. C. Morris, V. P. & G. M.



A Modern Drier for Progressive Clayworkers.

Is free from complicated Features. If you want IMPROVED METHODS, put in the modern up-to-date

NATIONAL DRIER

Our Steel Roller Bearing Cars are Unequalled.
Let us send you a circular, it will interest you.
Our guarantee protects from all chances.

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So Far as Ability and Faultless Material Can Make It.

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Blowers, Exhausters, Engines, Fans, Dry Kilns,
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The new methods we have introduced into the Blower business have revolutionized the trade and placed The New York Blower Company in advance of competition. When a paticurlarly good or economical dryer is wanted, we can save you money, time and future annoyance if you will consult us. Correspondence solicited. Plans and estimates furnished.

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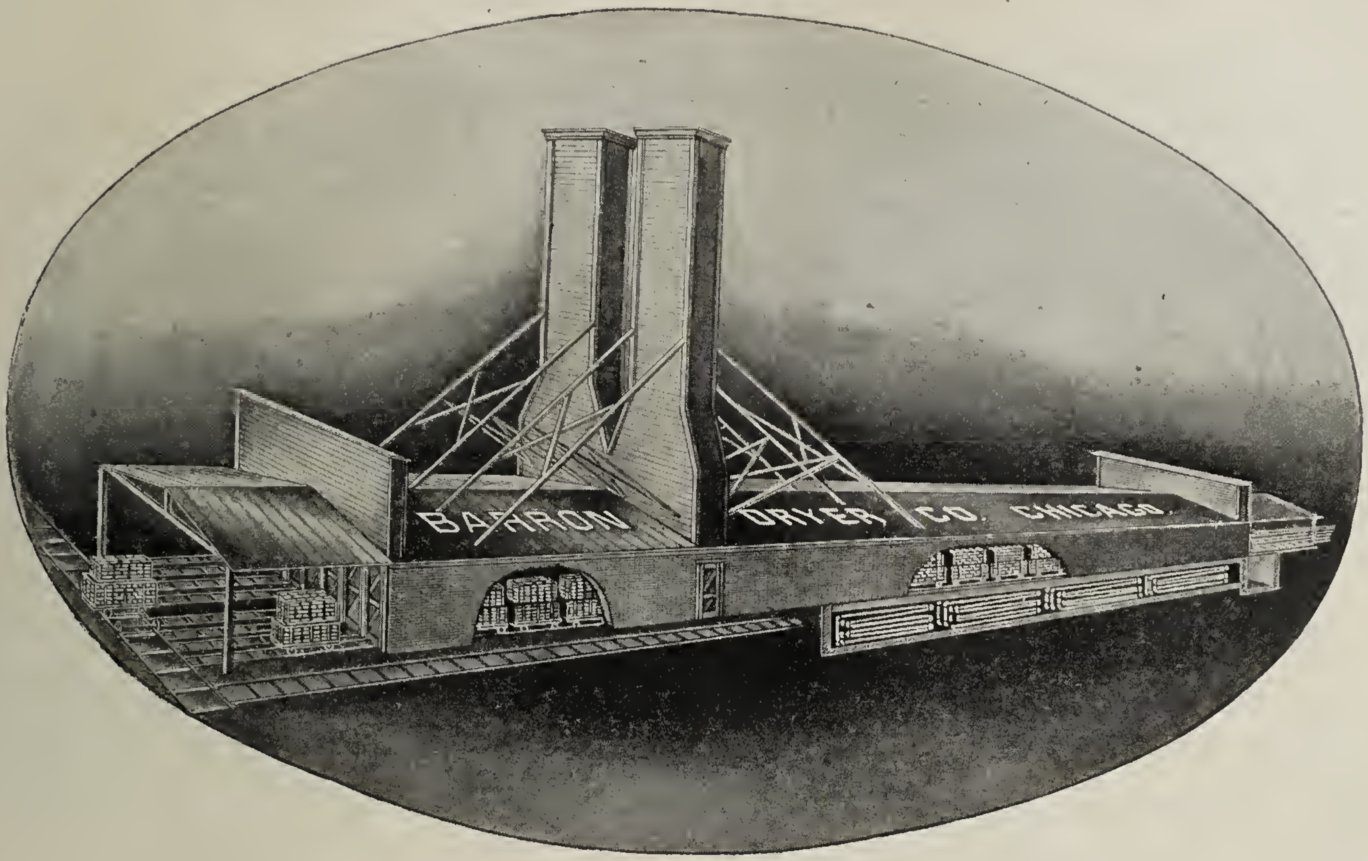
The New York Blower Co.,

BUCYRUS, OHIO, U. S. A.

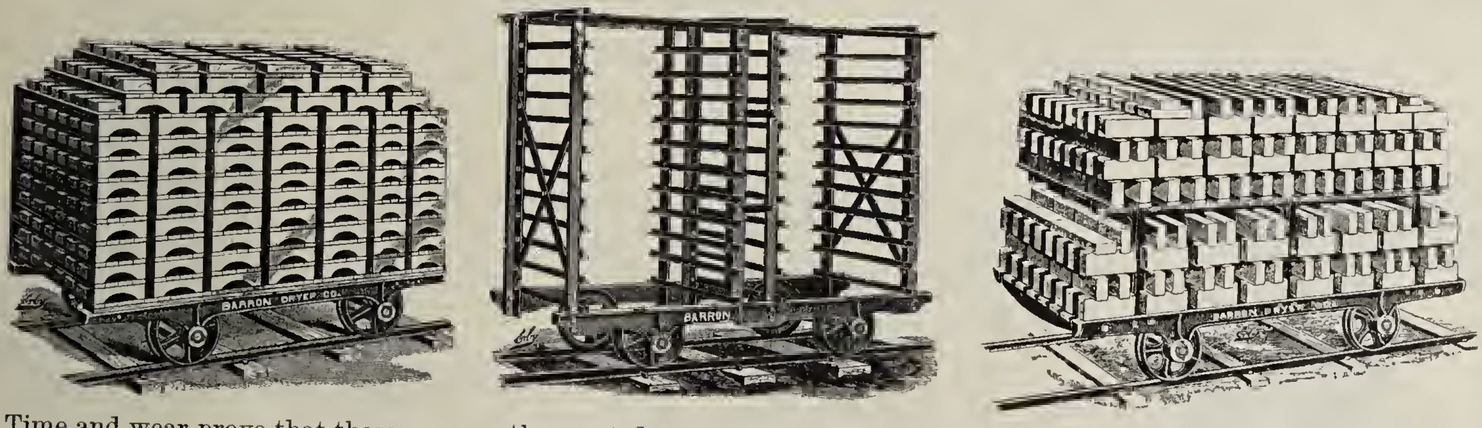
Builders of Waste Heat Dryers.



Barron Tender Clay Dryer.

THIS CUT illustrates an up-to-date Brick Dryer. IT IS THE EVOLUTION OF THE CHICAGO IRON CLAD DRYER, which contains the best known principles for rapid drying. The correct principle of this Dryer has been carefully retained throughout the development of the Tender Clay Dryer, which enables us to construct Dryers to suit all clays and dry the product with the greatest economy. Our Steam Saving Devices are inventions many years in advance of what is generally known in the science of Steam Fitting.

This is the Dryer that enables the largest brickmaking concerns in the world to produce brick at less cost than is possible by any other known process.



Time and wear prove that these cars are the most durable and easiest running. Send for information, estimates, etc.

BARRON DRYER COMPANY,

Temple Court Building, 225 Dearborn St., CHICAGO, ILL.

A STEAM SHOVEL

MODEL "G," 2½ YD

Is the most economical appliance for excavating clay.

Never strikes, and is therefore more reliable than hand labor.

Will work in all kinds of weather, insuring regular supply of material.

More thoroughly mixes the different stratas than is possible to do by hand.

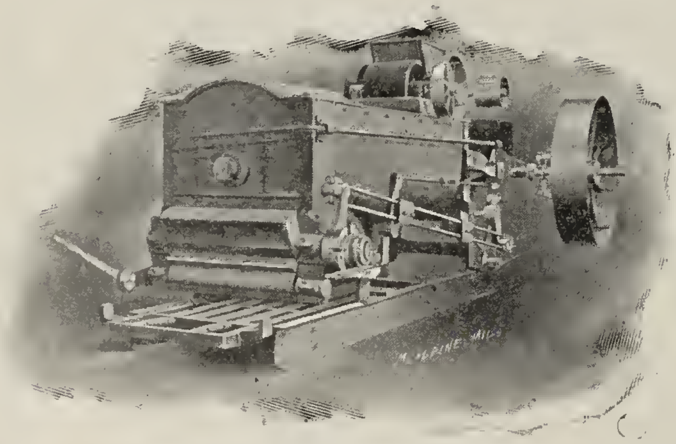
Will prove a paying investment in any yard where the material is taken from a face.

For many years we have supplied Steam Shovels for Brick Yards, and our machines are in successful use in the yards of many of the largest and most succcessful brick manufacturers of the country. We build machines having dipper capacities from ¾ cubic yard up to 4½ cubic yards, and can supply them with friction feed on boom or with independent engine feed.

If interested write us for illustrated catalog.

STYLE 'C," ¾ YD.

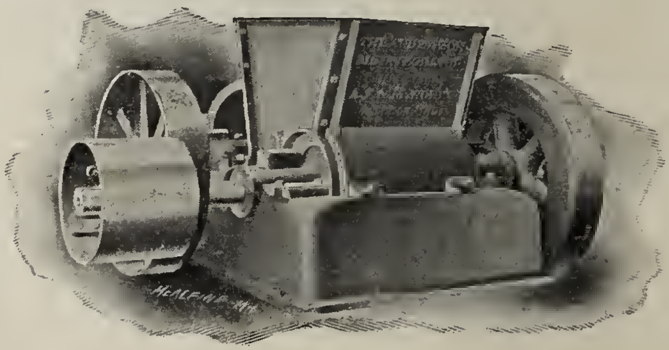
THE MARION STEAM SHOVEL CO., 610 West Center Street,
MARION, OHIO.



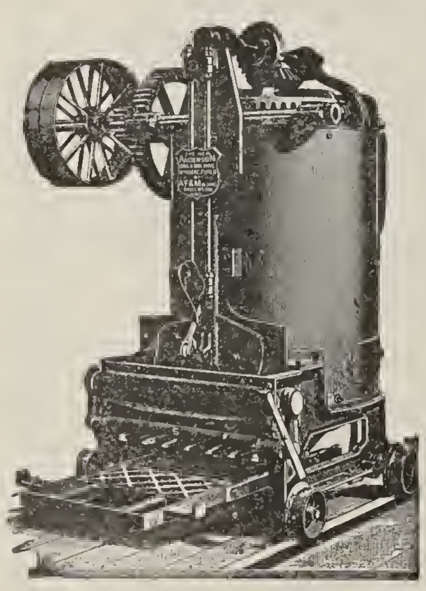
Horizontal Anderson Brick Machine.

DON'T PURCHASE UNTIL YOU WRITE US.

We can save you money.



Best Disintegrator on the Market.



Steel and Iron Upright Stock Brick Machine.

MANUFACTURERS OF . . .

New Departure Tile Machine,

The only machine for making Tile from 3 to 24-inch Diameter.

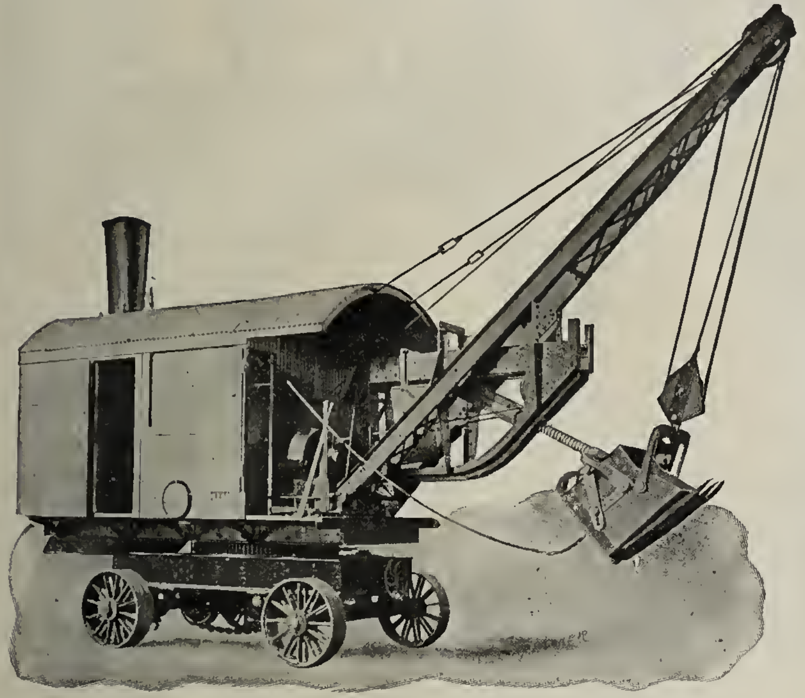
Pug Mills, Molds, Trucks and Barrows,
And all Brickyard Supplies.

1899 Horse Power Machine.

The Anderson Foundry and Machine Works,
Anderson, Ind.

Handle Your Clay With One Man and

The Thew Steam Shovel.



The Thew Improved No. 1 Shovel.

• • • • • • • •

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

• • • • • • • •

Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

• • • • • • • •

Made in all sizes.
Mounted on Car Wheels
or Traction Wheels.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 150,000 brick per day.

WRITE US FOR CATALOGUES OR INFORMATION.

The THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.

HAS GIVEN BETTER SATISFACTION THAN YOU CLAIMED IT WOULD.

THE ST. MARY STEAM BRICK WORKS.

Franklin, La., Sept. 20, 1902.

MESSRS. LEADER MANUFACTURING COMPANY, DECATUR, ILL.:

Gentlemen—The Leader No. 25 which you sold me last spring has done even more work, and has given me better satisfaction than you had claimed it would, and in justice to you, and as evidence of my appreciation, I take pleasure in attesting its merits.

Very truly yours, EUG. BODIN, per Thos. Bodin.

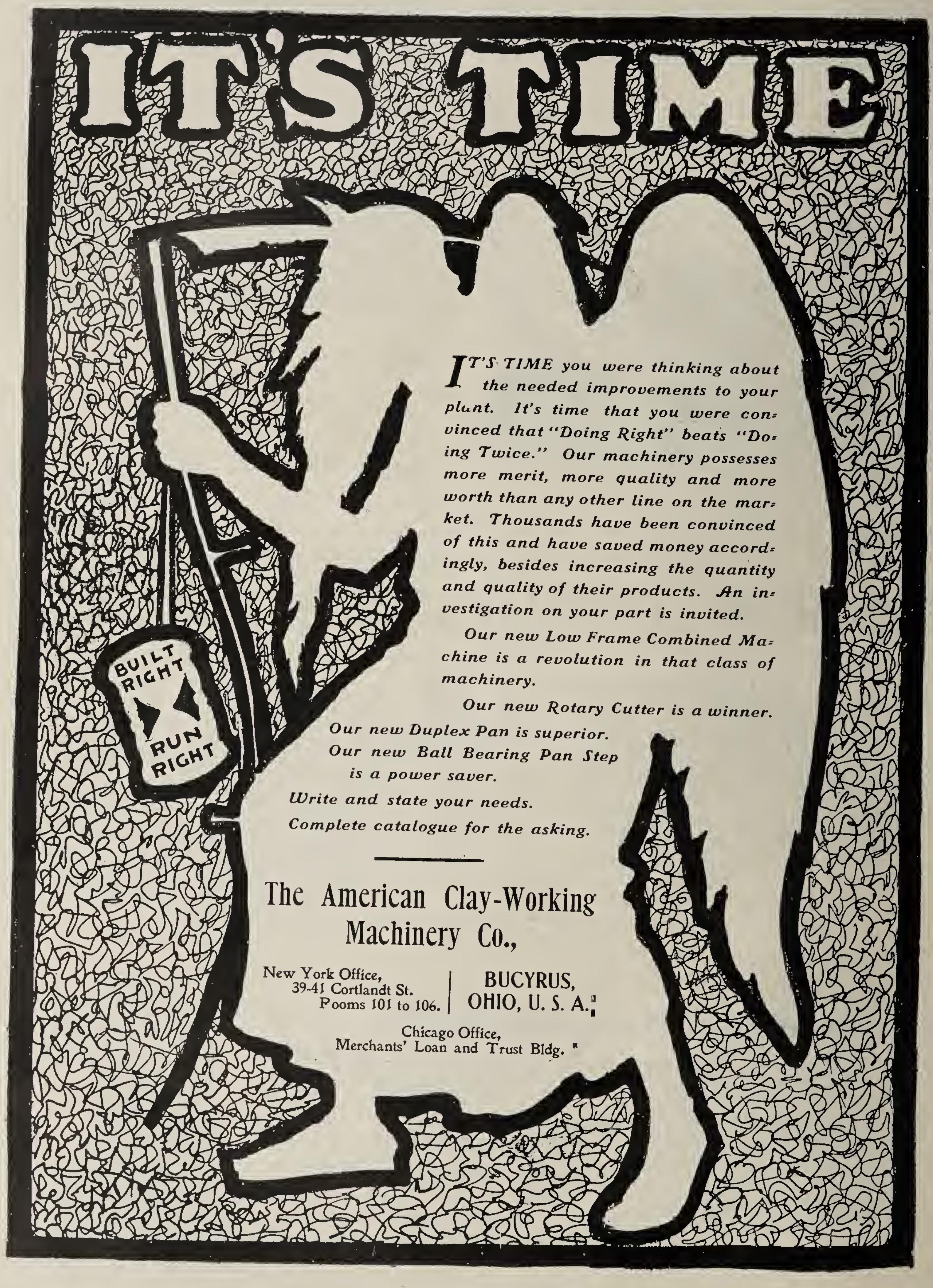
Leader Machines Are Not Better Than the BEST

BUT BETTER THAN THE REST,

And the Price is Right!

For further words of praise and little book of "opinions," write to

LEADER MANUFACTURING COMPANY, = Decatur, Ill.



IT'S TIME

IT'S TIME you were thinking about the needed improvements to your plant. It's time that you were convinced that "Doing Right" beats "Doing Twice." Our machinery possesses more merit, more quality and more worth than any other line on the market. Thousands have been convinced of this and have saved money accordingly, besides increasing the quantity and quality of their products. An investigation on your part is invited.

Our new Low Frame Combined Machine is a revolution in that class of machinery.

Our new Rotary Cutter is a winner.

Our new Duplex Pan is superior.

Our new Ball Bearing Pan Step is a power saver.

Write and state your needs.

Complete catalogue for the asking.

The American Clay-Working Machinery Co.,

New York Office,
39-41 Cortlandt St.
Pooms 101 to 106.

BUCYRUS,
OHIO, U. S. A.

Chicago Office,
Merchants' Loan and Trust Bldg.

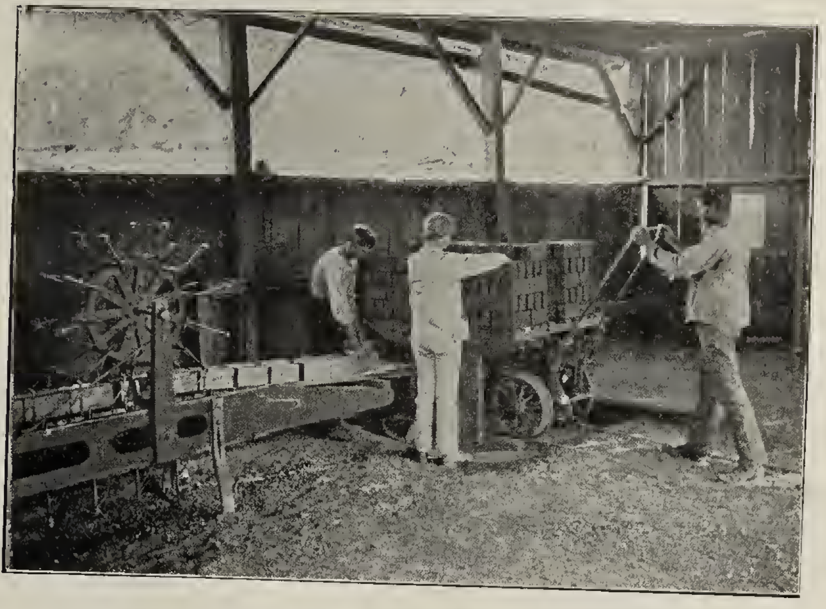
A PERFECT CAR SYSTEM

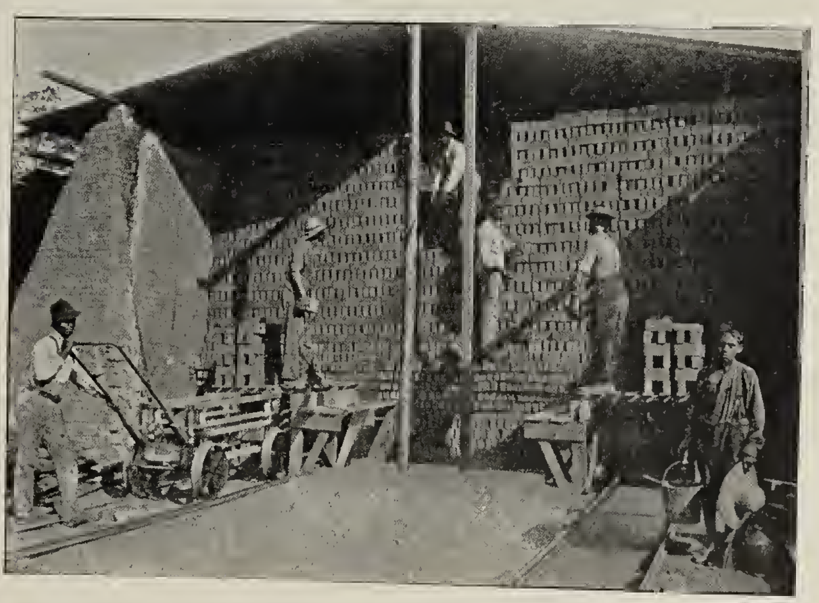
For Either Soft or Stiff Mud.

With only TWO CARS

One man will handle 40 M brick per day.

No Fan to Run. No Boiler to Steam.
No Pipes to Burst. No Fireman to Pay.
ø ø ø No Dryer. No Fuel.





We Guarantee This to be the best, cheapest and only out-door car system ever offered the brick maker. We guarantee to handle from the machine and put on the yard in good condition, from thirty to forty thousand green brick per day, with one man, and same amount to kiln. We guarantee our patent car and system to perform the work for which they are built, and all the workmanship and quality of material to be first class. Our new portable canvas covers give absolute protection from rain and storms and also protect tender clays.

THE SYSTEM consists of two elevating and lowering brick cars for a thirty to forty thousand capacity brick plant; these take the place of several hundred common cars. The car is made of channel steel, with movable deck, which is raised and lowered by a compound lever. From two to five hundred brick are taken from the machine and placed on a pallet, the lever lowered, raising pallet off the rests. The load is then on car, which is run on the yard to the rests along each track; the lever is again raised, thus lowering deck of car which places load on the rests, where the brick are left to dry, after which they are taken to the kiln in the same way.

The above cuts also show our new portable canvas covers, which are cheaper in first cost than wooden covers, and one man or boy can cover and uncover a yard of 200,000 brick in ten minutes.

We handle both soft and stiff mud brick. Write for further information and nearest place where you can see this system in operation.

Scotts Patent Brick Car Co.,

Mention The Clay-Worker.

Knoxville, Tenn.

See Opposite Page

If the machinery you have been using the past season has not been satisfactory as to quality and quantity of brick made.

If your machinery is worn so that it causes you annoying delays and expense because of breakage, which you know your competitor does not have.

DONT

attempt to start with this machinery next season.

REMEMBER

the old adage what is worth doing at all is worth doing right.

DONT

fail to investigate the merits of machinery shown on

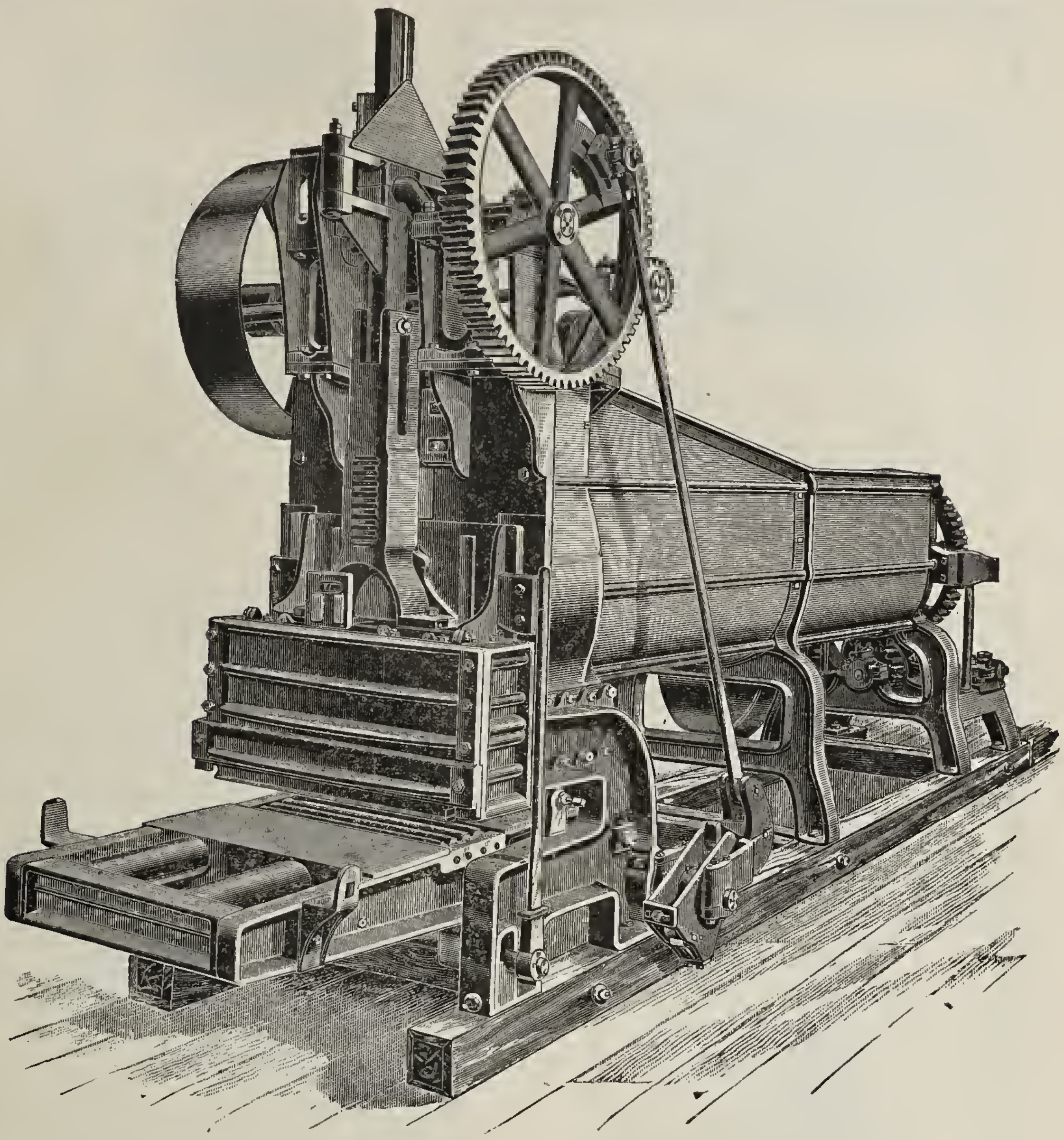
OPPOSITE PAGE.

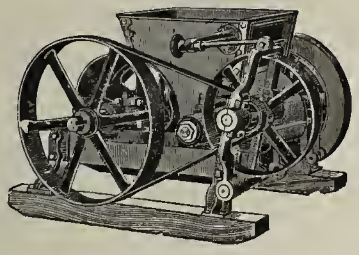
It is the largest, heaviest and best constructed on the market. It will make more and better brick, with less labor and power than can be done with any other machine of this class.

See Opposite Page

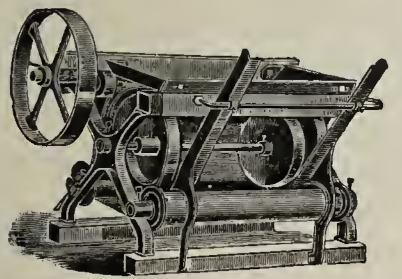
A POTTS
Horizontal Brick Machine

Having steel gear and shafts with ample tempering capacity to thoroughly temper the clay, with strength to work the clay stiff as practicable.





A POTTS DISINTEGRATOR to grind the clay and separate the stone.



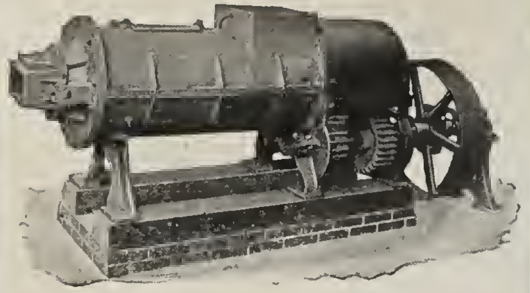
A POTTS MOULD SANDER to sand the moulds and save labor.

With these three machines you can make better brick for less money than your competitor. Let us figure with you. Our prices will be found to be right.

C. & A. POTTS & CO.,

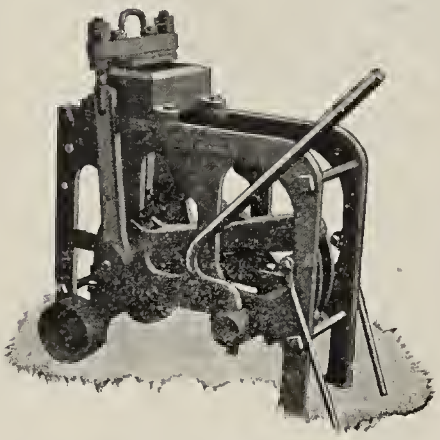
Southern Agents for Potts Disintegrators
ATLANTA BRICK MACHINERY CO., Atlanta, Ga.

Indianapolis, Ind.

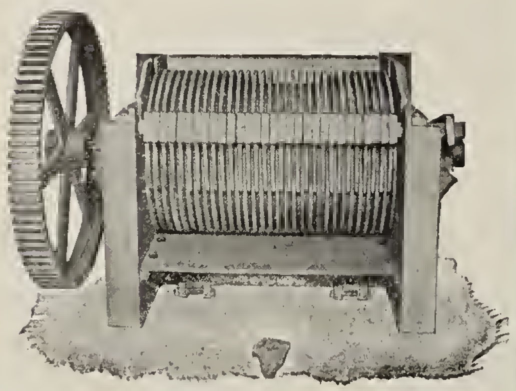


No. 1 Auger Machine
(Capacity 20,000 brick daily.)

Double Deck Spring Truck
(For Pallet Yards.)



Hand Represses
(Made Single or Double Lever.)



Soft Mud Clay Screen
(Renders Clay Fine as Silk.)

BRICK Machinery

OF
ALL
KINDS.

SOFT MUD, WIRE CUT, DRY PRESS.

⁂

WE
EQUIP
PLANTS
COMPLETE,

Including
Brick Machines,
Disintegrators,
Tempering Mills,
Elevators,
Dryers,
Engines,
Boilers, etc., etc.

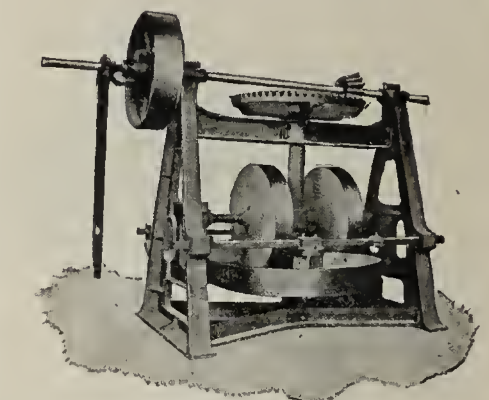
In fact,
EVERYTHING
A
BRICKMAKER
NEEDS.

⁂

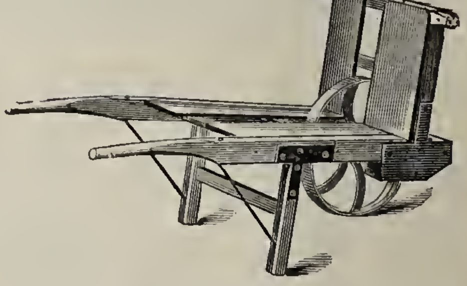
SEND
FOR
CATALOG.

Steam Repress
(A Splendid Machine.)

Single Deck Barrow
(A Great Favorite).



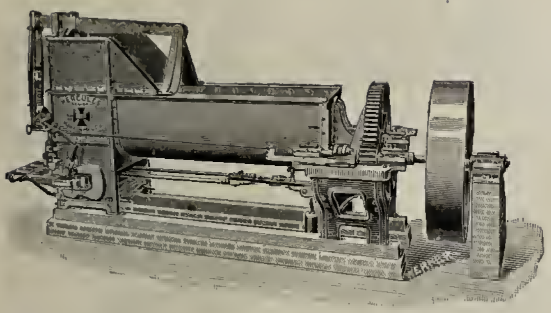
Dry and Wet Pans
(5, 7 and 9 Ft.)



Green Brick Barrows
(Hundreds in Use.)

THE HENRY MARTIN BRICK MACHINE MFG. CO., Inc.

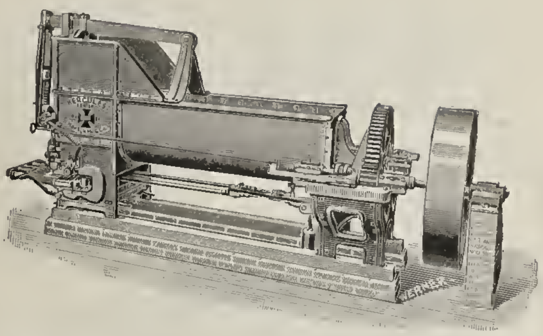
LANCASTER, PA., U. S. A.



These Are Small
Pictures of

A Large
Brick Machine

Considering Weight and Capacity.



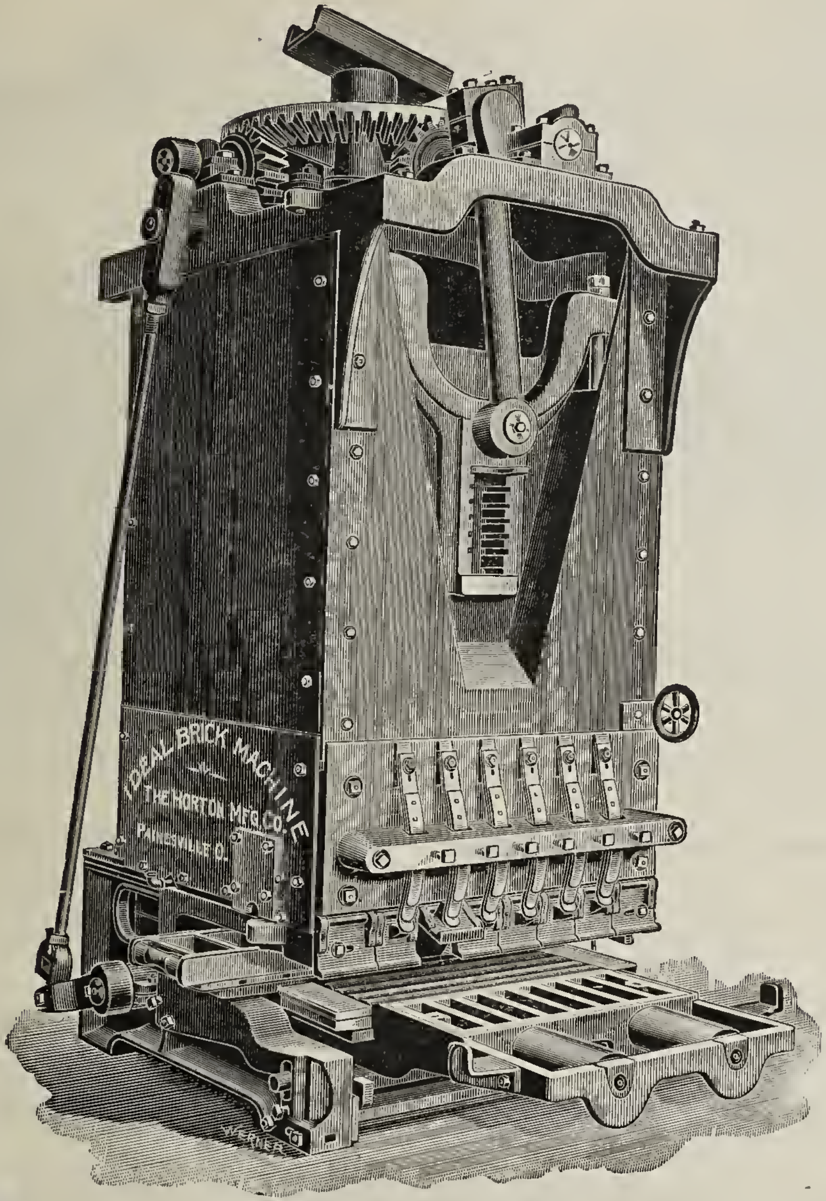
THE HERCULES STILL LEADS THEM ALL.

The Ideal

Horse Power Brick Machine. A new departure from the principles upon which horse power machines are usually built.

The Inside Press is the feature of this machine.

Write for our latest catalogue.

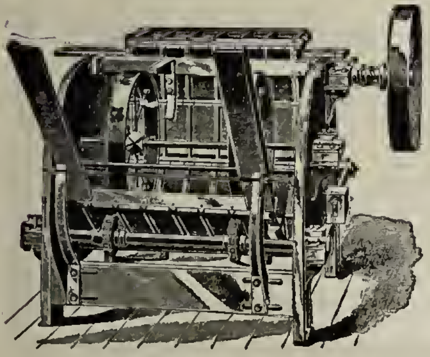

IDEAL BRICK MACHINE
THE HORTON MFG. CO.
PAINESVILLE O.
WERNER

"The Ideal."

Disintegrators.

Four sizes.
Fully guaranteed.
Sanders that sand.
Brickyard supplies of every description, and brick machines for large and small yards.

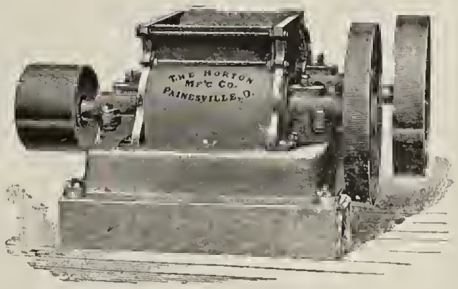
Give us a trial order and you will be our customer.



Sander.

MOLDS.

Standard sizes carried in stock. Shape molds a specialty. Prices right.


THE HORTON MFG. CO. PAINESVILLE, O.

Disintegrator.

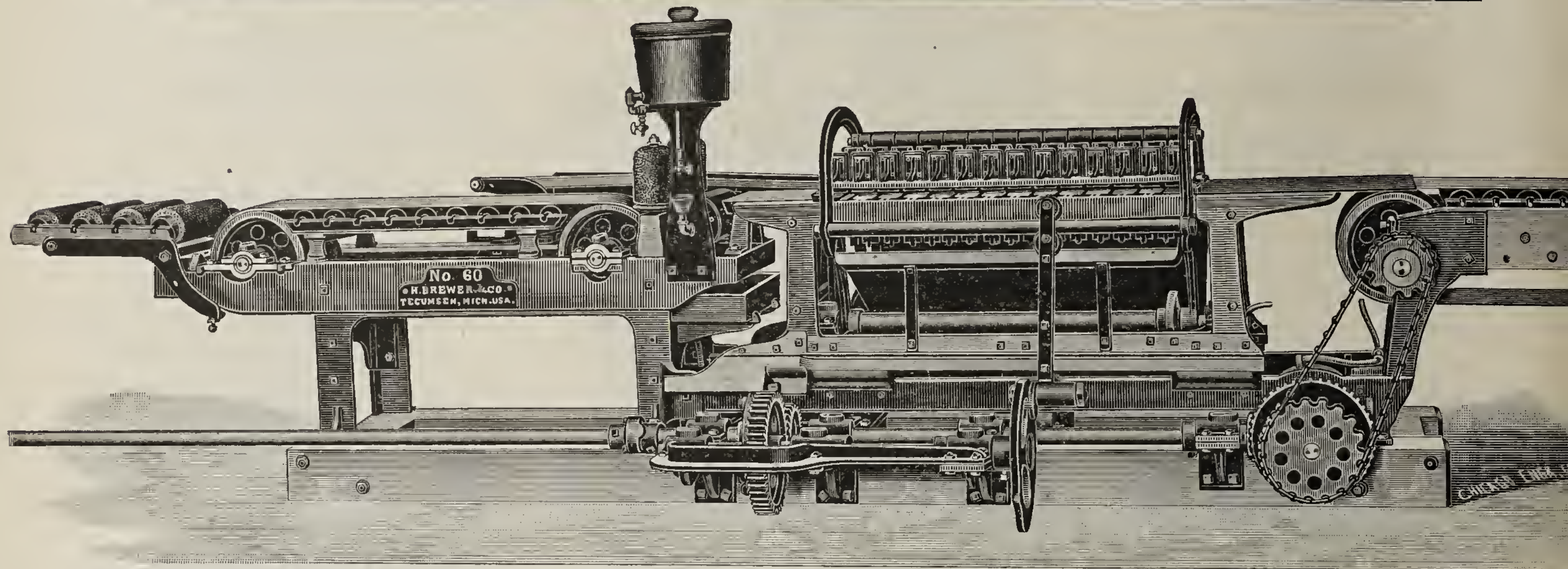
THE HORTON MANUFACTURING CO.,

Mention The Clay-Worker.

Painesville, Ohio, U. S. A.

DURABILITY.

An automatic brick cutter must not only give good service, but must continue to do so without breakdowns which cause expensive stops.



THE BREWER NO. 60

is not only durable but efficient and economical in its operation. Column does not upset while being measured, and every inch of it is cut into brick. No stubs to throw back, no thick or thin brick.

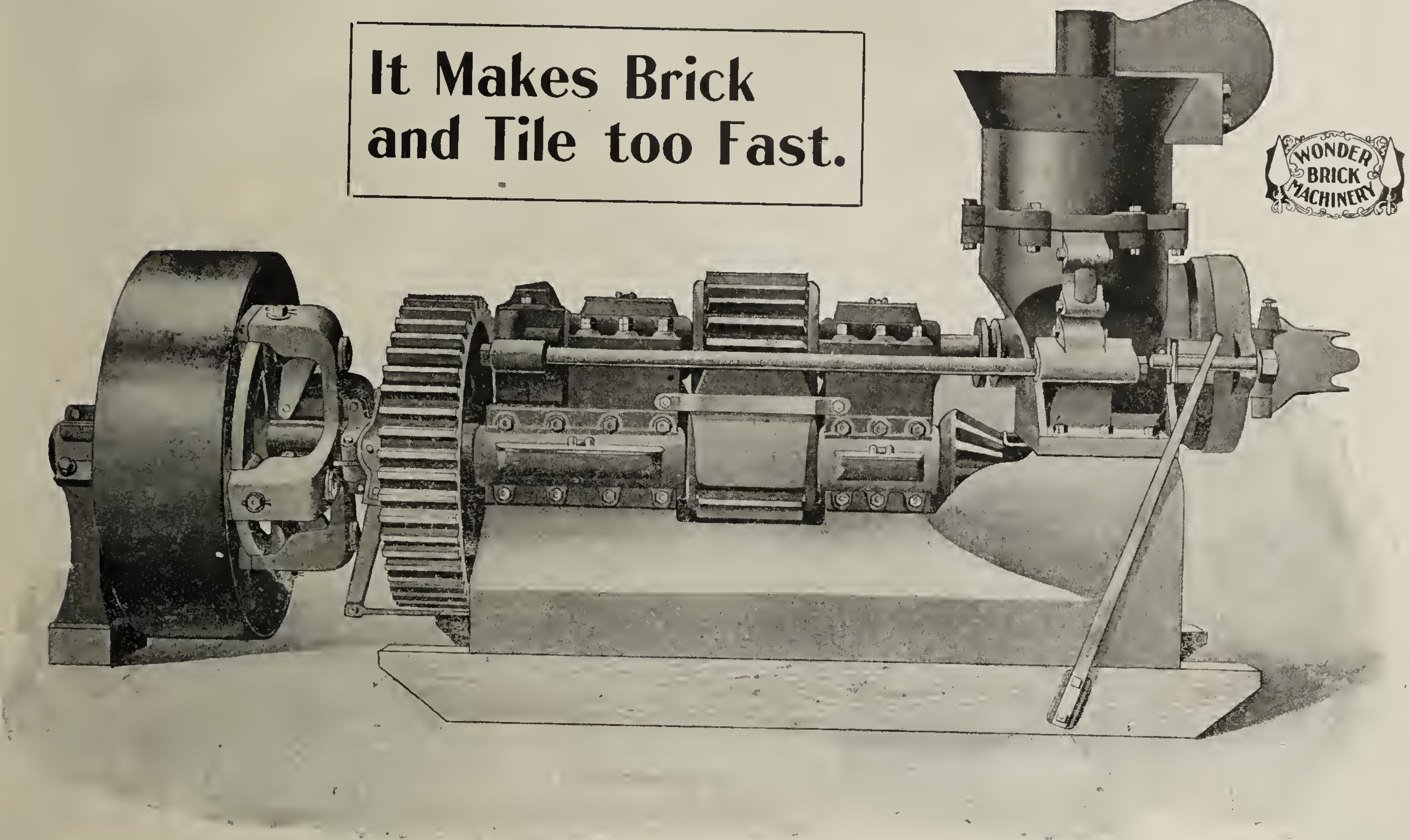
Get catalog.

H. BREWER & COMPANY,

Tecumseh, Michigan.

An Objection to the Wonder Machine.

It Makes Brick and Tile too Fast.



WONDER BRICK MACHINERY

BROWNSBURG, IND., October 7, 1902.

THE WALLACE MFG. Co., Frankfort, Ind.:

Gentlemen—We would have written you earlier, but our new Little Wonder has been making tile so rapidly that it has kept us busy caring for them. We had some trouble at the start with the 4-inch tile die, but after following your directions, the machine now makes 4-inch tile at the rate of 20 to 25 per minute.

There may be better tile machines then the Little Wonder, but it is good enough for us, and we have no desire to make any exchange.

Yours very truly, LINGEMAN BROTHERS.

This is only one of the many complaints of this kind that we are receiving daily. This letter pertains to the Wonder Machine as a Tile Maker. We have others that are equally as complimentary for this machine as a Brick Maker, as it makes brick equally as rapidly as tile.

The Wallace Mfg. Co.,

FRANKFORT, IND., U. S. A.

SOUTHERN AGENTS:
Atlanta Brick Machinery Co.,
403 Prudential Building, ATLANTA, GA.

WESTERN AGENTS:
Chicago Brick Machinery Co.,
225 Dearborn Street, CHICAGO, ILL.

Mention The Clay-Worker.

UNCLE SAM is proud of the Eagle. So are we. So are all the clayworkers who have bought Eagles. Why is it? People are never proud of a poor thing or a disappointing investment. They all like the Eagle because it is a fulfiller of guarantees, because it stands for quality, because it's a willing worker, because it saves its cost in repair bills, because when the whistle blows it's ready and able to run, and is willing and able to run overtime, or all the time, without complaint. If you're going to buy a repress and are willing to buy on a business basis of economy, you'll be safe in investigating the record of the Eagle. We'll send you facts and figures for the asking, and a list of users. Wire or write.

We also build the only complete line of clayworking machinery in the various processes. Every machine a winner because it's **"Built Right and Runs Right."**

The American Clay-Working Machinery Company,

Bucyrus, Ohio, U. S. A.

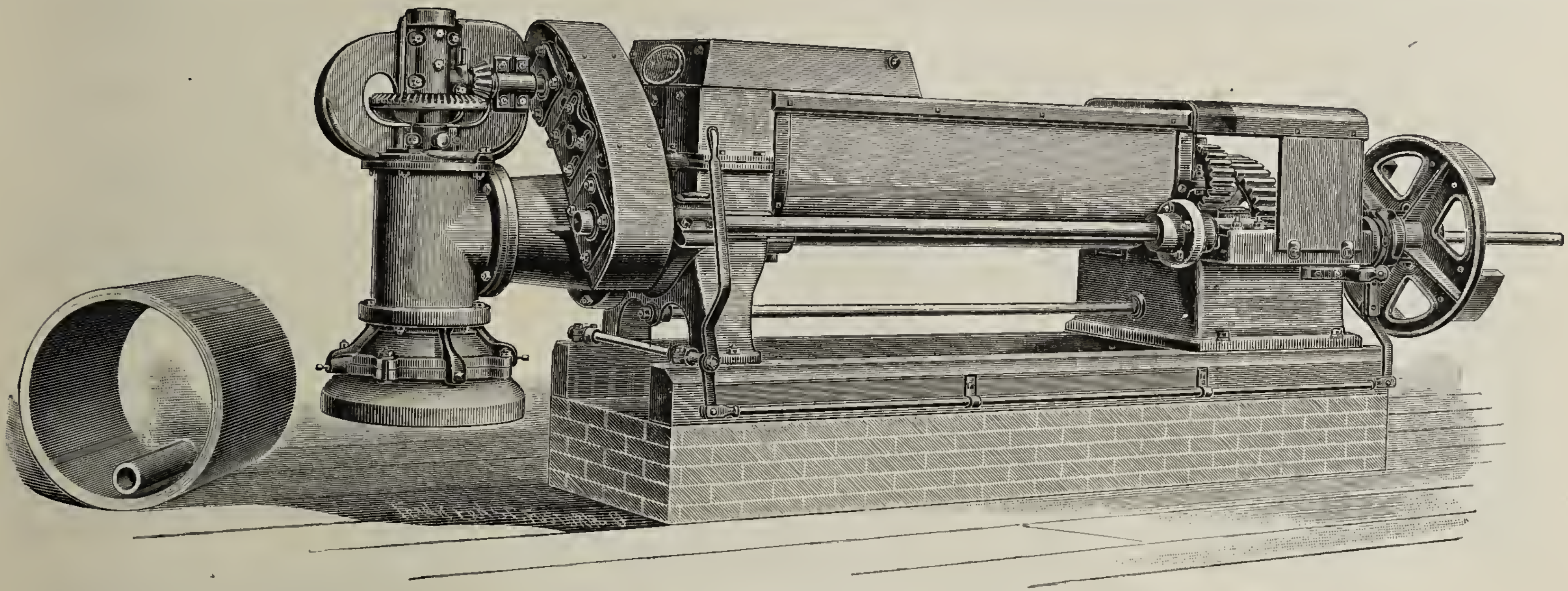
New York Office,
39-41 Cortlandt St.
Chicago Office,
Merchants' Loan and Trust Bldg.
European Office,
3 Gore St., Picadilly, Manchester, Eng.

See Ad. on Page 586.

A NEW COMBINATION.

◆

INVESTIGATE IT THOROUGHLY.



Recognizing the fact that the average tilemaker does not sufficiently pug the clay he uses we have arranged our famous "Hummer Combined" Brick Machine so as to make all sizes of drain tile from 2½ inches to 24 inches.

Sizes 2½ inches to 8 inches, delivered horizontally and the larger sizes vertically. This machine, with a "Bensing" Automatic Tile Cutting Table, makes the most complete outfit for the manufacture of drain tile and hollow building blocks on the market.

We would like an opportunity to make you thoroughly acquainted with the good qualities of this Machine. A postal card from you will bring the information.

The J. D. FATE CO.,

B. E. LaDOW, Western Agent,
1210 Chamber of Commerce, Chicago, Ill.

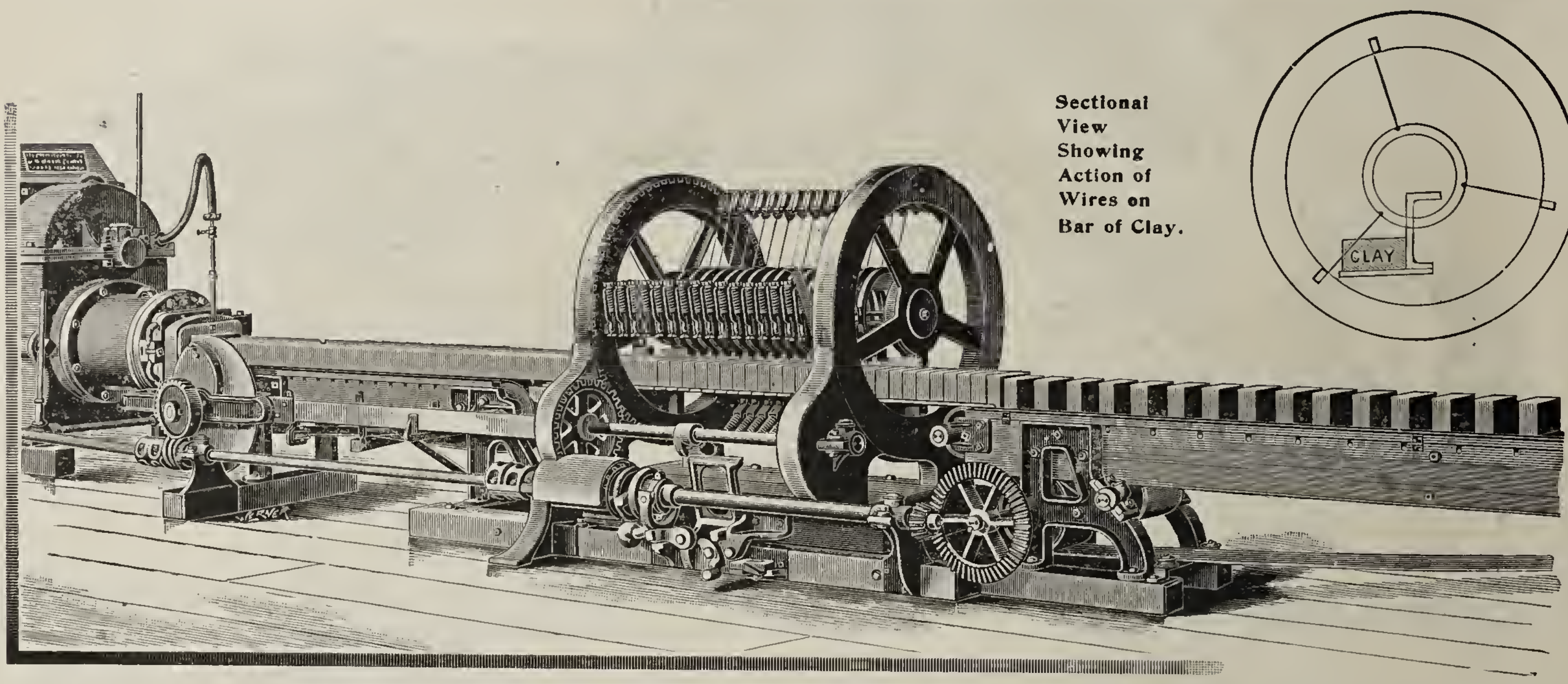
Plymouth, Ohio.

Mention The Clay-Worker.

NO OTHER

AUTOMATIC CUTTER

Is "Just as Good" as This.



Sectional View Showing Action of Wires on Bar of Clay.

ROTATING AUTOMATIC CUTTER. Patented.

Why waste time and money using Cutters which are frequently out of order and cannot be depended upon to do good work?

Why not produce brick of **finest quality** when it can be done with less expense?

A multitude of others have found it profitable to use this Apparatus.

Why should you not use it also?

You will be satisfied with it.

We will prove this statement if you will give us opportunity.

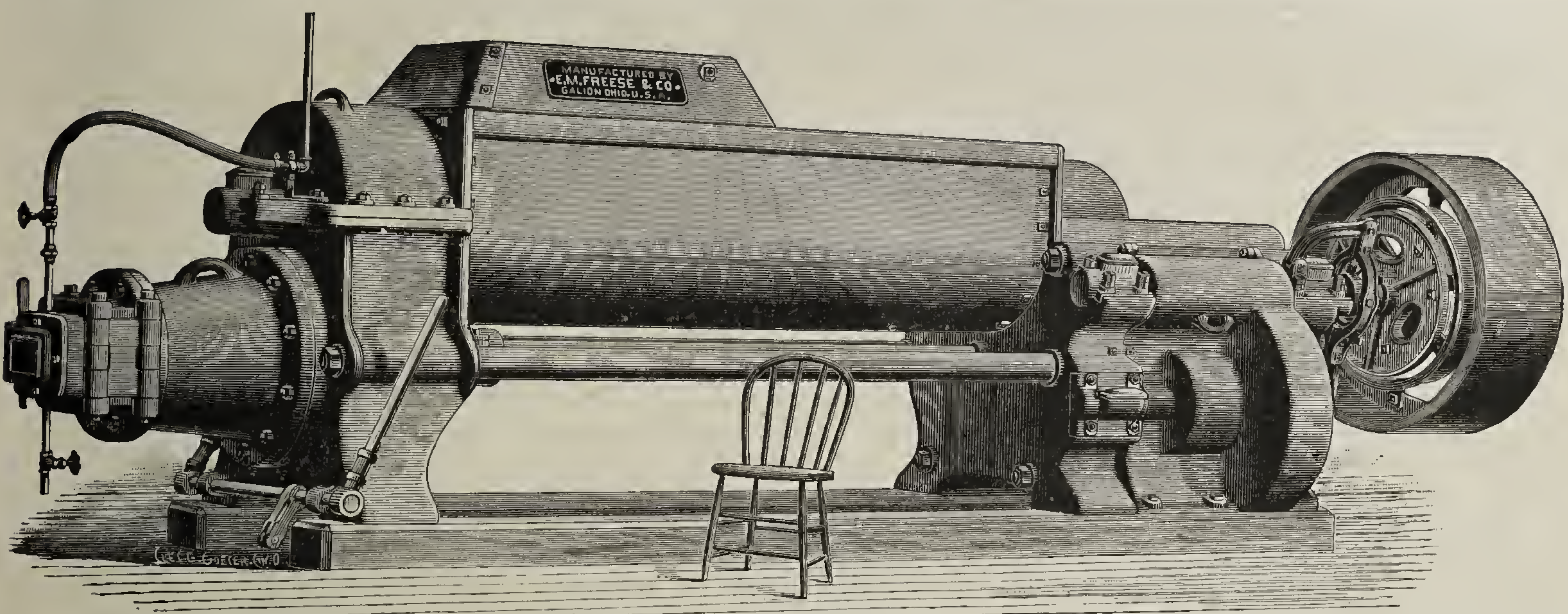
E. M. FREESE & CO.,

Galion, Ohio.

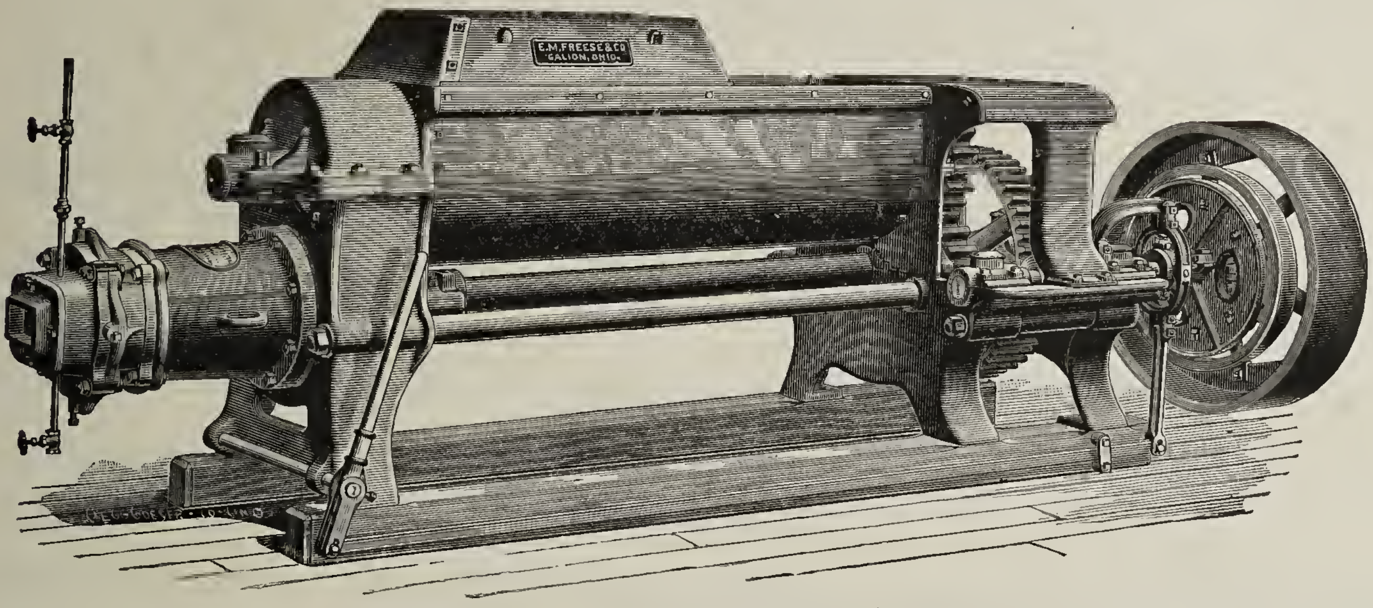
Mention The Clay-Worker.

Union Brick Machines

With Pug Mill Combined.


MANUFACTURED BY
E.M.FREESE & CO.
GALION OHIO U.S.A.

UNION BRICK MACHINE. (SPECIAL SIZE.)



UNION BRICK MACHINE. (No. 1 SIZE.)

We build these Machines in five (5) sizes.

Their reputation for convenience, enconomy and satisfactory service generally is established by their use in scores of the best Brick Plants.

E. M. FREESE & CO.,
Galion, Ohio.

Mention The Clay-Worker.

SOME OF THE ARTICLES WE MAKE

Horizontal & Vertical Brick Machines

Clay Granulators,
Clay Elevators,
Clay Cars, Pug Mills,
Revolving Dump Tables,
Tempered Steel Brick Strikes,
Kiln Castings,
And other castings.

◆ ◆ ◆

Friction Winding Machines,
Friction Clutches,
Friction Clutch Pulleys,
Friction Cut-off Couplings.

◆ ◆ ◆

Power Freight Elevators,
Hoisting Machines,
And Some Other Things.

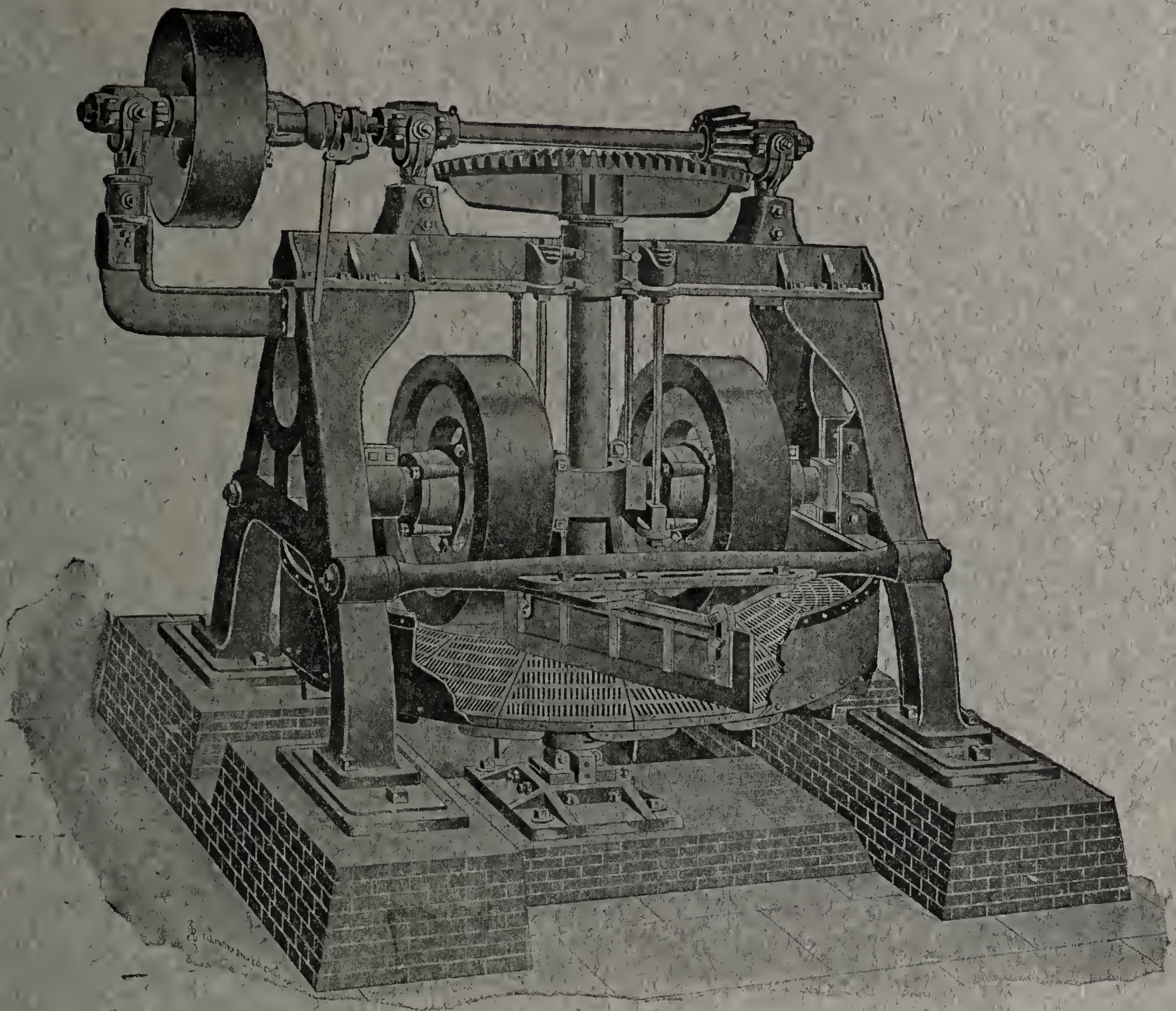
Have printed descriptive sheets describing many of these articles, which we will be happy to furnish, with prices on application.

It's not our aim to build the cheapest but we do try to build the best. Better Investigate Them.

The Eastern Machinery Co.,

NEW HAVEN, CONN.

Mention The Clay-Worker.



The FROST DRY PAN.

The ORIGINAL and BEST Dry Pan in the market. More of these Dry Pans in use to-day than all others combined. All sizes: both Wood and Iron Frames. Used by every Prominent Brick Manufacturer. Less repairs are required for the Frost Dry Pan than any other make. This is a very important fact. High Grade Automatic and Throttling Steam Engines, Horizontal Tubular Boilers and Plain and Submerged Tube Vertical Boilers. Send for Illustrated Catalogue.

The Frost Manufacturing Co.,

WORKS:
GALESBURG, ILL.

SALES DEPARTMENT:
135 Adams St., CHICAGO, Ill.

Expense and Annoyance
Eliminated With the
"A B C" Waste
Heat Brick
Dryer.

Gentlemen—We have installed the waste heat system at our works, conducting and distributing the hot air from the center of our kilns through underground ducts with your fan.

We do not hesitate to say that there is a very great saving in fuel, and that it works very satisfactorily indeed. The simplicity of, and the little machinery required in operating, the fan eliminates an immense trouble, expense and annoyance incident to either steam or direct heat system of drying

Yours very truly,
TERRE HAUTE BRICK AND PIPE CO.
(Will P. Blair, Sec.)

Terre Haute, Ind.,
Oct. 29, 1902.

The results obtained by others can be duplicated in your plant. Note the experience of the Terre Haute (Ind.) Brick and Pipe Co.

New York, Chicago, London. **American Blower Co.,** Detroit, Mich.

LL CLINE ADV. DET

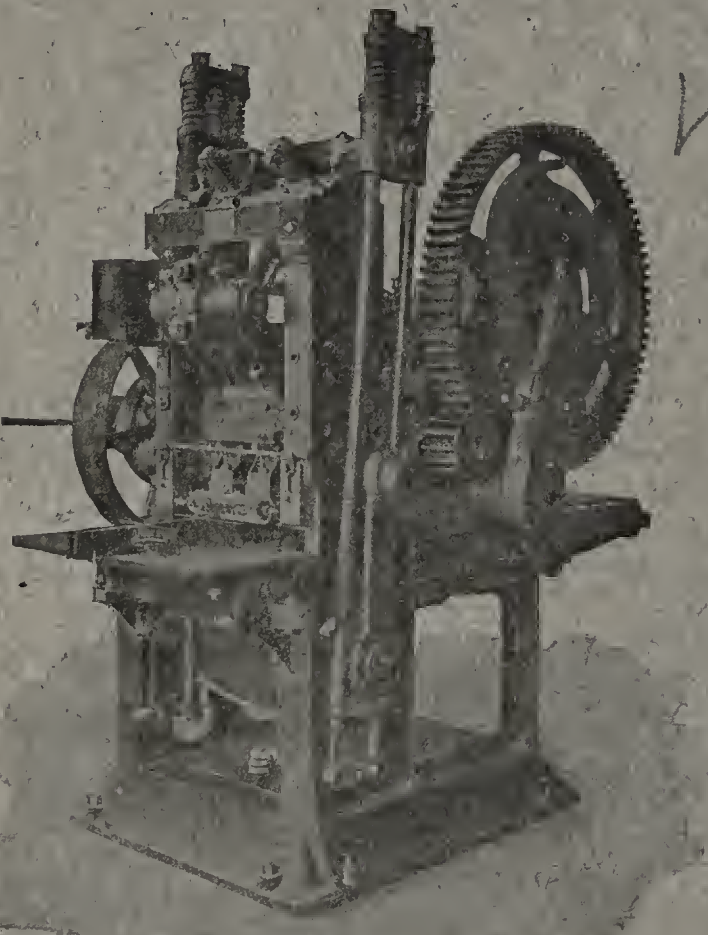
Looking for Trouble

That is we want to help you out of your trouble in screening your clay.

WE CAN DO IT

LET US TRY AND CONVINCE YOU.

DUNLAP MFG. CO.,
BLOOMINGTON, ILL.



THE RICHARDSON DOUBLE DIE REPRESS.

The **RICHARDSON REPRESS** will repress the ***finest face brick,*** and put in panels top and bottom, if desired. It is also a very durable repress, and is adjustable to wear. All working parts are above the dies.

We have recently shipped them to Virginia, Georgia, California, Illinois, Indiana, Ohio and Pennsylvania. These orders coming as they do from so many different sections of the country, is the best testimony of the superior merit of these machines that we can offer.

Have you seen our steel dryer cars?
We also build dry presses, and hand represses, and the Sword Brick Machine.

The Ohio Ceramic Engineering Co.,
CLEVELAND, OHIO.

BOUND BY

UNIVERSITY OF ILLINOIS-URBANA
3 0112 052630016